

**Conference Call Summary Between
U.S. Nuclear Regulatory Commission
and Pennsylvania State University**

Date and Time

March 17, 2011, at 1:00 PM (EST)

Participants

U.S. Nuclear Regulatory Commission (NRC)

Gregory Chapman
Maria Guardiola
Tyrone Naquin
Christopher Ryder

Pennsylvania State University (PSU)

Eric Boeldt
Mark Linsley

Background

PSU submitted an application for a license amendment, dated December 20, 2010, to amend Special Nuclear Materials License SNM 70-95. After conducting an acceptance review, the NRC staff issued a non-acceptance letter¹, dated March 10, 2011, citing a lack of detail in describing the facility, procedures, and handling equipment as required by Title 10 of the *Code of Federal Regulations* Part 70 (22(a)(7) and (8)). The purpose of the conference call was to discuss the reasons for the non-acceptance letter and to begin to communicate the NRC staff's expectations for a revised application.

Discussion

Eric Boeldt and Mark Linsley were unclear about the guidance that should be followed when developing their license amendment. NUREG-1556² was followed, which is the Standard Review Plan (SRP) that the NRC staff follows³ in reviewing an application from a licensee that possesses less than a critical mass. NUREG-1520⁴ is the SRP for an application from the licensee of a major fuel cycle facility. This SRP appears overly burdensome for a university to follow. Tyrone Naquin stated that there are several definitions of a critical mass, depending on the guidance. In looking at the possessing limits, Gregory Chapman stated that the sum of the fractions is above the limit for a critical mass because the unity rule is exceeded in NUREG-1556.

¹ Letter from Christopher Ryder, NRC, to Henry Foley, PSU, "Non-Acceptance Of Amendment Request To Add Plutonium To Special Nuclear Materials License SNM-95: Pennsylvania State University (TAC No. L33089)," March 10, 2011, ADAMS Accession Number ML1106603340.

² U.S. NRC, "Consolidated Guidance about Materials Licenses: Program-Specific Guidance About Special Nuclear Material of Less than Critical Mass Licenses," NUREG-1556, Volume 17, November 2000, ADAMS Accession Number ML003776996.

³ A licensee can use the SRP to determine how the NRC staff will evaluate a license application and provide information in their application accordingly.

⁴ U.S. NRC, "Standard Review Plan for the Review of a License Application for a Fuel Cycle Facility," NUREG-1520, Revision 1, May 2010, ADAMS Accession Number ML1013901100.

Gregory Chapman acknowledged review of the SRP for a university is lacking. In the past, universities have been regarded as low-risk licenses. The NRC accepted the NUREG-1556 guidance in such cases. Given the subject amendment, the risk is more significant. Maria Guardiola stated that NUREG-1556 is a good starting point; but, by itself, does not cover relevant safety topics. Gregory Chapman needed more details in the areas of concern; NUREG-1520 gives guidance in these areas, although other areas in NUREG-1520 are inapplicable.

Christopher Ryder outlined the regulatory requirements about the content of an application. Section 70.22(a)(7) and (8) state that an applicant is to describe the equipment, facilities, and procedures, which will be used by the applicant to protect health and minimize danger to life or property. Some examples in the regulation that are relevant to PSU include handling devices, working areas, measuring and monitoring instruments, and devices for the disposal of radioactive effluents and wastes. For the staff, the complement of §70.22 is §70.23(a) (2), (3) and (4), which requires the staff to determine that an applicant is qualified by reason of training and experience, and that the proposed equipment, facilities, and procedures are adequate to protect health and minimize danger to life or property.

Eric Boeldt stated that plutonium will not be used with the other nuclear materials. The amount of plutonium is miniscule. Gregory Chapman replied that co-use and amount is not the issue. Though a university is not a major fuel cycle facility, the NRC staff is trying to find middle ground. Eric Boeldt asked for guidance to follow. Usually, the broad-scope license has been satisfactory.

