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NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Michael C. Farrar, Chairman

Lawrence G. McDade

Dr. Nicholas G. Trikouros

In the Matter of:

SHAW AREVA MOX SERVICES, LLC

(Mixed Oxide Fuel Fabrication Facility
Possession and Use License)

January 24, 2012

Docket No. 70-3098-MLA

ASLBP No. 07-856-02-MLA-BD01

**SHAW AREVA MOX SERVICES, LLC'S
REPLY STATEMENT OF POSITION ON CONTENTIONS 9, 10 AND 11**

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Pursuant to 10 CFR § 2.1207(a)(2), and the Atomic Safety and Licensing Board's ("Board") July 26, 2011 Memorandum and Order (Summarizing Prehearing Conference Call, Revising Protective Order, and Scheduling Evidentiary Proceeding), September 9, 2011 Order (Summarizing Determinations Related to August 31, 2011 Teleconference), and December 22, 2011 Order (Granting Unopposed Motion for Extension of Time and Establishing Date for Prehearing Conference), Applicant Shaw AREVA MOX Services, LLC ("MOX Services" or "Applicant") hereby submits its Reply Statement of Position on Contentions 9, 10, and 11. This Reply Statement of Position is supported by the Reply Testimony of Ms. Sue King, Mr. Gary Clark, Mr. Gary Bell, and Ms. Martha Williams. For the reasons previously stated in MOX Services' Initial Statement of Position, as well as for the reasons set forth below, Contentions 9, 10, and 11 should be resolved in MOX Services' favor.¹

I. INTRODUCTION

Section II of this Reply Statement of Position briefly summarizes the most recent, relevant procedural history of this proceeding that was not addressed in MOX Services' Initial Statement of Position. The applicable legal standards were set forth in MOX Services' Initial Statement of Position,² and are not repeated here. Section III addresses Contention 9. Section

¹ The Intervenor in this proceeding have stated that "they [have] chosen not to take a position on [Contention 4] in the evidentiary proceeding." Intervenor's Initial Statement of Position at 2, n.1 (Oct. 19, 2011). In the Board's December 21, 2011 Order, it stated "[t]he resolution of Contention 4 is now on a different track that does not currently contemplate the submission...of any further evidentiary material. Order (Establishing Dates for Visit and Evidentiary Hearing) at 2 n.3 (Dec. 21, 2011). Thus, neither MOX Services' Reply Testimony nor this Reply Statement of Position addresses Contention 4.

² Shaw AREVA MOX Services, LLC's Initial Statement of Position on Contentions 4, 9, 10 and 11 (Sept. 29, 2011).

IV addresses Contention 10, and Section V addresses Contention 11. Finally, Section VI presents MOX Services' overall conclusions.

II. SUMMARY OF RECENT, RELEVANT PROCEDURAL HISTORY

On September 29, 2011, in accordance with the Board's September 9, 2011 Order, MOX Services submitted, among other things, its "Initial Statement of Position on Contentions 4, 9, 10, and 11" (MOX Services' Initial Statement of Position), its "Prefiled Direct Testimony on Contentions 9-11" (MOX Services' Direct Testimony), and supporting exhibits. On October 19, 2011, the NRC Staff submitted, among other things, its "Initial Statement of Position on Contentions 4, 9, 10, and 11" (Staff Initial Statement of Position), its "Prefiled Direct Testimony on Contentions 9, 10, and 11" (offered by Tom Pham) (Staff Direct Testimony), and supporting exhibits. Also on October 19, 2011, the Intervenors submitted their "Initial Statement of Position on Contentions 9, 10, and 11" (Intervenors' Initial Statement of Position), "Direct Testimony of Dr. Edwin S. Lyman in Support of Intervenors' Contentions 9, 10, and 11" (Intervenors' Direct Testimony), and supporting exhibits.

On December 19, 2011, the Intervenors submitted their "Statement of Position in Rebuttal to NRC Staff's Statement of Position on Contentions 9, 10 and 11" (Intervenors' Rebuttal Statement), in accordance with the Board's September 9 Order. *The Intervenors' Rebuttal Statement was accompanied by no further expert witness testimony or other evidentiary materials of any kind.*

The NRC Staff submitted its "NRC Staff Response to Intervenors' Initial Statement of Position on Contentions 9, 10, and 11" (Staff Rebuttal Statement) accompanied by the "NRC Staff's Prefiled Response Testimony of Tom Pham Concerning Contentions 9, 10, and 11" on December 20, 2011 (Staff Rebuttal Testimony), also in accordance with the Board's September 9

Order.

The purpose of this Reply Statement of Position and the accompanying “Shaw AREVA MOX Services, LLC’s Prefiled Reply Testimony on Contentions 9-11” (MOX Services’ Reply Testimony) is to respond to those Prefiled Direct and Rebuttal filings.

III. CONTENTION 9 – ABILITY TO MEET ITEM MONITORING REQUIREMENTS IN A TIMELY MANNER

Contention 9 states:

[MOX Services] Revised FNMCP does not satisfy the MC&A requirements in 10 C.F.R. § 74.55(b)(1) because it does not demonstrate that [MOX Services’] item monitoring program has the capability to verify, on a statistical sampling basis, the *presence* and *integrity* of SSNM items. In particular, [MOX Services] fails to show that it is capable of detecting item losses that total 5 formula kilograms of plutonium or more plant-wide within the time frames specified by the regulation (30 calendar days for Category 1 [sic] items and 60 days for Category 1B items contained in a vault or in a permanently controlled access area isolated from the rest of the material access area (MAA)).³

The regulation at issue in this Contention is 10 CFR § 74.55(b)(1), which requires a licensee to verify on a statistical sampling basis, the presence and integrity of SSNM items in a vault or Permanently Controlled Access Area (PCAA) within 30 days for Category IA items and 60 days for Category IB items, with at least a 99% power of detecting item losses that total at least five “formula kilograms,” plant wide.⁴

As explained in MOX Services’ previously-filed Direct Testimony, verification of the “presence” of an SSNM item involves verifying that the particular, uniquely identified SSNM

³ *Shaw AREVA MOX Servs.* (Mixed Oxide Fuel Fabrication Facility), LBP-11-09, 73 NRC ___, slip op. App. (Apr. 1, 2011) (New Contentions 9, 10, and 11) (emphasis added).

