

May 3, 2012

Michael C. Farrar, Chair  
Atomic Safety and Licensing Board  
Mail Stop: T-3 F23  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Nicholas Trikourous, Administrative Judge  
Atomic Safety and Licensing Board  
Mail Stop: T-3 F23  
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Washington, D.C. 20555

Lawrence G. McDade, Administrative Judge  
Atomic Safety and Licensing Board  
Mail Stop: T-3 F23  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

In the Matter of  
SHAW AREVA MOX SERVICES  
Mixed Oxide Fuel Fabrication Facility  
Docket No. 70-3098-MLA

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Dear Administrative Judges,

Pursuant to 10 C.F.R. § 2.1209 and the schedule agreed to by the Parties and approved by the Atomic Safety and Licensing Board ("Board") in an Order dated March 20, 2012,<sup>1</sup> the NRC staff ("Staff") tenders its Proposed Findings of Fact and Conclusions of Law in response to "Shaw AREVA MOX Services, LLC's Proposed Findings of Fact and Conclusions of Law for Contentions 9, 10, and 11" filed on April 13, 2012.<sup>2</sup> The Staff agrees in substance with the positions stated in MOX Services' Proposed Findings of Fact and Conclusions of Law, with minor alterations and additions. The Staff therefore adopts MOX Services' Proposed Findings of Fact and Conclusions of Law, as modified by the enclosed Attachment. The Attachment contains those changes the Staff would make to the text of MOX Services' Proposed Findings of Fact and Conclusions of Law.<sup>3</sup>

The Staff has determined that the contents of the Attachment contain security sensitive information and, as such, must be withheld from public disclosure in accordance with 10 C.F.R. § 2.390 and the Protective Order and Non-Disclosure Declaration. When separated from the Attachment, the transmittal letter and the corresponding certificate of service are decontrolled and may be recorded on the public docket.

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<sup>1</sup> See Order (Adopting Post-Hearing Deadlines) (March 20, 2012).

<sup>2</sup> "Shaw AREVA MOX Services, LLC's Proposed Findings of Fact and Conclusions of Law for Contentions 9, 10, and 11" (April 13, 2012) ("MOX Services' Proposed Findings of Fact and Conclusions of Law").

<sup>3</sup> In the Attachment, for the sake of clarity, altered or additional text is marked in red.

Farrar  
McDade  
Trikouros

In conclusion, the Staff requests that the Board adopt MOX Services' Proposed Findings of Fact and Conclusions of Law, as supplemented and modified by the Staff's Attachment.

Respectfully submitted,

*/RA/*

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Brett M. Klukan  
Counsel for the NRC Staff

Enclosures: Attachment: Section-by-Section Modifications

cc: Attached Service List

SECTION-BY-SECTION MODIFICATIONS

- 2.18 At the hearing, the witnesses attested to the accuracy of their written testimony on Contentions 9, 10, and 11, if they had not already done so by written affidavit, and answered questions posed by the Board.<sup>37</sup> None of the parties requested an opportunity to conduct cross examination.<sup>38</sup>
- 4.8 Mr. Pham is a Senior Safeguards Technical Analyst and the MC&A lead reviewer in the MC&A Branch, Division of Fuel Cycle Safety and Safeguards, Office of Nuclear Material Safety and Safeguards for the NRC.<sup>71</sup> He is also the technical project manager for the NRC's MC&A rulemaking activities.<sup>72</sup> Mr. Pham was the principal author of Chapter 13 of the Final SER for the MOX Facility, which includes the section of the SER on MC&A.<sup>73</sup> Mr. Pham has been a certified MC&A Inspector and MC&A licensing reviewer for more than 20 years.<sup>74</sup> He obtained a B.S. in Chemistry from the University of Dalat in 1974 and a M.S. in Chemistry from the University of Pittsburgh in 1985.<sup>75</sup> Mr. Pham currently also serves as the NRC's representative to the IAEA on MC&A matters.<sup>76</sup>
- 4.15(a)\* We would also point out that, in Section 13.2.3.2 of the SER, the Staff determined that "the FNMCP identifies and describes an item monitoring program that establishes the capability to provide timely plantwide detection of the loss of items that total two [formula kilograms] of plutonium, with 99-percent power of detection."<sup>89</sup> Similarly, in its Direct Testimony, the Staff concluded that the FNMCP "provides a fully-implemented item monitoring program, including item loss detection, item identification, item categorization, tamper-safing, accessibility, accounting and

<sup>37</sup> See generally Tr. 1080-81.

<sup>38</sup> See id. 1568-69. The parties, however, availed themselves of the opportunity offered by the Board to pose questions directly to the witnesses. See id. 1537-67.

<sup>71</sup> Exhibit NRC000006, NRC Staff's Direct Testimony at Q 1 – Q 2.

<sup>72</sup> See Exhibit NRC000006, NRC Staff's Direct Testimony at Q 2.

<sup>73</sup> See Exhibit NRC000006, NRC Staff's Direct Testimony at Q 3.

<sup>74</sup> See Exhibit NRC000007, Curriculum Vitae of Thomas N. Pham at 4.

<sup>75</sup> See Exhibit NRC000007, at 1.

<sup>76</sup> See Exhibit NRC000007, at 2.

