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NUCLEAR REGULATORY COMMISSION
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August 26, 2015

MEMORANDUM TO: Adelaide Giantelli, Branch Chief
Source Management and Protection Branch
Division of Material Safety, State, Tribal
and Rulemaking Programs
Office of Nuclear Material Safety
and Safeguards

FROM: Paul Goldberg, Project Manager */RA/*
Source Management and Protection Branch
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and Rulemaking Programs
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SUBJECT: QUESTIONS AND ANSWERS CONCERNING THE
APPLICATION OF 10 CFR PART 37 TO LICENSEES WITH
PART 73 SECURITY PLANS (THIRD GROUP OF QUESTIONS
FROM NUCLEAR ENERGY INSTITUTE)

The attached questions and answers are responses from the U.S. Nuclear Regulatory Commission (NRC) staff, approved by the Office of General Counsel (OGC), to questions from the Nuclear Energy Institute (NEI), provided in an email dated July 30, 2015, and at the Radiation Protection Forum on August 5, 2015, on how 10 CFR Part 37, Physical Protection of Category 1 and Category 2 Quantities of Radioactive Material, applies to nuclear reactors and other facilities with security plans under 10 CFR Part 73. The questions were consolidated for logical consistency. The answers were approved by Division management in the Office of Nuclear Material Safety and Safeguards (NMSS)/Division of Material Safety, State, Tribal and Rulemaking Programs, NMSS/ Division of Decommissioning, Uranium Recovery, and Waste Programs, Office of Nuclear Security and Incident Response/Division of Security Policy, and the Office of Nuclear Reactor Regulation/Division of Inspection and Regional Support, and reviewed by OGC which provided a notice of no legal objection. They have been made public on the NRC Web site at <http://www.nrc.gov/security/byproduct/10-cfr-part-37.html> and will be provided to NEI by email.

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301-415-7842

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OFC	NMSS/MSTR	NMSS/MSTR
NAME	PGoldberg	GSmith for AGiantelli
DATE	8/26/15	8/26/15

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Industry Part 37 Questions
3rd Set of Q&As
2015 Radiation Protection Forum Part 37 Panel
Wednesday, August 5, 2015

Operating Plant Questions

1. Interpretations of Regulations - Part 37.11(b) Exemptions

Neither the NRC nor the licensees have leave to interpret what the regulation meant to say. The rules cannot be interpreted through regulation by inspection. The exemption in 37.11(b) is clear – if the activities are protected by the Part 73 security provisions, then the subparts B and C of Part 37 do not apply. Therefore by regulation, any Cat 1 or 2 materials within the PA are adequately protected.....no further actions are required. There are other regulations that govern inventory and verification of sources, but those sources as well as any other Cat 1 or 2 materials are already secured by the Part 73 security plan. As an industry, we should insist the rule be applied as written. There are processes for changing the rule if needed – imposing rules through a TI is not a rule change process.

Per the regulation stated in 10 CFR 37.11(b), any licensee’s NRC-licensed activities are exempt from subparts B and C of Part 37 to the extent its activities are included in a security plan required by 10 CFR Part 73 (interpreted by the NRC as activities within the Protected Area). Considering the very clear exemption in 37.11(b), please explain the regulatory basis requiring “material accountability” and “inventory” of Category 1 and 2 materials within the Protected Area.

ANSWER:

The NRC has interpreted the regulation as written – “any licensee’s NRC-licensed activities are exempt from subparts B and C of Part 37 to the extent its activities are included in a security plan required by 10 CFR Part 73.” (emphasis added) Therefore, as stated in NUREG-2155, Implementation Guidance for 10 CFR Part 37 and in the two sets of Questions and Answers Concerning the Application of 10 CFR Part 37 to Licensees with Part 73 Security Plans (<http://www.nrc.gov/security/byproduct/nei-pt-37.pdf> and <http://pbadupws.nrc.gov/docs/ML1430/ML14307B321.pdf>), licensees may choose to protect their material under an existing Part 73 security plan, modified to include the Part 37 material, or a new Part 37 plan.