⁴ 10 CFR § 74.55(b)(1); Exhibit APP000014 at Q18.

item is in its intended location.⁵ MOX Services meets this requirement at the MOX Facility through a comparison of the Perpetual Inventory Report (which is generated by the MMIS) against item locations recorded by the PLCs, along with certain design, physical protection, verification, and operating features that help ensure the accuracy of the MMIS and PLC information.⁶

The comparison of the data from the two systems, along with MOX Services' robust physical protection features, provides the ability to verify the presence of such items on a *daily* and *on-demand* basis.⁷ MOX Services will automatically conduct the MMIS/PLC mapping comparison for all SSNM items in all SSNM item storage areas every night (*i.e.*, once a day).⁸ When this daily mapping occurs, if an SSNM item is not where it is supposed to be, as expected by MMIS, the anomaly is reported to the Operations staff. *This constitutes a complete, daily, automated verification of the presence of all SSNM items in item storage areas.*⁹ Furthermore, this same comparison can be performed at any time, on demand, for any or all SSNM item storage areas or any sub-part of such a storage area.¹⁰

Verifying the "integrity" of SSNM items at the MOX Facility involves physically verifying that the SSNM item storage area containment boundaries enclosing the particular, uniquely identified SSNM items have not been breached, so that it is apparent that the discrete, identified, and previously measured quantity of SSNM contained within those items has not

⁵ *Id.* at Q19.

⁶ *See id.* at Q22 – Q23.

⁷ *Id.* at Q23.

⁸ *Id.*

⁹ *Id.*

¹⁰ *Id.*

changed from the measured value.¹¹ Because access to these storage locations by personnel is controlled by design or security features or both, and material movements are executed and recorded by computer rather than by human access, MOX Services can protect these areas with tamper indicating devices (“TIDs”) or methods equivalent to tamper-safing.¹² Physical confirmation that the designated containment boundary (and the associated seals and TIDs) has not been breached verifies the integrity of all of the items contained therein.¹³ MOX Services has identified these specific containment boundaries in its Direct Testimony, along with its item integrity verification methods.¹⁴ MOX Services will perform *daily* checks of the containment boundaries, seals and TIDs.¹⁵ This satisfies the requirement for the verification of the integrity of SSNM items.¹⁶

The Intervenor has raised five (5) basic arguments in their submittals on Contention 9.

In particular they:

- A. Challenge whether MOX Services meets the “quantitative” requirement to achieve at least a 99% “power of detection” set forth in 10 CFR § 74.55(b)(1), as it applies to item *presence* verification;
- B. Question the “accuracy” of MOX Services’ methods for verifying SSNM item *presence*, asserting that MOX Services must demonstrate that those methods are 99% “accurate”;
- C. Attempt to use, among other things, EURATOM standards to challenge MOX Services’ compliance with NRC requirements, and to assert that MOX Services’ item monitoring methods for *presence* must be “validated” by traditional physical inventories in order to meet the item monitoring rule;

¹¹ *Id.* at Q28; Exhibit APP000031: MOX Services’ Reply Testimony at Q31 (Jan. 24, 2012).

¹² Exhibit APP000014 at Q28.

¹³ *Id.*

¹⁴ *See id.* at Q29.

¹⁵ *Id.*

¹⁶ *Id.*

- D. Assert that specific item verification plans or procedures are required as part of the License Application (LA); and
- E. Argue that the NRC Staff's Rebuttal Testimony violates principles of statutory and regulatory construction, and therefore does not support MOX Services' position.

Each of these arguments is addressed below.

A. MOX Services Fully Satisfies the "Quantitative" Power of Detection Requirements of 10 CFR § 74.55(b)(1).

As discussed in MOX Services' Reply Testimony, "power of detection" is, as defined in 10 C.F.R. § 74.4, "the probability that the critical value of a statistical test will be exceeded when there is an actual loss of a specific SSNM quantity."¹⁷ This means that if there is an item loss of 5 kilograms or more, the size of the sample would ensure, 99 out of 100 times, that the sample population would include the missing items.¹⁸ Section 74.55(b)(1) requires a statistical sampling plan that produces "at least 99 percent power of detecting item losses that total five formula kilograms or more, plant-wide."¹⁹ The manner in which an applicant or licensee ensures that it will achieve that 99% power of detection is by mathematically determining the number of items that must be sampled out of a given population.²⁰

The Intervenor's witness, Dr. Lyman, states that he does not believe that MOX Services meets the 99% power of detection requirement for item presence verification, because it uses PLC and MMIS mapping in lieu of a "conventional" random sample and physical inspection of a subset of items.²¹ But the number of items sampled by MOX Services constitutes 100% of the

¹⁷ Exhibit APP000031 at Q12.

¹⁸ *Id.*

¹⁹ 10 CFR § 74.55(b)(1).

²⁰ Exhibit APP000031 at Q13; *see also id.* at Q15, Q16.

