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September 30, 2000

Ms. Annette L. Vietti-Cook
Secretary of the Commission
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

ATTENTION: Rulemakings and Adjudications Staff

REFERENCE: Request for Comments on "Major Revision to 10 CFR Part 71: Compatibility With ST-1 – The IAEA Transportation Safety Standards – and Other Transportation Safety Issues, 65 Fed. Reg. 44360 (July 17, 2000)

Dear Ms. Vietti-Cook:

AEAT Technology QSA, Inc. is submitting the following comments on the Major Revision to 10 CFR Part 71: Compatibility With ST-1 – The IAEA Transportation Safety Standards – and Other Transportation Safety Issues as published in the July 17, 2000 Federal Register. AEA Technology supports the U.S. Nuclear Regulatory Commission's efforts to revise 10 CFR Part 71 to be compatible with IAEA ST-1 and to also address some non ST-1 issues in Part 71 during this revision.

AEA Technology and its customers ship radioactive material internationally on a daily basis. We estimate approximately 1500 Type B shipments on a daily basis domestically and another 1500 being shipped either internationally or within other countries on a daily basis. It is extremely important that the countries of the world adopt uniform regulations to assure the safe use and transportation of radioactive materials. This allows for a consistent level of safety as established by IAEA. It also allows for uninterrupted international transportation. for commerce Therefore, the NRC along with the U.S. Department of Transportation should make every effort to harmonize 10 CFR 71 with ST-1 as is reasonably achievable.

We also support the NRC's efforts to make Part 71 safety focus and performance based. This is a practical approach and allows for the correct level of concern and safety dependent on the hazards. It allows the licensee as well as the NRC to place its respective resources where they will have greatest impact on safety.

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Attached are our responses to many of the 18 issues raised. We will be submitting these comments both electronically and by letter.

Please contact me if you would like any further information on these comments.

Sincerely,

Cathleen Roughan
Regulatory Affairs and Quality Assurance Manager

AEA TECHNOLOGY'S RESPONSES
JULY 17, 2000 FEDERAL REGISTER NOTICE

Issue 1. Changing Part 71 to SI units only

- **What changes would licensees and Certificate of Compliance holders have to make to relevant documents if NRC revised 10 CFR Part 71 to require SI units only?**

Response: AEA Technology QSA, Inc. does not support a domestic change to require only System International (SI) units. For international shipments SI units are appropriate and are already used, however, for domestic shipments we recommend the NRC retain the dual unit use. Even though the United States has adopted a policy to go to the SI units the transition has not occurred, and as discussed below, the use of the curie and mR units continue to be used throughout the US. Therefore, requiring the SI unit for shipping purposes only, when the balance of the nation's activities and industries are in the curie and mR units would cause confusion as well as possible safety issues if misunderstandings, or miscalculations were to occur. For industrial radiography all calculations are performed using the curie and rem units, changing would cause confusion.

There would not be any change to shipping documents required if the NRC adopted the SI only units. It would only require discontinued the listing of the curie units on the shipping papers.

- **What risks and safety impacts might occur in shipments because of possible confusion or erroneous conversion between the currently utilized English units and SI units?**

Response: For the most part shipping already uses both the curie and SI units on shipping documentation. From a risk and safety stand point there should be limited risk in going to just the SI units for international shipments, however as discussed above, for domestic shipments the dual units should be retained. The SI units only on domestic packages could result in unnecessary exposures by a receiver of a shipment who doesn't realize the units are SI and or due to inexperience performs an erroneous calculation trying to convert them to curie units. In the event of a transportation accident, first responders will be making measurements on the scene. It is possible an inexperienced responder looking at the shipping papers and the readings on his meter, will not realize that different units are being used. This could result in delays in implementing the appropriate response or in unnecessary exposure as they try to correct the discrepancy.

What sort of transition period would be needed to allow for the conversion to exclusive use of SI units?

Response: A year should be adequate to update computer systems and operating procedures to reflect SI units only for international shipments.

- **What other conforming changes would have to be made to Title 10?**

Response: Title 10 uses curie units throughout. It appears in Part 61 for burial, Part 34 for radiography and Part 20 requires curie units for contamination and radiation survey records for the transport vehicle and package. In addition to the NRC the EPA and FDA use curie units in their regulations. Until the country as a whole adopts the SI units the NRC should allow the continued use of dual units.

Issue 2. Radionuclide Exemption Values

- **In some cases, would shippers have to expend resources to: 1) identify the radionuclides in a material; 2) measure the activity concentration of each radionuclide; and, 3) apply the method for mixtures of radionuclides when determining the basic radionuclide values for exempt material?**

Response: Although shippers are already doing this, the calculations and computer codes will need to be

updated to reflect the change in A_1/A_2 values, resulting in some increase of time to prepare a shipment. Packages that were previously exempt may not be with the new values. Some packages that were not exempt may be now. Therefore, time must be allotted for making the update.