[To be inserted after section 4.15 of MOX Services' Proposed Findings of Fact and Conclusions of Law].

<sup>89</sup> Exhibit APP000021, at 13-6. In the Staff's Response Testimony, the Staff clarified that the term, "power of detection," is an expression that "refers only to the missing item or the item(s) missing material being chosen for verification as part of the statistical sample. It does not address the accuracy of the method used to detect if an item is missing or missing material." Exhibit NRC000008, NRC Staff's Response Testimony at Q 2 – Q 3.

control procedures, item measurements, item verification, and monitoring of samples.<sup>90</sup> The Staff's witness, Mr. Tom Pham, testified at the hearing that MOX Services' "100 percent verification" approach (instead of using a random sampling approach) was acceptable to meet the regulation's statistical sampling requirement.<sup>91</sup> At the hearing, Mr. Pham described the guidance provided in NUREG-1280, which allows MOX Services to rely on controlled access areas to meet the tamper-safing requirements of 10 CFR § 74.55.<sup>93</sup> In keeping with this approach to item integrity verification, the Staff concluded that MOX Services' tamper-safing procedures are acceptable to "ensure the continuing validity of previously measured and attested to nuclear material values assigned to unique items, and the personnel access controls, surveillance and records procedures for entrance and exit of personnel to and from control access areas."<sup>94</sup>

- 4.27(a)\* At the hearing, Mr. Pham reaffirmed the position set out in his pre-filed testimony that power of detection does not address the accuracy of the method used to detect whether or not an item is missing.<sup>128</sup>
- 4.46 With respect to software security and the protection of data stored in the MMIS and PLCs, Dr. Lyman testified that the relevant software was developed by foreign (French) nationals and could include "malicious code."<sup>164</sup> MOX Services testified that it does use as much of the French MELOX software as practicable, because the MELOX software has been successfully used for other 15 years, taking advantage of the facility's operational experience.<sup>165</sup> The MELOX software was first developed at a time when there was no knowledge that the MOX facility would be built. Thus, Mr. Bell testified that "MOX Services has high confidence that no malicious software was built into MELOX to target the MOX Facility."<sup>166</sup>

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<sup>90</sup> Exhibit NRC000006, NRC Staff's Direct Testimony at Q 7.

<sup>91</sup> See Tr. 1276.

<sup>93</sup> See Tr. 1402-03.

<sup>94</sup> Exhibit APP000021, at 13-6.

\* [To be inserted after section 4.27 of MOX Services' Proposed Findings of Fact and Conclusions of Law].

<sup>128</sup> Tr. 1224-25; see NRC Exhibit NRC000008, Staff Reply Testimony at Q 2.

<sup>164</sup> Exhibit INT000001, Intervenor's Direct Testimony at Q 5, ¶¶ 16-17. However, when asked how malicious code could be introduced into PLCs, Dr. Lyman asserted in response that it was not the Intervenor's position "to come up with credible scenarios to defeat a physical protection system." Tr. 1556 (Lyman).

<sup>165</sup> See Exhibit APP000031, MOX Services' Reply Testimony at Q 29.

<sup>166</sup> Exhibit APP000031, MOX Services' Reply Testimony at Q 29.

- 4.66(a)\* Mr. Pham articulated that it was his position that manual verification is more prone to errors as compared with digital alternatives.<sup>216</sup> As he put it, "If I give a person 100 items to go in and read out 10 different digit numbers of a barcode, there's a very good chance that the person's going to mess it up versus if I covert that activity to an automation by a barcode reader."<sup>217</sup> In addition, at the hearing, Dr. Lyman conceded that his intended approach to verification, including physical verification, would not be 100 percent accurate.<sup>218</sup> As he stated, "[e]very process is going to have its own potential fallibility and inaccuracy."<sup>219</sup>
- 4.72(a)\* The Staff also argued that the EURATOM requirements, which do not include a specific requirement for an item monitoring program, are not relevant with respect to MOX Services' compliance with 10 CFR § 74.55(b)(1).<sup>228</sup>
- 4.80 The NRC Staff's Direct Testimony, on the other hand, endorsed MOX Services' position.<sup>244</sup> As Mr. Pham explained therein, "[i]f a storage area provides protection equivalent to tamper-safing, it is generally acceptable for an applicant or a licensee to verify the integrity of the storage area, including the boundaries (e.g., walls, floor, and ceiling) and of the tamper-safing devices on any access points (e.g., doors and vents)."<sup>245</sup>
- 4.82 But MOX Services witness, Mr. Clark, explained that the 99 percent power of detection aspect of 10 CFR § 74.55(b)(1) is met by "verify[ing] the integrity of 100 percent of the items in storage by verifying daily the [tamper-safed] integrity boundaries around those items."<sup>248</sup> Ms. Williams also responded that MOX Services' integrity boundary concept was not "novel," and she provided comparable examples at the B&W, NFS and Humboldt Bay facilities.<sup>249</sup> Mr. Pham concurred that the

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\* [To be inserted after section 4.66 of MOX Services' Proposed Findings of Fact and Conclusions of Law].

<sup>216</sup> Tr. 1258-59 (Pham).

<sup>217</sup> Tr. 1259 (Pham).

<sup>218</sup> See Tr. 1566-1567 (Lyman).