²¹ Exhibit INT000001 at A.5 ¶ 5.

population of items, as opposed to a selective random sample.²² As MOX Services' witnesses have stated:

[MOX Services'] approach is better than the partial population sampling Dr. Lyman seems to advocate. . . . Verifying the presence and integrity of 100% of the population of items is at least as effective in achieving the requisite power of detection as verification of only a statistical subset of the total population.²³

As discussed in this Reply Testimony, this 100% sampling approach applies to both presence and integrity verification.²⁴ However, the Intervenor has provided testimony and made arguments only on the power of detection issue as it applies to item "presence." They have provided no testimony or other evidence on the power of detection issue for item "integrity." As such, they have not even attempted to satisfy their burden of going forward with evidence on this power of detection issue for item integrity.

The only other basis upon which Dr. Lyman appears to challenge MOX Services' ability to use the MMIS/PLC mapping for item monitoring purposes is his argument that the MMIS/PLC mapping data must be "at least 99 percent accurate."²⁵ This application of the "99% power of detection" requirement to the MMIS / PLC mapping is inappropriate. As discussed in the next section, power of detection and MMIS/PLC system accuracy are entirely separate concepts, and there is no quantitative requirement governing the accuracy of MOX Services' item monitoring methods in 10 CFR § 74.55(b)(1).

In short, MOX Services' 100% sample size satisfies the explicit requirement to achieve at least a 99% power of detection, in accordance with 10 CFR § 74.55(b)(1).

²² Exhibit APP000031 at Q18.

²³ *Id.* at Q18.

²⁴ *See id.* at Q18 – Q19.

²⁵ Exhibit INT000001 at A.5, ¶ 5.

B. MOX Services Has Adequately Demonstrated the Accuracy of Its MMIS/PLC Mapping Approach.

Dr. Lyman's second argument on the "quantitative" aspects of 10 CFR § 74.55(b)(1) is that MOX Services has not satisfied the rule because it has not provided any "quantitative evidence" to demonstrate that "the PLC mapping data is at least 99% accurate."²⁶ MOX Services' expert witnesses have testified that Dr. Lyman is confusing power of detection with accuracy, and that the two concepts are not interchangeable.²⁷ Furthermore, there is no quantitative requirement in the rule for MOX Services to demonstrate that its item monitoring *methods* are at least 99% accurate.²⁸ Once the distinction between "power of detection" and item monitoring system accuracy is understood, it is clear that there is nothing in the express language of Section 74.55(b)(1) that addresses the accuracy of item monitoring methods.

That, of course, is not to say that MOX Services' item monitoring system or methods are held to no accuracy standard whatsoever. MOX Services must provide reasonable assurance that its item monitoring methods will detect item losses totaling five formula kilograms in a timely manner.²⁹ In the absence of some specific, prescriptive regulatory requirement, this is a matter of expert judgment, taking into account the specific item monitoring method(s) selected by the applicant or licensee.

Indeed, licensing boards, the Commission, and federal courts have agreed that, where NRC regulations do not include prescriptive requirements, the determination of whether an applicant complies with the requirements is best left to the technical expertise of the NRC Staff. For example, with regard to the similarly general requirement for "adequate protection of public

²⁶ Exhibit INT000001 at A.5, ¶ 5.

²⁷ Exhibit APP000031 at Q20.

²⁸ *Id.*

²⁹ *See id.* at Q21.

health and safety,” the D.C. Circuit court in *Union of Concerned Scientists v. NRC* held that the “adequate protection” standard cannot be quantified with a “mechanical formula or set of objective standards,” but rather should be applied on a case-by-case basis, using the NRC’s expertise and technical judgment.³⁰ Precedent within the NRC is consistent with this view. In *Oyster Creek*, the Licensing Board stated:

In this proceeding, [the Applicant] must demonstrate that it satisfies the “reasonable assurance” standard by a preponderance of the evidence (*Commonwealth Edison Co. (Zion Station, Units 1 and 2)*, ALAB-616, 12 NRC 419, 421 (1980)).

“Reasonable assurance,” in this context, is not susceptible to formalistic quantification or mechanistic application. Rather, whether the reasonable assurance standard is satisfied is based on sound technical judgment applied on a case-by-case basis. *See Union of Concerned Scientists v. NRC*, 880 F.2d 552, 558 (D.C. Cir. 1989); see also *North Anna Envtl. Coal. v. NRC*, 533 F.2d 655, 667 (D.C. Cir. 1973).³¹

The Commission upheld the *Oyster Creek* licensing board’s understanding of the “reasonable assurance” standard, and likewise refused to interpose an objective standard for this determination.³² The Commission explained:

“Reasonable assurance” is not quantified as equivalent to a 95% (or any other percent) confidence level, but is based on sound technical judgment of the particulars of a case and on compliance with our regulations.³³

³⁰ See *Union of Concerned Scientists v. NRC*, 880 F.2d 552, 558 (D.C. Cir. 1989).

³¹ *Amergen Energy Co., LLC* (License Renewal for Oyster Creek Generating Station), LBP-07-17, 66 NRC 327, 340 (2007).

³² *Amergen Energy Company LLC* (License Renewal for Oyster Creek Generating Station), CLI-09-07, 69 NRC 235 (Apr. 1, 2009).

³³ *Id.* at 263.