The licensee must describe the existing physical security protection measures being used to ensure the Part 37 material (e.g., calibrator) is being protected from theft and diversion. The new Part 37 plan can implement the Part 37 rule as written, or may credit the security measures of the Part 73 plan if supplemented with material accountability and training. The regulation in 37.11(b) does not remove security requirements from the material completely, it avoids duplicative security of the material.

If the licensee is crediting the security measures of the Part 73 plan as providing protection of Part 37 material, the licensee must describe the Part 73 security measures being used/relied upon to provide protection against theft and diversion. The security measures the licensee may credit include:

- Access Authorization;
- Perimeter Intrusion Detection and Assessment;
- Access Controls associated with establishment and maintenance of Protected Area;
- Fitness For Duty;
- Behavioral Observation;
- Insider Mitigation;
- Visitor Escort and Control;
- Safety Security Interfac; and
- Suspicious Activity Reporting.

2. Revision of the Part 37 Rule

The industry concern with the TI was around the need to aggregate and account for quantities of concern inside the Part 73 licensee Protected Area (PA). It appears the weekly inventory was the only aspect addressed. Are there efforts to further reduce the cumulative impact of this rule?

ANSWER:

The NRC received and docketed a petition for rulemaking (ADAMS Accession No. ML14199A570) dated June 12, 2014, filed by NEI (*Federal Register*, Volume 80, page 33450, dated June 12, 2015).

The petition requested NRC to:

- remove undue regulatory burden for facilities with Part 73 security plans
- improve the clarity of Part 37 and provide greater regulatory certainty
- exempt large components and material stored in robust structures

3. Part 73 Security Measures in the Protected Area

Besides training and material accountability, are there any additional security controls that must be in place for Shepherd calibrators inside the Protected Area (if the Protected Area is defined as a security zone)?

ANSWER:

If a device is mobile, Part 37.53 requires two independent physical controls to secure the material from unauthorized removal when it is not under direct control and constant surveillance by the licensee. One of the controls may be the barrier that forms the security zone, and the second control may be a locked wheel on a Shepherd calibrator, or storage of a radiography device in a locked cage or in a locked room or secured with a chain or other device. If the mobile device is in use, it must be under direct control and constant surveillance of an authorized person.

4. Material Accountability

Section 03.02 b. of TI 2800/041, Revision 1 contains extensive discussion of requirements for material accountability within the PA:

- a. *In accordance with 10 CFR 37.11(b), “Any licensee’s NRC-licensed activities are exempt from the requirements of subparts B and C of this part to the extent that its activities are included in a security plan required by part 73 of this chapter. NRC guidance and the TI go on to explain “...physical protection measures in the protected area (PA) that are required by 10 CFR Part 73 for a power reactor, ISFSI, or fuel cycle facility provide reasonable assurance of the security of Part 37 material.” Please explain the regulatory basis for requiring a material accountability process for Category 1/2 materials inside the PA – this is the only section of the TI that does not cite a section of the Part 37 regulation for reference.*
- b. *The material accountability section of the TI states, “The process should also include identifying the generation or disposition of Part 37 material (e.g., transfer of material to another licensee or movement from one security zone to another).” Then the “Guidance” portion expands that to include tracking material within the security zone by having the inspector verify “that records on the generation, movement, or disposition of Part 37 material within a security zone, or from one security zone to another, are updated and maintained according to licensee procedures.” With consideration of the very broad exemption in 37.11(b), please explain what section of the Part 37 rule requires tracking of Category 1 or 2 materials within the PA (security zone).*
- c. *Considering the exemption in 37.11(b) and the fact the words “material accountability” and “inventory” do not appear in the Part 37 regulation, please explain the regulatory basis for the following inspection guidance described in Section 03.02 b. of the TI:*

“The inspector should select one or two samples to verify the effectiveness of the licensee’s process for Part 37 material accountability and inventory control inside the PA.”
- d. *Section 03.02 b. of the TI states “Part 37 material within reactor systems and the spent fuel pool are considered to be protected with respect to Part 37 requirements by the nature of the protective measures implemented to meet the Part 73 requirements and radiological protection measures implemented to meet Part 20 requirements, and therefore are beyond the scope of this TI.” That statement appears to contradict the broad exemption provided in 10 CFR 37.11(b) by limiting the Part 73 security protections within the PA to only the materials within the reactor systems and the spent fuel pool. Please verify the exemption in 37.11(b) applies as “Any licensee’s NRC-licensed activities...” and not just to materials within the SFP and the reactor systems.*