<sup>219</sup> Tr. 1566 (Lyman).

\* [To be inserted after section 4.72 of MOX Services' Proposed Findings of Fact and Conclusions of Law].

<sup>228</sup> Exhibit NRC000008, Staff Reply Testimony at Q 8.

<sup>244</sup> Exhibit NRC000006, NRC Staff's Direct Testimony at Q 15.

<sup>245</sup> Exhibit NRC000006, NRC Staff's Direct Testimony at Q 15.

<sup>248</sup> Tr. 1350-51 (Clark).

<sup>249</sup> See Tr. 1396-97 (Williams).

approach was not a novel one and was, in fact, as Ms. Williams had testified, currently employed in other facilities.<sup>250</sup>

- 4.87 In Section 3.1.3 of its FNMCP, MOX Services has proposed that "[t]he alarm resolution procedures of Sections 3.1.1.4 and 3.1.4.1 of the [FNMCP] will normally be completed within three calendar days after an item is declared missing."<sup>251</sup> MOX Services' identified twelve available procedures or methods it intends to use, as appropriate, to resolve an alarm within this time frame.<sup>252</sup> In Section 13.2.3.3 of the SER, the Staff concluded that MOX Services' alarm resolution program "demonstrates that it will have the ability to respond to and resolve MC&A alarms of the potential loss of nuclear materials."<sup>253</sup> As noted by the Staff in its Direct Testimony, Chapter 3 of NUREG-1280 provides guidance regarding alarm resolution time commitments.<sup>254</sup> The Staff found that MOX Services' proposed alarm resolution procedures are consistent with the guidance set forth in NUREG-1280.<sup>255</sup> On a related note, Mr. Pham testified that it is the position of the Staff that there is no regulatory requirement that MOX Services must meet the alarm resolution requirements in 10 CFR § 74.57(b) by means of an inventory.<sup>256</sup> Rather, MOX Services may use any number of alarm resolution methods, "so long as the [it] provides reasonable assurance that an available alarm resolution method or a combination of methods can meet the timing commitments."<sup>257</sup>
- 4.90 Dr. Lyman testified, without reference to the express language of the regulation or any other legal support, that MOX Services must demonstrate that "each and every method it has identified can be completed within the approved time period."<sup>261</sup> Dr. Lyman further asserted that "as long as the possibility exists that an inventory may be needed (and there is surely such a circumstance in the broad universe encompassing 'any' MC&A alarm), then MOX Services needs to show that it can be completed within the approved time period."<sup>262</sup> And he stated that if MOX Services

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<sup>250</sup> See. Tr. 1402-03 (Pham).

<sup>251</sup> Exhibit APP000020, FNMCP Ch.3, § 3.1.3 (Apr. 2010).

<sup>252</sup> See Exhibit APP000020, at 147.

<sup>253</sup> Exhibit APP000021, at 13-7.

<sup>254</sup> Exhibit NRC000006, NRC Staff's Direct Testimony at Q 20.

<sup>255</sup> Exhibit NRC000006, NRC Staff's Direct Testimony at Q 22 – Q 23; Tr. 1455-56 (explaining the guidance in NUREG-1280 regarding appropriate timeframes).

<sup>256</sup> Exhibit NRC000006, NRC Staff's Direct Testimony at Q 24; see Tr. 1446.

<sup>257</sup> Exhibit NRC000006, NRC Staff's Direct Testimony at Q 24.

<sup>261</sup> Exhibit INT000001, Intervenors' Direct Testimony at A.6, ¶ 3.

<sup>262</sup> Exhibit INT000001, Intervenors' Direct Testimony at A 6, ¶3. However, when given the opportunity at the hearing, Dr. Lyman chose not to articulate a scenario in which an inventory would be necessary to resolve an alarm. See Tr. 1564-65 (Lyman).

believes it can resolve alarms using a combination of other methods, it should remove the "inventory" method from its list of proposed methods.<sup>263</sup>

- 4.91(a)\* Mr. Pham, in agreement with the statement made by Ms. Williams, testified that "MOX Services can use any method, or multiple methods, to resolve any alarm with [the] approved time period. A physical inventory of a storage vault is not the sole method for resolving an item alarm."<sup>268</sup>
- 4.106 Mr. Pham indicated that if an alarm is not resolved within the set time period, MOX Services would be required to report the event to the NRC, who would then determine what response actions were necessary to resolve the event.<sup>294</sup> The NRC might send a team to investigate the issue, it might ask the facility to investigate the issue, and it might initiate an enforcement action.<sup>295</sup> NRC MC&A inspectors would review MOX Services' response and determine whether the response met the requirements of 10 CFR Part 74 and the commitments in MOX Services' FNMCP.<sup>296</sup>

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<sup>263</sup> See Exhibit INT000001, Intervenors' Direct Testimony at A6, ¶3.

\* [To be inserted after section 4.91 of MOX Services' Proposed Findings of Fact and Conclusions of Law].

<sup>268</sup> Exhibit NRC000008, Staff Reply Testimony at Q 14.

<sup>294</sup> See Tr. 1459-60 (Pham).

<sup>295</sup> See *id.*

<sup>296</sup> See Exhibit APPR00014, MOX Services' Direct Testimony at Q 46.