The Commission instructed that to satisfy the “reasonable assurance” standard, an applicant must “make a showing that meets the ‘preponderance of the evidence’ threshold of compliance with the applicable regulations.”³⁴

In this case, MOX Services’ witnesses have discussed at considerable length how MOX Services ensures that the results of the MMIS/PLC mapping are accurate. That testimony discusses: the architecture and functions of the MMIS and PLCs; the MOX Facility design elements that contribute to the accuracy of the MMIS/PLC mapping results (such as the robust physical protection elements); the operational need for a high degree of accuracy in the manufacturing process; the automated functions that reduce the potential for human error; and the hardware design, manufacture, security protection and software validation and verification features of the MOX Facility.³⁵ Again, Intervenors have provided no evidence to refute this testimony, and so have not met their burden. MOX Services, on the other hand, has made a compelling case that the MMIS/PLC mapping approach will provide highly accurate results and that it fully satisfies the reasonable assurance standard.

C. MOX Services Need Not Conduct Physical Inventories to Comply With 10 CFR § 74.55(b)(1), Nor Are EURATOM Requirements Relevant to This Question.

Dr. Lyman next states that:

In order to provide the required assurance that the PLC mapping is accurate to [the] desired quantitative standard, it would be necessary to periodically *validate* the data provided by the system. This would entail comparing the data with the actual physical inventories of the storage areas of the plant. There is no indication in the testimony of MOX Services that it intends to do such validation.³⁶

³⁴ *Id.*

³⁵ See Exhibit APP000014 at Q15, Q22 - Q24, Q27; Exhibit APP000031 at Q22 - Q23, Q28.

³⁶ Exhibit INT000001 at A.5, ¶ 6.

First, as discussed in Section III.B above, there is no “desired quantitative standard” for MMIS/PLC system accuracy in the rule, so Dr. Lyman’s fundamental premise regarding a quantitative determination of “accuracy” is wrong.

Second, while Dr. Lyman states that accuracy can only be confirmed or validated by physical inventories,³⁷ he makes no effort to address or respond to the extensive testimony provided by MOX Services on how it ensures the accuracy of MMIS/PLC mapping results (as summarized in Section III.B above). Thus, that testimony is unrefuted.

Furthermore, MOX Services’ FNMCP specifically commits to comply with the separate physical inventory requirements set forth in 10 CFR Part 74, which are outside the scope of Contention 9.³⁸

The Intervenor next reference EURATOM requirements applicable to the French MELOX Facility.³⁹ MOX Services has made clear that it is not subject to EURATOM requirements, and Dr. Lyman has expressly acknowledged this point.⁴⁰ EURATOM requirements are not within the scope of Contention 9 and are irrelevant to this proceeding.⁴¹ Thus, Dr. Lyman’s reference to EURATOM requirements does not support his position, and does not meet the Intervenor’s burden of proof.

³⁷ *Id.*

³⁸ Exhibit APP000031 at Q24.

³⁹ *See* Exhibit INT000001 at A.5, ¶¶ 7-9.

⁴⁰ *See id.* at ¶¶ 7-8.

⁴¹ As we concluded in our Motion to Strike this aspect of Intervenor’s argument, whether MOX Services’ MC&A procedures and systems would satisfy EURATOM requirements is entirely irrelevant to whether MOX Services complies with 10 CFR § 74.55(b)(1). *See* MOX Services’ Partially Unopposed Motion to Dismiss and Motion to Strike at 9-11 (Oct. 31, 2011); *see also* Exhibit APP000031 at Q25.

D. No Specific Plan or Procedures Are Required As Part of the License Application to Verify the Reliability, Functionality, Accuracy or Security of the MMIS/PLC Mapping.

Dr. Lyman has argued in his Direct Testimony that MOX Services must have a “plan” to verify the “reliability, functionality and security of MMIS” in order to satisfy the NRC’s item monitoring requirements.⁴² The Intervenor’s legal Rebuttal Statement of Position asserts there is a need for “detailed procedures to periodically verify the performance of the *PLCs*,” in order “to demonstrate the system can operate with this astonishingly high level of accuracy [*i.e.*, with 100% accuracy].”⁴³

As discussed in Section III.B above, MMIS/PLC system accuracy is simply not required to achieve any specific quantitative standard under the rule at issue in this Contention, whether it be 99%, 100% or some other value. Thus, the rule could not logically require a “plan” or a “procedure” for demonstrating such a particular level of accuracy.

Furthermore, the legal requirement for the content of the MOX Facility License Application is to provide an FNMCP that shows how compliance with 10 CFR § 74.51 will be accomplished.⁴⁴ The Intervenor has not identified any failure to meet that requirement, nor do they even argue the issue. Again, they have failed to meet their burden.

Nevertheless, MOX Services’ witnesses have pointed out that the FNMCP contains specific commitments to proceduralize the methods of verifying the reliability of the MMIS, and to conduct start-up testing of the system.⁴⁵ Furthermore, the NRC Staff witness, Mr. Pham,

⁴² Exhibit INT000001 at A.5, ¶ 13.

⁴³ Intervenor’s Rebuttal Statement at 4 (emphasis added).

⁴⁴ 10 CFR § 70.22(b).

⁴⁵ Exhibit APP000031 at Q27.

correctly points to specific measures in MOX Services' FNMCP that will "protect and ensure the integrity of the data stored by the PLCs."⁴⁶

Thus, while no specific plans or procedures for MMIS/PLC system accuracy are currently required, MOX Services has made appropriate and adequate commitments to put such procedures into effect.

E. Contrary to Intervenor's Legal Statement, the NRC Staff's Rebuttal Testimony Is Consistent with the Letter and Intent of NRC Regulations.