ANSWER:

Licensees should have a process to account for Part 37 material in order to demonstrate they are protecting Part 37 material. Licensees must have an understanding of what the material is, approximately where the material is located and how the material is being protected. An inventory may be an acceptable tool to facilitate material accountability, but is not required. Other reasonable measures may also be used to ensure the material is protected.

5. Updating Material Accountability Information

Are inventory plans updated during material movement or is an annual inventory plan adequate to meet approximate amount of material and location requirements?

ANSWER:

The generation or disposition of Part 37 material should be included, in a timely manner, as part of the accountability process (e.g., transfer within a security zone, movement from one security zone to another, or transfer of material to another licensee).

6. Part 37 Material in Systems, Structures, and Components (SSCs)

What exactly is the NRC looking for with regard to detailed inventory / inspection of CAT 1 or CAT 2 material within defined security zones covered by part 73? When do they consider material / waste no longer in the system? I have been to different conferences nobody has consensus on this issue.

The answer (in NUREG-2155) to question 3 in the explanation of 37.11(b) states in part, "Activation products contained in the structure (such as the stainless steel lining of a reactor vessel, stainless steel bolts, or the reactor hull) would not be subject to 10 CFR Part 37 as long as these materials remain an integral component of a reactor." Does this exemption include systems that support reactor operation such as Liquid Radioactive Waste systems or Makeup Water systems?

ANSWER:

Part 37 radioactive material (activation products and fission products) contained in, or part of a system, structure or component (SSC) or auxiliary support systems (e.g., in-process ion exchange resin beds or filter housings, installed resin storage tanks, spent fuel cooling systems, radwaste processing systems, underwater vacuum systems, skid mounted demineralizer systems, radiation monitoring systems, in-core or ex-core detectors, etc.) would not be subject to Part 37 requirements as long as this material remains in place within such a system.

7. Material Accountability after Material is Removed from Systems, Structures or Components (SSCs)

Once resin or filters are removed from the reactor structure or reactor system components, is the licensee required to update and track the cumulative amount of radioactive material?

For example, resin sluiced into a liner or high integrity container or filters removed from the reactor coolant clean-up system and placed in a portable storage containers.

Does the licensee have to determine the curie content for each addition and maintain records of such to determine the total curie content to either prove or disprove the liner or filters meet category 1 or 2 in each area where the portable storage containers or high integrity containers located?

ANSWER:

Material accountability begins at the point when the material is removed from a SSC or auxiliary support system (such as the reactor coolant system or spent fuel cooling system, or other components such as volume control tanks, valves, demineralizers, etc.) and becomes portable.

Licensees may conservatively estimate the total quantity of radioactive material possessed in containers of resin or in filter canisters as being Category 1 or 2 material based on dose rate surveys and historical information on isotopic content. Minor amounts of radioactive material do not need material accountability. Note: The purpose of the aggregation requirement is to determine whether or not the licensee has Part 37 material; and if so, when it becomes subject to Part 37 requirements.

8. Material Accountability in “Spent Fuel Pools”

The TI, on page 3 does not provide for material stored within a spent fuel pool as being excluded from part 37 requirements. The TI, on page 6 under material accountability described Part 37 material inside the protected area and inside a spent fuel pool as protected and considered beyond the scope of the TI. Why is this statement in this specific section and not in the more global section of 03.01 Inspection Preparation? Is the material within the spent fuel pool only excluded from the material accountability requirement?

ANSWER:

Because of the existing requirements that apply to the spent fuel pool, licensees do not have to provide material accountability for Part 37 material in the spent fuel pool. Part 37 material in the spent fuel pool is, however, subject to Part 37 security measures. Licensees may demonstrate compliance with Part 37 security measures if the Part 37 material in the spent fuel pool is protected by a Part 37 security plan, or by a Part 73 security plan supplemented with training.