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
SHAW AREVA MOX SERVICES	)	Docket No. 70-3098-MLA
(Mixed Oxide Fuel Fabrication Facility)	)	ASLBP No. 07-856-02-MLA-BD01

CERTIFICATE OF SERVICE

I hereby certify that copies of the "NRC STAFF'S PROPOSED FINDINGS OF FACT AND CONCLUSIONS OF LAW" in the above captioned proceeding have been served on the following persons by deposit in the United States Mail or through deposit in the Nuclear Regulatory Commission internal mail system as indicated by an asterisk (\*) on this 3<sup>rd</sup> day of May, 2012:

Michael C. Farrar, Chair \*  
Lawrence G. McDade  
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c/o Karen Valloch  
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<sup>1</sup> Three copies, in accordance with Section L of the July 26, 2011 Protective Order.

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*/RA/*

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Brett M. Klukan  
Counsel for the NRC Staff

Dated: May 3, 2012



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION II  
245 PEACHTREE CENTER AVENUE NE, SUITE 1200  
ATLANTA, GEORGIA 30303-1257

June 21, 2012

MEMORANDUM TO: James H. Moorman, Director  
Division of Construction Projects

David A. Ayres, Chief /RA/  
Construction Projects Branch 2  
Division of Construction Projects

FROM: Darren W. Piccirillo, Senior Construction Project Engineer /RA/  
Construction Projects Branch 2  
Division of Construction Projects

SUBJECT: SELF-ASSESSMENT OF NEW CONSTRUCTION PLANNING  
AND SCHEDULING

A self-assessment was conducted to review the construction planning and scheduling program. The expected outcomes for the assessment were to identify ways to improve the accuracy and understanding of the NRC construction inspection schedule by evaluating the communication processes used, and to identify ways to improve the efficiency and effectiveness of inspections by evaluating the methods used to manage inspection resources.

Technically, this process has been effective. However, CCI has identified opportunities to make improvements in process implementation that should result in more effective resource management and is the focus of this self assessment.

Overall, the assessment shows that the new construction inspection planning and scheduling system functions well enough to meet the inspection demands on NRC Region for work now under way on the projects at Plant Vogtle, Plant Summer, MOX facilities and Watts Bar. However, this scheduling system is not as effective as it could be, and enhancements are needed to ensure the system is adequate for handling the inspection workload that will exist when the construction on the plants listed above reaches its peak in a few years.

CONTACT: Darren W. Piccirillo, DCP/CPB2  
404-997-4491

Recommendations on how to address identified improvements or enhancements are described in the attached report. No additional issues were identified.

Enclosure:  
Self-Assessment of Construction  
Inspection Planning and Scheduling

cc w/encl: F. Brown, RII  
C. Ogle, RII  
J. Yerokun, RII  
T. Reis, RII

MEMORANDUM TO: James H. Moorman, Director  
 Division of Construction Projects

David A. Ayres, Chief */RA/*  
 Construction Projects Branch 2  
 Division of Construction Projects

FROM: Darren W. Piccirillo, Senior Construction Project Engineer */RA/*  
 Construction Projects Branch 2  
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CONTACT: Darren W. Piccirillo, DCP/CPB2  
 404-997-4491

PUBLICLY AVAILABLE       NON-PUBLICLY AVAILABLE       SENSITIVE       NON-SENSITIVE  
 ADAMS:  Yes      ACCESSION NUMBER: ML12178A026       SUNSI REVIEW COMPLETE

OFFICE	RII:DCP						
SIGNATURE	DWP2						
NAME	D. Piccirillo						
DATE	06/26/2012						
E-MAIL COPY?	YES      NO						

## **Self-Assessment of Construction Inspection Planning and Scheduling March 2012**

**Lead Assessor/Org:** Darren W. Piccirillo/CCI/DCP/CPB2

**Assessors/Org:** Patrick Heher/ CCI/DCP/CPB2  
Andrew Lerch/ CCI/DCP/CPB2  
David Pierce (consultant)/Lockheed Martin

### **I. Background**

The construction planning and scheduling process was developed to be a scalable process that would support multiple construction projects occurring simultaneously. Since the construction schedule for a typical unit can be very large (upwards of 100,000 activities), the scheduling system was designed to allow changes to the licensee's construction schedule to automatically adjust the NRC ITAAC inspection schedule. The process for scheduling ITAAC inspections involves identifying the proper "owner" inspection group for each ITAAC based on technical competency. The ITAAC owners plan the inspection scope (Smart Plan) for each of their assigned targeted ITAAC. The inspection activities in the Smart Plans are then tied to activities in the licensee construction schedules. Therefore, with the links established between inspection activities and licensee construction activities, NRC inspection dates will automatically move based on changes in the licensees' construction schedule.

Technically, this process has been effective. However, CCI has identified opportunities to make significant improvements in process implementation that should result in more effective resource management and is the focus of this self assessment.

### **II. Method**

The purpose of this self-assessment was to perform a review of the new construction planning and scheduling program. The expected outcomes for the assessment were to identify ways to improve the accuracy and understanding of the NRC construction inspection schedule by evaluating the communication processes used, and to identify ways to improve the efficiency and effectiveness of inspections by evaluating the methods used to manage inspection resources. The assessment was conducted by hiring an independent consultant with 35 years of experience in planning and scheduling of complex projects. The Action Plan for conducting this assessment outlined the tasks to be performed by the consultant with assistance from the NRC/CCI staff.