In the Intervenor's legal Rebuttal Statement, they argue that the NRC Staff Witness' (Mr. Pham) testimony interprets the MC&A regulations in a way that "renders some of their terms meaningless and thereby violates standard principles of statutory and regulatory interpretation."⁴⁷ They also state that Mr. Pham's position is "contradicted by the plain language of NUREG-1280."⁴⁸

First, MOX Services has, through its own testimony and other exhibits, met its burden of demonstrating that it complies with the regulations at issue in this proceeding. Nevertheless, we address the Intervenor's legal criticisms of Mr. Pham's testimony below.

The Intervenor's first address the "Verification of Item Presence" in Section II.A.1 of their Rebuttal Statement. In that section, all the Intervenor's do is repeat Dr. Lyman's Direct Testimony about the alleged need for verification that the MMIS/PLC mapping will be 100% accurate, and for a "plan" to demonstrate such accuracy.⁴⁹ There is no discussion of the express language of the rule, its regulatory history, or principles of regulatory interpretation. As such,

⁴⁶ Exhibit NRC000008 at Q4.

⁴⁷ Intervenor's Rebuttal Statement at 2; *see also id.* at 2-5.

⁴⁸ *Id.* at 2.

⁴⁹ *See id.* at 4.

this section of the Intervenor's Rebuttal Statement makes no legal argument, and adds nothing to the record.

The Intervenor's next address the "Verification of Item Integrity" in Section II.A.2 of their Rebuttal Statement. Here, they challenge Mr. Pham's agreement with MOX Services that, by verifying the integrity of the various SSNM item storage areas on a daily basis, MOX Services verifies the integrity of the items within those storage areas.

In particular, they begin by stating that:

If it is possible to satisfy the requirement for verifying the *integrity* of items . . . by verifying the integrity of storage area boundaries, then it follows logically that it should be possible to verify the *presence* of an item in the same way. After all, if the system is sensitive enough to detect removal of the partial contents of a container it should also be sensitive enough to detect the removal of the entire container.⁵⁰

They go on to state that:

As a result of this logical inference, however, much of the language in 10 CFR § 74.55 would be superfluous . . . because no items would need to be monitored.⁵¹

Without any further explanation, the Intervenor's also assert that other provisions of 10 CFR § 74.55 would be "superfluous," concluding that "[i]n short, Mr. Pham's definition of item monitoring is unacceptable because it would effectively remove item monitoring from the regulations."⁵²

Intervenor's arguments regarding the regulations are less than clear. However, what they appear to be saying is that, given the separate language of Section 74.55 that calls for certain items to be "[t]amper-safed or placed in a vault or controlled access area that provides protection at least equivalent to tamper-safing" (see Intervenor's reference to rendering 10 CFR §

⁵⁰ *Id.* at 5.

⁵¹ *Id.*

⁵² *Id.* at 5-6.

74.55(a)(1) “meaningless”),⁵³ MOX Services cannot take credit for those same requirements or features (e.g., vaults) to satisfy the other requirement in 10 CFR § 74.55(b) for monitoring of items protected in this manner (see Intervenor’s reference to 10 CFR § 74.55(b)).⁵⁴

While the TIDs, vaults, and controlled access areas appropriately play a role in MOX Services’ ability to verify the integrity of items, MOX Services relies upon two important elements other than the existence of TIDs, vaults and controlled access areas. First, MOX Services has designated specific item storage area boundaries, such as the boundaries of individual gloveboxes, with seals on potential access points.⁵⁵ Second and perhaps most importantly, MOX Services has committed to *daily verification* of the integrity of those storage area boundaries, including seals and TIDs.⁵⁶ Thus it is the conduct and periodicity of those active verification activities that is critical. Section 74.55 does not require or even address the frequency of such verification efforts. Thus, the daily checks go beyond the requirement of 10 CFR § 74.55, and there is no inconsistency or logical error that renders any portion of Section 74.55 “meaningless.” As to Contention 9, the Intervenor’s discussion that is summarized above ends any effort by them to demonstrate a disparity between Mr. Pham’s opinions and the regulations themselves.

The balance of the Intervenor’s Rebuttal Statement on Contention 9 addresses alleged inconsistencies with the non-binding guidance in NUREG-1280.⁵⁷ The Intervenor quotes NUREG-1280 to the effect that an item monitoring “alarm ‘exist[s] whenever an item monitoring test results in . . . one or more items being found defective (i.e., with some or all of

⁵³ *Id.* at 5.

⁵⁴ *Id.*

⁵⁵ Exhibit APP000014 at Q29.

⁵⁶ *Id.*

⁵⁷ Intervenor’s Rebuttal Statement at 6-7.

their SSNM contents missing),” and then draws the conclusion that “NUREG-1280 thus anticipates that discrete containers of SSNM are items that will be measured in the course of item integrity verification. Under Mr. Pham’s interpretation . . . the whole vault would become the ‘item’ and therefore it would be necessary to inventory the entire vault *in order to resolve an alarm* that is triggered by a breach of the boundary.”⁵⁸

Intervenors’ conclusion that NUREG-1280 anticipates that item integrity verification includes quantitative measurement of items is incorrect. Their claim ignores the fundamental interplay between process and item monitoring in the overall MC&A program. As we explained in our Direct and Rebuttal Testimony, items are quantitatively measured and sealed before they are eligible to be covered by item monitoring, and item monitoring methods assume those measured values are preserved.⁵⁹ Item monitoring specifically relieves the licensee of the requirement to re-measure these items, so long as the items are encapsulated or protected equivalent to tamper-safing.⁶⁰

Intervenors’ claim also ignores the fact that many items are encapsulated or tamper-safed *within* the defined containment boundaries used for integrity verification. For example, DCM contains welded 3013 containers. Although the defined containment boundary for DCM is the vault walls and vault doors, a breach of the DCM vault would not necessitate a quantitative measurement of every 3013 container, because those containers are individually welded and their contents determined prior to placement in the vault.⁶¹

⁵⁸ *Id.* at 6 (emphasis added).