9. Defining a Security Zone

A licensee maintains a category 2 source within the protected area boundary. The category 2 source is located in a room within a building that is located inside the protected area boundary which is designated as the security zone. The room does not meet the requirements of a physical barrier. The licensee takes credit for the PAB as the physical barrier. Does this meet the intent of part 37?

ANSWER:

Yes, licensees have the flexibility to determine their security zones based upon the site specific nature of their facility and the Part 37 material in their possession. Licensees may define their protected area (PA) as a security zone and meet the intent of the security zone requirements in Part 37.

10. Radiography

A licensee determines the security zone to be the (Part 73) protected area and has identified the approximate location of possible category 1 or 2 material located within specific buildings inside the protected area. As long as that material remains within these buildings during radiography operations are the requirements for accountability and inventory control met?

Is the licensee required to inform Security every time the radiography source is moved inside the protected area (i.e. radiography source being used during an outage in numerous locations within auxiliary, containment or turbine building)?

ANSWER:

The licensee's material accountability process for radiography equipment should identify the storage location or status of the material (e.g., in storage in a particular area, or in use under the control of an authorized user). If the source is under direct control and constant surveillance while in use, its location need not be specified. A mobile source not under direct control and observation, such as a radiography camera, requires two independent physical controls, one of which may be the physical barrier of the security zone.

11. Exempted waste materials

The answer (in NUREG-2155) to question 2 in the explanation of 37.11(c) states in part, "Radioactive waste with diffuse category 1 or category 2 quantities, as opposed to discrete sources, is exempt only from the requirements in Subparts B, C, and D of 10 CFR Part 37. These wastes are subject to the requirements in 10 CFR 37.11(c)(1) through 10 CFR 37.11(c)(4) in Subpart A, "General Provisions," of 10 CFR Part 37."

Do activities involving (exempt) waste with diffuse material, such as spent filters and DAW, which are conducted inside the protected area meet all the requirements of 37.11(c)(1) through 37.11(c)(4)?

How are these wastes subject to material accountability in spite of being exempted from part B, C, and D of the regulation per 10 CFR 37.11(c)?

What is the regulatory basis for the material accountability requirements for radioactive materials inside areas covered by a security plan required by part 73?

ANSWER:

Part 37 exempted waste materials are only subject to the requirements of Part 37.11(c)(1) through (c)(4). Material accountability and training are required to the extent necessary to identify the materials as Part 37 exempt waste, and to the extent necessary to meet Part 37.11(c)(1) through (c)(4).

12. Large Components and Robust Structures

What and why do you have to provide detailed analysis of equipment required to move or steal large items such as old steam generators? This is what appears to be the requirement in the TI. It seems intuitively obvious and serves no useful purpose to have to create a document on what is required to move large items such as this.

ANSWER:

Part 37 materials in large components and robust structures are not exempt from Part 37 requirements. However, NRC has determined that enforcement discretion is appropriate under a defined set of conditions identified in the EGM. The written analysis is to ensure the NRC assumptions bound the actual conditions found at each licensee's facility. In performing the written analysis, the licensee may make reasonable assumptions in determining the time it would take to remove the material, and the time it would take to detect such removal. The assumptions in the written analysis should be specific to the licensee's site and available equipment. The analysis need not be complex or lengthy, but should provide the information necessary to demonstrate that the licensee has considered the security of the large components/robust structures relative to the specific site features and equipment available. An analysis that documents the following items is deemed sufficient:

1. the equipment needed to access and remove the material in a large component or robust structure;
2. the time (reasonable assumptions allowed) it would take to deploy the equipment needed and to access and remove the material;
3. the time needed for security measures; e.g., roving patrols, security post observations, cameras, observation by licensee's authorized persons, etc., to detect such movement; and
4. that there will be no decrease in the effectiveness of the Part 73 security plan through use of any of the Part 73 security measures identified in (3) above by performing these duties.

Outside the Protected Area

13. Control of Vendors

What measures are established to ensure adequate control over vendors (e.g. Truck Drivers) accessing security zones with materials outside of protected area? Is being escorted by an authorized individual sufficient control?