The methods used by the consultant to research and prepare this report were as follows:

1. Interviews with NRC personnel who operate the Primavera Schedule, Division Chiefs and other individuals who provide input data and use the system's outputs. The following individuals were interviewed:
  - a. David Ayres, Branch Chief CPB2 (incoming)
  - b. Alan Blamey, Branch Chief CPB2 (outgoing)
  - c. Jason Boehm, Construction Inspection Scheduler
  - d. Scott Freeman, Branch Chief CIB3

Enclosure

- e. George Gardner, Senior Project Construction Inspector
  - f. Robert Haag, Branch Chief CPB3
  - g. Patrick Heher, Construction Project Inspector
  - h. Caudle Julian, Senior Project Manager (Acting for Branch Chief CIB1 for interview purposes)
  - i. George Khouri, Construction Project Inspector
  - j. Andrew Lerch, Construction Project Inspector
  - k. Martin McInerney, Construction Inspection Scheduler
  - l. Kathleen O'Donohue, Branch Chief CIB2
  - m. Chuck Ogle, Director, Division of Construction Inspection
  - n. Steve Smith, Senior Construction Inspector
  - o. Jimi Yerokun, Deputy Director, Division of Construction Inspection
2. Review and Analysis of the following documents
- a. Regional Office Instruction No. 1401 – Internal Self-Assessment and Evaluation Program
  - b. Inspection Scheduling and Resource Management Self Assessment Action Plan
  - c. DCP-12, Developing Smart Plans for Scheduling AP1000 DCD Revision 19 Inspections
  - d. DCP-13, CCI Scheduling Business Rules Desktop Guide
  - e. P6 Schedule outputs, including:
    - i. NRC New Reactor 13W Insp Schedule Report (for Vogtle Units 3&4, Summer Units 2&3, Watts Bar Unit 2, LES, NRC Vendor 13W)
    - ii. 6 Week Outlook – Schedule Concern Indicator Report
    - iii. NRC CIB1a Elec Resources 13 Week
    - iv. CIB1 Electrical Resources – 12 Months
    - v. CIB1 Electrical NO Resources - 12 Months
    - vi. NRC CIB2a Civil Resources 13 Week
    - vii. CIB2 Civil Resources – 12 Months
    - viii. CIB2 Civil NO Resources - 12 Months
    - ix. NRC CIB3a Mech Resources 13 Week
    - x. CIB3 Mech Resources – 12 Months
    - xi. CIB3c Mech NO Resources - 12 Months
    - xii. New Reactor Inspection Schedule (365 Day Outlook)
    - xiii. P6 WBS and Activity Structures Reports
  - f. Scheduled ITAAC inputs – Planned and Scheduled
3. Attendance at several of the following meetings over the period March 7 to March 26.
- a. Construction Project Status Meetings
  - b. Division of Construction Inspection Weekly Status Meetings

### III. Observations from the Consultant's Evaluation

#### A. Input from Licensee Construction Schedules

##### Discussion

At the present time, the primary means of determining possible inspection dates is based on construction schedules that are generated by plant licensees in the course of their project management process. These schedules are sent to CPB2 and are loaded into the NRC inspection schedule database. CPB2 schedulers then interpret the licensee schedules and create a link from appropriate construction activities to NRC inspection activities. Possible dates for inspections are then determined when the NRC schedules are recalculated.

In a fully functioning schedule system, updates of licensee schedules would alert CPB2 schedulers to changes in schedule dates for work in the field, and the links between licensee schedules and NRC schedules would ensure that possible inspection dates are updated accordingly. However, problems with the licensee schedules hinder this at times. The main problem is that the schedules received from the licensees are highly complex, are often out of date, and thus are not fully accurate information for use by the CPB2 schedulers, Branch Chiefs and other inspectors. The reasons are complex, but the main issue is that the licensees provide copies of their construction schedules as a courtesy, and these schedules are not designed with inspections in mind. Given this fact, establishing accurate connections between construction schedules and inspections schedules is difficult. There are, however, other ways that the CPB2 schedulers can obtain information about field progress and possible inspection dates.

During interviews with Branch Chiefs and Inspectors, many individuals noted that personnel who have the opportunities to observe construction in the field have a working knowledge of construction progress. Also, a cursory examination of the staff rosters of individuals assigned to DCP and DCI reveals that at least 50 individuals have some opportunity to observe and judge construction progress in the field. A method is needed to tap the knowledge that these professionals accumulate as they proceed with their inspection work. This would help fill the gaps in CPB2's schedule knowledge.

##### Recommendation

That NRC establish a method that would tap the knowledge of NRC personnel in order to augment the system of obtaining licensee schedule progress information to drive the inspection schedules. In order to do this, NRC should encourage and develop communication among inspectors and other branch personnel.

Communication is a process that must be led by Branch Chiefs and other senior individuals in each branch. To accomplish this communication, Branch Chiefs should lead the way by encouraging and using whatever means can be found for inspectors at all levels to record and report observations, and then ensure that what they learn is made visible to all, especially to CPB2 schedulers.