⁵⁹ *See* Exhibit APP000014 at Q11; Exhibit APP000031 at Q33.

⁶⁰ Exhibit APP000031 at Q33.

⁶¹ *See* Exhibit APP000014 at Q29.

Furthermore, the Intervenor's conclusion that protecting the integrity of an entire storage area makes that area one item, directly contravenes the regulatory definition of an "item." As we explained in our Direct and Reply Testimony, the regulation defines an item as "any discrete quantity or container . . . not undergoing processing, having a unique identity and also having an assigned element and isotope quantity."⁶² A storage area cannot be an "item," so long as automation moves items in and out of that area, changing the contents therein.

Intervenor's also quote the following language from NUREG-1280 for the premise that item verification must include quantitative measurement:

The response actions documented in Chapter 3.0 of the FNMC plan . . . are initiated if an unauthorized vault or CAA penetration is known or suspected to have occurred, or if the SSNM content of any container is unexplainable and significantly different from the recorded value.⁶³

But Intervenor's ignore the construction of NUREG-1280. Specifically, the quoted text is plainly presented in the guidance document as the second condition by which SSNM that is not tamper-safed or encapsulated may still be considered to be stored in a manner equivalent to tamper-safing.⁶⁴

Thus, Mr. Pham's testimony and MOX Services' item monitoring approach is consistent with NRC regulations and relevant regulatory guidance.

F. Conclusion

In sum, the Intervenor's have failed to meet their burden on this Contention, while the evidence presented by MOX Services' experts, and reinforced by the NRC Staff's expert,

⁶² Exhibit APP000014 at Q19 (emphasis omitted); Exhibit APP000031 at Q33.

⁶³ Intervenor's Rebuttal Statement at 7 (emphasis omitted).

⁶⁴ See Exhibit APP000030 at 25.

supports a finding that MOX Services satisfies the item monitoring requirements of 10 CFR § 74.55(b)(1). Accordingly, this Contention must be resolved in MOX Services' favor.

IV. **CONTENTION 10 – ABILITY TO MEET ALARM RESOLUTION REQUIREMENTS IN A TIMELY MANNER**

Contention 10 states:

The Revised FNCMP is inadequate to satisfy the alarm resolution requirements in 10 CFR § 74.57(b), which requires that licensees “shall resolve the nature and cause of any MC&A alarm within approved time periods.” In the event that alarm resolution requires an inventory of one of the four item storage areas identified in [MOX Services’] December 17, 2009 Exemption Request, [MOX Services] has not demonstrated that it can meet its commitment to normally resolve the alarm within three days. Revised FNMCP at 152.⁶⁵

The regulation at issue in this Contention, 10 CFR § 74.57(b), requires that “Licensees shall resolve the nature and cause of any MC&A alarm within approved time periods.” It does not establish a specific time period as a regulatory requirement. Instead, it envisions that the NRC Staff will approve a proposed time period and the licensee will adhere to that time period. Indeed, MOX Services’ FNMCP § 3.13 states that “[t]he alarm resolution procedures of Sections 3.1.1.4 and 3.1.4.1 of this Plan will *normally be completed within three calendar days after an item is declared missing*” and the NRC Staff’s SER documents the Staff’s approval of MOX Services’ alarm resolution commitment.⁶⁶

The Intervenors raise six (6) basic arguments in their submittals. In particular they:

⁶⁵ MOX Facility, LBP-11-09, slip op. App. (New Contentions 9, 10, and 11).

⁶⁶ Exhibit APP000020 at 152 (emphasis added); *see also* Exhibit APP000021 at 13-7.

- A: Assert that if an inventory of one of the four relevant storage areas identified in the Contention is required to resolve an alarm, MOX Services has not demonstrated it can complete such an inventory normally within three days;
- B: Assert that MOX Services believes it does not have to specify any particular alarm resolution methods;
- C: Suggest that MOX Services' use of the term "normally" is not appropriate under the rule;
- D: Argue that each and every alarm resolution method identified by MOX Services must be completed in the approved time frame;
- E: Suggest that a review of computer code might be a necessary alarm resolution method; and
- F: Assert that resolution of "integrity"-related alarms would necessarily require full and time-consuming storage area inventories.

Each of these arguments is addressed below.

A. MOX Services Need Not, But Has, Demonstrated It Can Complete An Inventory to Resolve An Alarm Normally Within Three Days.

The Intervenors have asserted that *if* an inventory of one of four specific SSNM item storage areas (DCM, DCE, STK, and TAS) is required in order to resolve an alarm, MOX Services has not demonstrated that it can normally resolve the alarm within three days.⁶⁷

Importantly, neither 10 CFR § 74.57(b), the NRC's SER, nor MOX Services' commitment in the FNMCP requires MOX Services to demonstrate that it can resolve the nature and cause of an alarm within the approved time period by any *one* particular means, such as an "inventory," as suggested by Contention 10.⁶⁸ In suggesting that MOX Services must demonstrate it can complete an inventory in each of the four relevant areas "normally in three days," the Contention fails to even allege a noncompliance with 10 CFR § 74.57(b). Therefore, Contention 10 should be resolved in MOX Services' favor on this basis alone.

⁶⁷ *MOX Facility*, LBP-11-09, slip op. App. (New Contentions 9, 10, and 11)

⁶⁸ See 10 CFR § 74.57(b); Exhibit APP000021 at 13-7; Exhibit APP000020 at 152.