ANSWER:

The escort for the unauthorized individual must be an individual that meets the Access Authorization requirements of Subpart B—Background Investigations and Access Authorization Program. This would include individuals determined to be trustworthy and reliable under Part 73 (see Part 37.25(b)(2) grandfathering).

14. Tamper Indicating Devices and Intrusion Detection Equipment

What is expectation/periodicity for security performing physical tamper monitoring actions? Note: 37.49(a)(3)(ii) states: For category 2 quantities of radioactive material, weekly verification through physical checks, tamper indicating devices, use, or other means to ensure that the radioactive material is present.

ANSWER:

If tamper indicators, such as a seal on a 55 gallon drum, are used for verification of presence of Category 2 material, the integrity of the seal would have to be monitored weekly (37.49(a)(3)(ii)). Verification of the presence of Category 2 material may also be performed through physical checks, actual use of the materials, or other means.

For security system equipment, a maintenance program must be established to maintain the equipment in operable condition to ensure the systems are capable of performing their intended function when needed. This would include routine inspection of the equipment relied on to meet the security requirements for inspection and testing at the manufacturer's suggested frequency, or if not specified by the manufacturer, inspection and testing at least annually.

15. Mobile Devices Outside the Protected Area

Are the part 37 mobile devices' requirements applicable only to material outside of the Protected Area as suggested by the TI, section 03.03 j. Mobile Devices?

ANSWER:

Section 03.03 of the TI is applicable to areas outside the Protected Area. Therefore, inspection requirements in the TI, section 03.03 j for mobile devices are applicable only to material outside the PA. As noted in answers 3 and 10 above, the 37.53 requirement for two independent physical controls applies to mobile devices regardless of location.

Decommissioning Plant Questions

16. Decommissioning questions regarding part 37 and part 73:

A nuclear plant will have all the spent fuel on the ISFSI pad around 2018 and will submit a security plan to reduce the part 73 security barrier to just around the ISFSI pad. We will leave the current protected area/restricted area fence in place just to minimize access to the plant radioactive material areas. The Reactor Building will be locked by security. Inside the RB are some SNM contained in x-core detectors and some small amount of SNM in specimen capsules in the core barrel containing surveillance dosimetry (contains much less than 5 grams SNM).

Does the RB and its contents have to be under part 37 security requirements or part 73 security requirements or neither for guarding this type SNM?

Do incore detectors that have been abandoned in place..... inserted into the Rx Vessel have to be under the requirements of part 37? RB will be locked and if needed have a commercial grade alarm on the doors? B&W design incore detectors are inserted then bolted in place....only removed by unbolting, pulling 50 -60 feet of cable/tubing.... irradiated portion in the last 6-10 feet with detector on end. No part 73 security systems or officers are planned to be guarding the RB.

Do any removable in plant components in the AB or RB have to be under the part 37 requirements after the part 73 security area is removed and only around the ISFSI pad? We will have removed all spent filters and drums of waste from the radwaste processing areas.....including cleaning out all items from the spent fuel pool.....filters, cut up incores and fuel assembly parts. We will clean out and remove all hi-rad spent resin and ship for burial after the planned reduction in part 73 security footprint.....but this will be under part 37 even though outside the part 73 security area at this time.

Are there any problems the NRC has had with reduction of security footprints at decommissioning sites?

ANSWER:

If a licensee's Part 73 protected area excludes the reactor building or auxiliary building, which contain radioactive materials, then the licensee must meet the requirements of Part 37.

If two physical barriers exist separating radioactive materials, then the material is not subject to aggregation requirements. For example, a locked building, or an outer fence with typical industrial security access controls can serve as one of the barriers, and a second barrier can be an installed and intact system, structure or component (SSC) that requires dismantling in order to gain unauthorized access the material, depending upon the particular configuration. Under these conditions, the radioactive materials are not subject to aggregation if the material is protected by two physical barriers;

Once the licensee has begun active decommissioning and is dismantling the facility, 10 CFR Part 37 would apply to rubble and removed components. Similarly, large volumes of diffuse concentrations may also not be subject to aggregation requirements due to the physical barriers inherent in the physical form of diffuse waste, depending upon the particular configuration.