- **Should the exemption values apply to domestic as well as export shipments?**

Response: The exemption values need to be uniform across the world. Many industries perform international shipments as part of daily business. An exempt quantity in one country must be the same as for another country to eliminate mistakes and/or delays in shipments. It would be difficult for one country to explain to another country why an exempt package in their country is not exempt in another country. The hazard/risk must be recognized the same in all countries shipping radioactive material, such that the standard of packaging is consistent and affords the required level of protection.

If the exemption values only applied to export shipments, would the resulting standard be practical to implement?

Response: As discussed above the exemption value needs to be global.

- **If DOT specifies the exemption values in its regulations (49 CFR 173), should the NRC incorporate those same exemption values in Part 71, or simply make reference to the exemption values in the DOT regulations?**

Response: to prevent any potential conflicts between the DOT and NRC regulations, the NRC should reference the DOT regulations and not adopt unique exemptions for transportation or a separate table.

Issue 3. Revision of A_1 and A_2

- **Is there a practical alternative to adoption of the A_1 and A_2 values?**

Response: For transportation applications the A_1/A_2 values should continue to be used. It is not practical to change systems unless that system is uniformly recognized around the world. There is no other system being used today.

- **Are there specific values that should be modified for domestic use only? What would be the justification for doing so?**

Response: While specific values of the A₁/A₂ table should not be different from those in ST-1, we do concur with the USDOE's proposed rule change to ST-1 keep the A₁ value for Cf-252 at 5mg instead of the value of 2.5 mg. As it is likely that ST-1 will be revised to reflect the old value, it does not make sense to force vendors to change packaging for a short time when there are few shipments made of Cf-252 domestically.

- **To what extent should the US partial adoption of ICRP 61 be considered for revising the A₁ and A₂ values?**

Response: Because the universal adoption of ICRP 61 is reflected in the A₁/A₂ values in the international regulations the US partial adoption of ICRP 61 should not be a factor in the transportation regulations.

Issue 6. Type C Packages and Low Dispersible Material

- **What would be the impact on air transport of currently certified Type B packages if the activity content is limited to the activity content thresholds specified above?**

Response: We believe that the impact would be minimal. However, the creation of the Type C package and the addition of the LDM were to specifically cover plutonium shipments. The LDM was to limit the shipment of plutonium in the form of a liquid or oxide by air. We believe the NRC should remove the plutonium specific requirements for air and replace them with these new

Issue 7. Deep Immersion Test

- **How should the differences in the acceptance standards be addressed?**

Response: Due to the international nature of transportation AEA Technology believes the NRC regulations

should be consistent with ST-1.

- **What would be the impact on availability of packages and shipping costs if all packages with an activity greater than $10^5 A_2$ are required to pass the immersion test requirements?**

Response: AEA Technology QSA, Inc. has not assessed this impact as it currently has no packages that exceed the required value.

- **Would US origin package designs have to be specially reviewed and certified before shippers could export them in accordance with international regulations if ST-1 requirements were not adopted?**

Response: If this response is not specific to the deep immersion test but to all package design criteria, we state the following. The shipment of US certified package designs for import/export use beginning in mid 2001 is entirely dependent upon approval of such designs to ST-1 performance standards. Failure to grant US Competent Authority Certifications for such designs would seriously hinder AEA Technology, and the entire industrial radiography industry. These industries rely heavily on international shipments as part of routine business. This would place US package designers and manufacturers at a very strong competitive disadvantage. This was evident when NRC and DOT failed to adopt IAEA-85 in a timely manner and did not have the mechanism in place to approve to the newest standard. This resulted in many of our shipments not being acceptable in several countries.

Issue 8. Grandfathering Previously Approved Packages

- **Should the "grandfathering" of previously approved packages be limited to those approved under the last two major revisions of the regulations? If not, on what basis should the "grandfathering" of previously approved packages be allowed?**

Response: While grandfathering may not be allowed for international shipments under ST-1 it should be allowed for domestic shipments. A shipping package does not become unsafe just because it is a year or

a day older. The NRC has the ability to recall certifications if there is a question about the safety of a package. Older packages should continue in service provided they are properly maintained and no safety deficiencies are identified.

- **How long should “grandfathered” packages be allowed to be fabricated or used?**

Response: Packages that are in use should be grandfathered unless significant safety deficiencies with the package have been identified. These should be allowed to continue to be used until they reach the end of their useful life. Fabrication of new packages can only occur on a case by case basis.

- **What type and magnitude of package design changes should be allowed for “grandfathered” packages, before re-certification to the current set of regulations is required?**

Response: ST-1 allows for a phase out of manufacturing of any packages that are not certified to the 1996 version of ST-1 by Dec. 31 2006. This provides a window for the design, testing and certification of new packages, the re-evaluation of existing packages to the 1996 specification, or the request for special certification.

- **IAEA has initiated a process to review and update ST-1 on a two-year frequency and does this new process raise any issues on the grandfathering limitations to the last two major revisions?**

Response: We are very concerned with the two-year review cycle.. This limited time period could result in regulatory changes that effects a package that is the middle to the end of its design and licensing process. It takes approximately 2-3 years to fully design and test a new package. Once a package is approved to the existing standard it should still be authorized for use, as it does not become unsafe because of a regulatory wording change. Packages can be assessed based on their history and determine a practical lifetime.