Nevertheless, in its Direct Testimony MOX Services recounted the list of typical steps it plans to use to resolve an alarm as reflected in its FNMCP, has made clear that this is not an exhaustive list of potential approaches, and has explained how it will use these methods to *normally* resolve the alarm within three days.⁶⁹ The three day period of time is the typical, expected length of time in which MOX Services expects to resolve most alarms.⁷⁰ Review of MOX Services' methods demonstrates that most alarms are likely to be resolved well within three days.⁷¹

Furthermore, and although not necessary for the disposition of this Contention in MOX Services' favor, MOX Services' Direct Testimony demonstrates that MOX Services can "normally" perform an inventory (in the unlikely event one was necessary) in each of the four relevant storage areas within three days.⁷²

B. MOX Services Has Specified Its Anticipated Alarm Resolution Methods.

Dr. Lyman states that MOX Services claims that it is not "require[d]...to specify any particular method to resolve an alarm."⁷³ MOX Services' witnesses did not so testify. As previously discussed, they identified multiple methods for alarm resolution in their testimony (which are also identified in the FNMCP) and the anticipated time frames in which those methods could be completed.⁷⁴

⁶⁹ See Exhibit APP000014 at Q42, Q46; Exhibit APP000020 at 146-48.

⁷⁰ Exhibit APP000014 at Q45.

⁷¹ See *id.* at Q46, Q51.

⁷² *Id.* at Q47.

⁷³ Exhibit INT000001 at A.6, ¶ 2.

⁷⁴ Exhibit APP000031 at Q36; Exhibit APP000014 at Q42, Q46 - Q47.

C. MOX Services' Application of the Term "Normally" in Establishing Alarm Resolution Procedures and Times is Wholly Appropriate under the Rule.

Dr. Lyman's testimony essentially suggests that use of the term "normally" creates a "loophole" in the alarm resolution requirements that is contrary to the rule.⁷⁵ But, first, he has provided no reference to anything in the regulations or regulatory history of the regulations to support his position and meet the Intervenor's burden.

Second, MOX Services' witnesses have made clear, not only that in almost all cases alarm resolution procedures will be completed well within three days,⁷⁶ but that it is not appropriate or practical to commit to resolve *all* alarms in a specific time. Ms. Williams, in particular, addressed this point in her testimony based on her extensive experience as a former NRC MC&A reviewer and inspector.⁷⁷

D. There Is No Requirement to Show that Each and Every Available Alarm Resolution Method Can Be Completed Within the Approved Time Period.

Dr. Lyman has erroneously stated, without any logical basis, that "each and every [alarm resolution] method [MOX Services] has identified [must] be completed within the approved time period."⁷⁸ The requirement of the rule is to resolve alarms in an approved time frame, *not* to demonstrate that this can be done by any single method.⁷⁹ In any event, it is not at all clear why Dr. Lyman even makes this point since, once again, MOX Services' testimony has shown that each and every alarm resolution method that has been identified can, in fact, be completed within three days.⁸⁰

⁷⁵ Exhibit INT000001 at A.6, ¶ 7.

⁷⁶ See Exhibit APP000031 at Q37 - Q38; Exhibit APP000014 at Q45 - Q46.

⁷⁷ Exhibit APP000031 at Q39.

⁷⁸ Exhibit INT000001 at A.6, ¶ 3.

⁷⁹ 10 CFR § 74.57(b); Exhibit APP000031 at Q41.

⁸⁰ See Exhibit APP000031 at Q40 - Q43.

E. Intervenors' Argument Regarding the Potential Need to Review Computer Code Does Not Support Its Position.

Dr. Lyman references an internal MOX Services' email suggesting that a review of computer code might become a necessary component of MOX Services' alarm resolution methods, presumably to suggest this could not be done within three days.⁸¹ MOX Services' witnesses have explained that such a computer code review would not, in their view, facilitate alarm resolution or provide any further insight for resolving an alarm than a record review.⁸²

As a matter of law, however, even if in a given circumstance, a computer code review was determined to be useful (a point not conceded by MOX Services), albeit time-consuming, this would not call into question MOX Services' compliance with the alarm resolution rule. As MOX Services' testimony has shown, the multiple alarm resolution methods identified provide a high degree of assurance of a prompt resolution of almost any alarm, and (for purposes of argument) the fact that a single method *may* exist that would take additional time, does not in any way call into question the conclusion that alarms will normally be resolved in three days.

F. Full Storage Area Inventories Would Not "Necessarily" Be Required for Resolution of Item Integrity-Related Alarms.

Finally, under its discussion of Contention 10, and without the benefit of supporting testimony by Dr. Lyman, the Intervenors' Rebuttal Statement stated that, if MOX Services intends to verify item integrity by verifying that a storage area boundary has not been breached, "then resolution of alarms triggered by storage area breaches would necessarily require inventories of the contents of the entire storage area."⁸³ MOX Services' witnesses have explained that other methods, such as access control checks or exit monitor checks, could be

⁸¹ Exhibit INT000001, at A.6, ¶ 5.

⁸² See Exhibit APP000031 at Q44.