## **B. Schedule Information Displays are Too Complex**

### Discussion

After observing several scheduling meetings and reviewing samples of schedule reports, the consultant felt it was apparent that the schedule displays on the screen in the Main Planning Room contain so much information that the displays were confusing to many. Also, a number of interviewees noted that the projections of the schedule reports were difficult to read.

There are no "rules" regarding schedule reports, except that the recipients of the information are the ultimate judge of "quality", but some general principles are recognized as valid approaches to the design of reports.

The key points about reports are:

1. Schedulers and Branch Chiefs should work together to avoid "information overload"
2. The number of activities on any screen should be held to a minimum
3. Layouts should be reduced to show only key information about activities
4. Layouts should be designed to suit individual branch needs.

### Recommendations

1. Schedule reports need not be the same for all branches. P6 is a particularly powerful software system, and has many options for schedule displays which should be explored to find the format most favored by various users.
2. In general, simple is better. Information which is more than basic or which is seldom used is best displayed in provided in separate supplementary reports.
3. CPB2 schedulers and Branch Chiefs should not be afraid to try different report formats.
4. Bar charts are easier to read and comprehend than are tabular reports.
5. Any bar chart should have extraneous or redundant information removed, e.g. a date column does not also need hours and minutes displayed.
6. Instead of showing individual inspector man-hours in spreadsheet format, try using histograms instead.
7. Try using P6s split screen feature, e.g. bar chart on the top window and man-hours on the bottom window.
8. Use the activity coding power of P6 more vigorously to arrange activities into meaningful groups, e.g. group all the activities that will be done by one team.
9. Try showing groups without Summary Bars, which can clutter a screen if too many are used.
10. Divide activities into "must happen during construction" and "can happen during construction" to aid in prioritizing the work.

## C. Meeting Productivity Improvements

### Discussion

As presently conducted, scheduling meetings are not as effective as they could be.

The problems have been 1) losing focus during the course of a meeting, 2) attempting to deal with too many subjects in one meeting, and 3) a very large number of attendees at schedule meetings.

Losing focus in this case refers to the tendency to digress into subjects which are not directly related to the inspection schedule. This situation is the result of two factors.

The first factor is that the meetings were not conducted in a firm and efficient manner. This was because the chair of the meetings was often a relatively junior inspector who has to operate the display software at the same time.

Another factor is that planning and updating are handled in the same meeting, which results in shifting back and forth between the two issues and confusion can ensue. Normally in construction scheduling, these two tasks are generally dealt with separately, and NRC should follow that general principle. The reasons for this are the fact that updating is a relatively routine process. Facts are "gathered" and recorded in the software, which is a relatively straightforward process. Scheduling is much more difficult, and involves using schedule information to make complex decision about future work. These decisions usually involve trade-offs and joint decision making, and mixing scheduling with updating usually results in some confusion and lack of focus.

Also, the number of attendees is quite large, which makes it difficult for a chairperson to keep a meeting under firm control, and it is possible that some information is either missed or not entered into the P6 schedule.

### Recommendations

The NRC should establish the following procedures:

Assign someone with sufficient authority to chair the meetings, although it does not need to be the same individual at every meeting.

Keep meetings focused on the published agenda and purpose. This is a basic principle of conducting meetings which should be observed.

Have one scheduler from CPB2 running the software display for all participants to see. This individual should have no other duties during the meeting.

Have one or more schedulers from CPB2 acting as note takers. These individuals should also publish meeting minutes as soon as possible after a meeting.

Hold separate meetings for Updating and Planning/Scheduling. Apparently the decision to do this was made before this self-assessment began, and continuing down that path should improve meeting productivity.

#### **D. Not all Smart Plans are Scheduled**

##### Discussion

Not all Smart Plans for targeted ITAACs have been completed and entered in the P6 schedule as activities. The three main inspection branches are working on completing the required Smart Plans but have not finished yet, and the P6 Schedule cannot be completed until this happens.

Smart Plans thus far have been developed well ahead of the scheduled construction work and no inspections have been affected by lack of a Smart Plan.

##### Recommendation

Preparation of Smart Plans and Schedule input should continue as presently performed. No changes to this process are necessary, although all parties should be aware that the inspection schedule workload will increase as work in the field increases.

#### **E. Cumbersome and inefficient P6 Server arrangement**

##### Discussion

The present local P6 software installation limits use of P6 to a small number of computers in the in the NRC offices. Also, the only computer that can display schedule information on a screen is in the Main Planning Room (945).

This setup means that the CPB2 schedulers cannot use other conference rooms for scheduling meetings with small groups.

##### Recommendation

Complete the transition to P6 on Headquarters servers as soon as possible.

#### **F. Estimated hours for Inspections and for Prep & Doc activities are not complete.**

##### Discussion

At present, hours are assigned to inspectors and to activities in blocks of time that are multiples of 8 hours that reflect the number of days a person is expected to inspect a site. The amount of time that it will actually take to do an inspection or to do the associated prep and doc is not factored into schedule assignments.

Also, Prep and Doc activities are not displayed on the P6 schedules, and time for this work appears to be factored into schedule assignments separately.