Christopher Ryder suggested that Eric Boeldt and Mark Linsley look at the license of another university, such as the University of Texas. G. Chapman expressed caution using this as an example because the subject amendment may not use the same materials as PSU. Not many universities have dispersible plutonium. Later, Christopher Ryder retracted this as an example after recalling that he had seen a renewal application from the University of Texas, not an amendment. Eric Boeldt and Mark Linsley asked about National Institute of Standards and Technology (NIST); they wanted a template so that the NRC staff can process the application in a timely manner. Tyrone Naquin suggested that his counterpart at NIST may be beneficial to contact. Both he and Gregory Chapman were unaware of other examples. Eric Boeldt was surprised that PSU is the only university that has asked to do the subject work. They asked if all such licenses are from NRC or do Agreement States issue such licenses. The NRC staff did not answer this question.

Eric Boeldt said that the last renewal application has much of the information that is requested. The subject license amendment is adding a small increase to both the activity and the volume. Gregory Chapman said that, currently, dispersible plutonium is being added. The facility, procedures and handling equipment for dispersible plutonium must be described. Maria Guardiola stated that NUREG-1556 does not specify the information needed by the NRC staff to evaluate safety. The licensee can, for example, look at the relevant portions of Chapter 6 in NUREG-1520. When asked, she went on to say that relevant details would include accidents and consequences. Eric Boeldt said that the plutonium is in an acidic, aqueous, form. There is not risk of explosion. Christopher Ryder said that a revised amendment should state this. Maria Guardiola suggested that they describe the amounts of solutions. Christopher Ryder said to describe the facility, such as laboratory benches with plastic covers with an absorbent side to retard spills. Gregory Chapman said the radiation protection program for dispersible materials

must be described. Eric Boeldt and Mark Linsley stated that the same is true for uranium. Tyrone Naquin disagreed. For example, learning how to handle dispersible plutonium is not standard training.

Eric Boeldt and Mark Linsley asked how physical security would differ from the other materials, such as strontium, that the university is licensed to possess. The NRC staff said that the issue of plutonium needs to stand on its own.

Eric Boeldt said, in regards to training, that dry runs are not typically done. The amount of plutonium that they will be handling is not a lot of radioactivity. There is a heightened awareness of the hazard posed by plutonium. The expectation was that NRC would take the subject application as an amendment, not a new license. Maria Guardiola stated that the NRC staff must determine the adequateness of the facility and procedures to safely handle the plutonium; this was not discussed in the application. Gregory Chapman pointed out that with the use of plutonium, there is an issue of public perception.

Eric Boeldt said that he was not expecting the application to be rejected. The NRC staff could have asked for more information. He inquired if a revised application would have to be signed again by the University's Vice President for Research. Christopher Ryder stated that the revised application would have to be signed by the person who has signature authority.

Eric Boeldt pointed out that the amendment is not just for training students. The material will also be used for research into detecting plutonium to determine the history of spent fuel. Tyrone Naquin replied that the safety determination makes no such distinction. To approve an amendment, the NRC staff must be assured that, in this case, the plutonium can be safely used. Christopher Ryder said that, the application should describe the facility and procedures. This can be done by reference to existing documents.

Tyrone Naquin offered another conference call. Plutonium is different than uranium and cesium; the difference must be evident in the amendment request. Mark Linsley asked if the NRC would review a draft of the application. Christopher Ryder said that the staff does not review drafts. We could have another conference call. PSU could give the NRC staff a presentation of their intentions ensuring a pre-application meeting to establish a common understanding of expectations for a revised submittal.

Eric Boeldt asked, what would happen if, given an approved application, a professor wants to do another kind of experiment? Christopher Ryder said that every licensee must find a balance between providing enough detail to allow the NRC staff to make a safety determination and allowing enough latitude to make changes. Tyrone Naquin said the NRC staff is not interested in the details of experiments; the staff is interested in safety.

Christopher Ryder reminded Eric Boeldt to send a revised application to the Rockville, MD address of NRC—not to the Washington, DC address. Also, an advance copy may be sent to Christopher Ryder so as to begin administrative matters of the licensing process and to alert the licensing project manager to expect an application.