⁸³ Intervenors' Rebuttal Statement at 8.

conducted to resolve such an alarm.⁸⁴ If SSNM was removed from an item, any effort to remove such material from the MOX Facility would likely be detected through these or other means. Again, even if an inventory of one of the four storage areas in question were necessary, MOX Services has shown that it can normally accomplish this within three days.⁸⁵

G. Conclusion

As MOX Services' witnesses have concluded:

Our view is that Dr. Lyman has mischaracterized both the applicable regulatory requirement and our prior testimony, erroneously argued that each and every alarm resolution method must be completed within the approved time frame, and ignored the fact that MOX Services' can normally complete even a full inventory, if necessary, of the four storage areas that are the subject of the Contention within three days.⁸⁶

Intervenors' Rebuttal Statement fails to call into question MOX Services' Direct Testimony, as it provides no additional support for Intervenors' position. Intervenors' Rebuttal Statement contains no further support for their assertions regarding the alleged need for physical inventories for alarm resolution, or for their claim that MOX Services' use of the term "normally" is inconsistent with NRC regulations.

Thus, the Intervenors have again failed to meet their burden, and the evidence provided by MOX Services and the NRC Staff supports the conclusion that MOX Services can meet its alarm resolution timing commitments and therefore satisfies 10 CFR § 74.57(b). Accordingly, Contention 10 must be resolved in MOX Services' favor.

⁸⁴ Exhibit APP000031 at Q33, 46; Exhibit APP000014 at Q46.

⁸⁵ Exhibit APP000014 at Q47.

⁸⁶ Exhibit APP000031 at Q46.

V. **CONTENTION 11 – ABILITY TO MEET THE REQUIREMENT TO RAPIDLY ASSESS THE VALIDITY OF ALLEGED THEFTS**

Contention 11 states:

[MOX Services] claims that in the event of alleged theft of plutonium from the [MOX Facility], it is capable of confirming the presence of a specific individual plutonium item within eight hours and verifying the presence of all Pu in item form in vault storage within 72 hours. But [MOX Services] does not support this assertion with any information that would show how such confirmation and verification will be carried out in the specified timelines. In addition, as discussed above in Contentions 9 and 10, other statements by [MOX Services] in its exemption application and RAI responses strongly indicate that in fact, [MOX Services] is not capable of meeting these timelines with respect to certain categories of plutonium in vault storage. Therefore [MOX Services] has not demonstrated that it satisfies [10 CFR § 74.57(e)].⁸⁷

This Contention cites 10 CFR § 74.57(e), which simply states that “[t]he licensee shall provide an ability to rapidly assess the validity of alleged thefts.” As we have explained previously, in the context of 10 CFR § 74.57(e), “alleged thefts” are “[a]larms that originate external to the MC&A system.”⁸⁸ The regulation itself does not provide specific time frames as a regulatory requirement for what would constitute a “rapid” assessment. Rather, relevant NRC guidance in NUREG-1280 sets forth the eight and 72 hour criteria that MOX Services has committed to in its FNMCP.⁸⁹ Contention 11 challenges MOX Services’ ability to meet the eight and 72 hour commitments regarding the “presence” of items in vaults or PCAAs.⁹⁰

⁸⁷ *MOX Facility*, LBP-11-09, slip op. App. (New Contentions 9, 10, and 11).

⁸⁸ *See* Initial Statement of Position at 34 (*citing* Exhibit APP000014 at Q56; Exhibit APP000030 at 50).

⁸⁹ *See* Exhibit APP000014 at Q54; Exhibit APP000030 at 49; Exhibit APP000020 at 161.

⁹⁰ *MOX Facility*, LBP-11-09, slip op. App. (New Contentions 9, 10, and 11).

As we explained in our Direct Testimony, the same MMIS/PLC mapping comparison discussed under Contention 9 could be undertaken and completed instantaneously in response to an alleged theft.⁹¹ This comparison satisfies both the eight hour criterion for a single, specified or randomly selected SSNM item in a storage area, as well as the 72 hour criterion for all items within a vault or PCAA.⁹²

The Intervenor has argued under Contention 11, again, that MOX Services assumes its MMIS/PLC mapping system is “100 percent accurate,” and that it is “completely invulnerable to any type of cyberthreat,” raising the specter again of “foreign-supplied MMIS servers.”⁹³ These assertions are fully addressed by MOX Services’ witnesses.⁹⁴ The assertions are hyperbole, mischaracterizations of MOX Services’ testimony, and factually in error.

Thus, the Intervenor has failed to meet its burden. The evidence provided by MOX Services and corroborated by the NRC Staff’s expert testimony supports the conclusion that MOX Services can meet its theft resolution timing commitment, and therefore satisfies 10 CFR § 74.57(e). Accordingly, Contention 11 must be resolved in MOX Services’ favor.

VI. CONCLUSION

For the reasons set forth by MOX Services, it complies with the regulations at issue in Contentions 9, 10, and 11. The Direct and Reply Testimony of Ms. King, Mr. Clark, Mr. Bell, and Ms. Williams demonstrate that MOX Services meets the item monitoring requirements of 10 CFR § 74.55(b)(1), the alarm resolution requirements of 10 CFR § 74.57(b), and the theft resolution requirements of 10 CFR § 74.57(e). Accordingly, MOX Services respectfully

⁹¹ See Exhibit APP000014 at Q58.

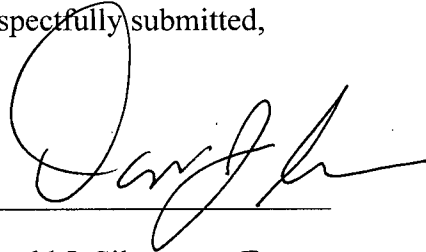
⁹² See *id.* at Q58 - Q59.

⁹³ Exhibit INT000001 at A.7, ¶¶ 4-5.

⁹⁴ See APP000031 at Q47 – Q49.

requests that the Board issue an initial decision resolving Contentions 9, 10, and 11 in MOX Services' favor.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Donald J. Silverman', written over a horizontal line.

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