The process of scheduling inspections and assigning inspectors to site visits and other work could be better performed if reasonable estimates of hours required to perform a given task were available and activities in the schedule were resource loaded with those values.

### Recommendation

1. Estimate hours needed for each inspection activity and resource load schedule activities accordingly.
2. Estimate hours needed for the Prep and Doc work associated with each inspection, investigate adding Prep and Doc activities to the schedule and including these activities in the scheduling process

### **G. The Schedule Update and Planning Cycle is Shorter than Necessary.**

#### Discussion

The present one week per schedule is probably not necessary. Typical industry scheduling practice is to update and re-schedule on a monthly basis, and shorter cycles are used only in special cases such as plant outages or on project which have extremely tight completion deadlines. Changing to a longer cycle would have several advantages, including more time between meetings for Branch Chiefs and other personnel to collect update information and plan their operations. Also, all personnel would benefit from less time spent in meetings.

#### Recommendation

DCP/DCI should change to a 2 week scheduling cycle on a trial basis. If this proves to be effective, and monthly cycle should be considered.

### **IV. Conclusion**

Overall, the NRC inspection scheduling system functions well enough to meet the inspection demands on NRC Region for work now under way on the projects at Plant Vogtle, Plant Summer, MOX facilities and Watts Bar. However, additional enhancements may be necessary to ensure scalability of this process as the inspection workload increases. A future assessment will identify the enhancements necessary for continued effective inspection planning and scheduling.



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION II  
245 PEACHTREE CENTER AVENUE NE, SUITE 1200  
ATLANTA, GEORGIA 30303-1257

March 22, 2012

MEMORANDUM TO: James Moorman, Director  
Division of Construction Projects (DCP)

THRU: Deborah Seymour, Branch Chief /IRA/  
Construction Projects Branch 1 (CPB1)

FROM: Cynthia Taylor, Senior Project Inspector, CPB1 /IRA/

SUBJECT: REVIEW OF MIXED OXIDE FUEL FABRICATION FACILITY (MFFF)  
PERFORMANCE FOR THE 1<sup>ST</sup> QUARTER FISCAL YEAR 2012 -  
DOCKET NO. 70-3098

On March 6, 2012, staff from the Center for Construction Inspection (CCI) and Nuclear Materials Safety and Safeguards (NMSS) met to perform a quarterly review of MFFF performance and to identify needed changes to the MFFF construction inspection plan. The quarterly review covered the time period of October 1 through December 21, 2011. No violations were identified during this period; however minor violations were identified in the areas of vendor oversight and commercial grade dedication.

As a result, and based on the discussions held during the quarterly review, the following changes to the MFFF construction inspection program were agreed upon by CCI and NMSS staff.

1. Refocus MFFF Construction Inspection Schedule Activity Identification Number (ID) 1420 (process vessel and pipe inspection) as a programmatic instrumentation and control inspection using the targeted/prioritized items relied on for safety (IROFS) components as the inspection sample. Independent Verification Plan-005 has a complete listing of the targeted IROFS components. Construction Inspection Branch 1 will take the lead on the development of the inspection plan.
2. Refocus MFFF Construction Inspection Schedule Activity ID 1320 (corrective action program inspection) and MFFF Construction Inspection Schedule Activity ID 1330 (quality assurance program inspection) to assess vendor oversight. An additional inspector may need to be added to the inspection(s) to meet this aim. Prior to the inspections, Construction Projects Branch 1 (CPB1) will communicate the changes to the lead inspectors.
3. Assign an inspector with commercial grade dedication experience to provide technical assistance to the MFFF resident inspector staff for one to two weeks. CPB1 will request the resources to assist the resident inspector.

CONTACT: C. Taylor, RII/CCI/DCP/CPB1  
404-997-4480

These changes involved previously scheduled inspections and did not add additional inspections to the MFFF Master Inspection Plan. The changes were added to the Open Items section of DIAMOND (Digital Information Archive for the MFFF and Online Normalized Database).

Docket No. 70-3098

Construction Authorization No.: CAMOX-001

cc:

D. Roberts, RII, CCI

J. Moorman, RII, DCP

T. Reis, RII, DCP

D. Seymour, RII, DCP

W. Gloersen, RII, DCP

C. Ogle, RII, DCI

J. Yerokun, RII, DCI

S. Freeman, RII, DCI

M. Lesser, RII, DCI

K. O'Donohue, RII, DCI

J. Bowen, NMSS

D. Tiktinsky, NMSS

K. Morrissey, NMSS

These changes involved previously scheduled inspections and did not add additional inspections to the MFFF Master Inspection Plan. The changes were added to the Open Items section of DIAMOND (Digital Information Archive for the MFFF and Online Normalized Database).