We are concerned with such a short time period for changes. If the IAEA had adopted this process following the adoption of ST-1 the US would be behind on two sets of revisions before it incorporates ST-1 in its regulation. However, there may be merit in the program if it is conducted similar to the way the US

regulators update and revise its regulations with minor continuous change and only major revisions periodically. This should continue to be the practice for adoption of future changes to ST-1.

Issue 9. Changes to Various Definitions

- **Do the definitions conflict with existing programs, or introduce other issues or concerns?**

Response: ST-1 definition identifies the specific types of packaging allowed for Class 7 and unless DOT revises its regulations there will be a conflict domestically. We do not recommend this change.

- **Are there other definitions of terms that are recommended for incorporation in Part 71?**

Response: The NRC needs to consider definitions for "uniformly distributed", distributed throughout" and "homogeneous". The NRC uses all three terms; it would be helpful to understand the differences between them.

Issue 12: Special Package Approvals

- **Should NRC consider adopting an analogue of IAEA's special arrangement provision modified to address packaging?**

Response: The IAEA's special arrangement provision is for shipments between countries in nonconforming packages, therefore it would not lend itself to domestic shipments. However, if it is the concept that a nonconforming package can be shipped under special circumstances then there is merit in the NRC taking this into consideration. There have been cases where a Type B package has been damaged such that it continues to secure and shield the source but it does not meet the conditions of the certificate of Compliance. A special arrangement certificate would be beneficial in these cases as it would allow for transport of the damaged equipment to be shipped for disposal or return to the manufacturer. With the model 20WC being terminated at the end of 2000, this removed the only current option for

transporting small damaged Type B containers (where the source is still secure and shielded). We recommend that NRC adopt a provision for special arrangement certificates.

- **What (additional) determinations should be included in an application for a special package approval?**

Response: The review should be based on the specific of the situation and be assessed in a timely manner at that time.

- **Should the risk-informed basis used specifically for the Trojan approval be adopted for other special package approvals?**

Response: The review performed for the Trojan shipment provides a point of reference. Since this has been accepted it could be referenced as the basis for other similar shipments. However each case should be assessed on its own special circumstances.

Issue 13. Expansion of Part 71 Quality Assurance Requirements to Holders of, and Applicants for, a Certificate of Compliance

- **Should consistency be maintained between the QA provisions of Parts 71 and 72, in light of the existence of dual purpose cask designs?**

Response: The NRC currently has adequate Quality Assurance control on the Part 71 packages under Subpart H. NRC has the ability and authority to assure that corrective actions are accomplished even if the nonconformances (NONC) are not notices of violations (NOV) We do not believe that issuing a NOV instead of a NONC will result in any additional compliance than is already currently in place.

Issue 14. Adoption of ASME Code

We do not believe that the ASME code should be applied to the smaller Type B packages such as industrial radiography devices. As more than 500 of these are manufactured a year it would be cost and time

prohibitive to have to have a nuclear inspector on site during fabrication and to obtain code parts. If the ASME code is adopted it should be made very clear that it only covers spent fuel packages.

- **Can other regulatory vehicles for NRC endorsement of Code be used or should this only be done by rulemaking?**

Response: Adoption of voluntary consensus standards should not be part of the regulation. Primarily, because the standards are updated from time to time it would take a formal regulatory process to change the regulation to adopt the standard changes. In current regulation where standards have been adopted there are conflicts as one part of the regulations endorses one version of the standard while another part endorses another version. In addition industry standards are voluntary and consensus in nature, not all members of the industry wish to adopt the entire standard. This results in an exception provision in the license. We recommend that the NRC place industry standards in the regulatory guides, which would allow for simpler updating and recognize that other methods of demonstrating compliance are available.

- **Are there other voluntary consensus standards that should be considered in addition to, or in lieu of, ASME code?**

Response: No

Issue 15. Adoption of Changes, Tests, and Experiments Authority

- **Should this change authority apply to spent fuel packages involved in domestic commerce only?**

Response: The change authority should be extended to all packages.

- **Should this change authority be expanded to include all types of transportation packages, licensees, or users?**

Response: The change authority should be extended to all packages, licensees, or users. Changes can be sent in to NRC/DOT and be incorporated at the next major revision or renewal of the certificate. Many other countries already utilize this practice where minor changes are sent in to the Regulatory Authority and are incorporated into the certificate at the next renewal or revision. This has been proven effective

and has not reduced the safety of any shipment. It also saves time for both the regulatory reviewer and the package designer and/or manufacturer.

Should the change authority apply to all domestic transportation packages?

Response: The ST-1 does not have a specific change authority nor does it have a specific provision preventing neither changes that do not materially change the package nor the basis that the package was certified to. The industry believes that the same would apply to the change authority within the new Part 71. Therefore, should not be limited to domestic use only.

- **Should the change authority apply to dual purpose spent fuel packages?**

Response: The change authority should be allowed for all packages.