Docket No. 70-3098

Construction Authorization No.: CAMOX-001

cc:

- D. Roberts, RII, CCI
- J. Moorman, RII, DCP
- T. Reis, RII, DCP
- D. Seymour, RII, DCP
- W. Gloersen, RII, DCP
- C. Ogle, RII, DCI
- J. Yerokun, RII, DCI
- S. Freeman, RII, DCI
- M. Lesser, RII, DCI
- K. O'Donohue, RII, DCI
- J. Bowen, NMSS
- D. Tiktinsky, NMSS
- K. Morrissey, NMSS

PUBLICLY AVAILABLE   
  NON-PUBLICLY AVAILABLE   
  SENSITIVE   
  NON-SENSITIVE  
 ADAMS: Yes   
 ACCESSION NUMBER: ML12087A233   
  SUNSI REVIEW COMPLETE   
  FORM 665 ATTACHED

OFFICE	RII: DCI	RII: DCI	RII: DCI	RII: DCI	RII: DCI
SIGNATURE	CDT	DAS	CRO		
NAME	C. Taylor	D. Seymour	C. Ogle		
DATE	3/16/2012	3/16/2012	3/19/2012		
E-MAIL COPY	YES    NO	YES    NO	YES    NO	YES    NO	YES    NO

**Regional Technical Assistance Request Form (NMSS)**

---

Date: May 30, 2012

Mail and E-Mail to: John D. Kinneman, Director  
Division of Fuel Cycle Safety and Safeguards

From: James H. Moorman, Director /RA/  
Division of Construction Projects

Licensee: Shaw AREVA MOX Services  
MOX Fuel Fabrication Facility (MFFF)

License Number: NRC Construction Authorization No. CAMOX-001, Rev. 2

Docket Number: 70-3098

Enforcement Action being held in abeyance: (✓) Yes ( ) No (not applicable)

Suggested change in licensing procedure (enclosed): not applicable

Statement of Problem: The inspection staff requests an interpretation of the MFFF MOX Project Quality Assurance Plan (MPQAP) as to whether the specification of critical characteristics of basic components and the development of criteria to be used for verification of these critical characteristics during the commercial grade dedication (CGD) process is (1) a design control process as implemented by Section 3, *Design Control*, of the MPQAP or (2) an acceptance and verification process as implemented by Section 7, *Control of Purchased Material, Equipment, and Services*, of the MPQAP.

Background: During the conduct of an inspection of commercial grade dedication by regional inspection staff (Inspection Report 070-3098/2012-001, dated 05/11/2012), inspectors identified that the applicant (MOX Services) did not apply all of the requirements for design control in their process for identifying critical characteristics of basic components and for specifying criteria for verifying the critical characteristics. Although the inspectors considered the applicant's practices to be a failure to comply with regulations for design control, interviews with MOX Services personnel identified that the applicant held differing viewpoints. The viewpoints expressed by MOX Services are characterized in the attachment to this TAR along with associated comments by the regional inspection staff.

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## Regional Technical Assistance Request Form (NMSS)

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Primary Question:

Is the specification of critical characteristics of basic components and the development of criteria to be used for verification of these critical characteristics during the commercial grade dedication (CGD) process a: (1) design control process as implemented by Section 3, *Design Control*, of the MPQAP or (2) an acceptance and verification process as implemented by Section 7, *Control of Purchased Material, Equipment, and Services*, of the MPQAP?

- a. Is the process of identifying and modifying specified critical characteristics for basic components and the criteria for verifying the critical characteristics subject to the requirements of MPQAP Section 3, *Design Control* or subject to the requirements of Section 7, *Control of Purchased Material, Equipment, and Services*?

Additional Questions:

In addition, the inspection staff had the following additional questions:

1. Is a revision to a CGIE (e.g. change of critical characteristics) considered a design change?
2. What requirements from MPQAP Section 3, *Design Control*, are applicable to CGIEs (e.g. specification of critical characteristics and acceptance methods) and revisions to CGIEs?
3. Is a documented technical justification required by the MPQAP when issuing a revision to a CGIE (e.g. change in critical characteristics) or can the technical evaluation in the CGIE stand on its own merit?
4. Is a Commercial Grade Item Evaluation (CGIE) considered a design (output) document?
5. Is it permissible to revise critical characteristics once they are established?
6. Is it an acceptable approach to include commercial grade dedication requirements in MPQAP Section 7, *Control of Purchased Material, Equipment, and Services*, instead of MPQAP Section 3, *Design Control*?
7. Is it an acceptable approach to consider the applicant's CGD program as an acceptance, procurement, and verification process (MPQAP Section 7, *Control of Purchased Material, Equipment, and Services*) with engineering involvement?

## **Regional Technical Assistance Request Form (NMSS)**

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8. What is meant by engineering involvement as described in NRC Generic Letter 91-05?

Action Requested: The inspection staff requests an interpretation of the MOX CGD program questions and MPQAP as noted in the problem statement and the questions above. Section 4.b.(1)(c)2) of IR 70-3098/2012-001 identified an inspector follow-up item (IFI) pertaining to reviewing the applicability of using design control to define critical characteristics. A potential enforcement action is pending on this issue, depending on the response to the questions in this TAR.

Recommended Action and Alternatives: ( ) Approve or ( ) Reject

TARs addressing similar issues (subject and date): not applicable

Background documents (identify those not sent electronically): Please refer to the list of cited documents shown below. Additional background documents or information from the regional contacts can be made available upon request.

Remarks: The inspection staff requests a determination of the applicability of the questions in this TAR to other program offices in NRR and NRO.

Headquarters Reviewer(s): *To be determined*

The NMSS/FCSS program office has identified that they plan to coordinate responses from the appropriate branches in NRR and NRO.

Regional Reviewers: W. B. Gloersen, RII/DCP/CPB1  
C. Jones, RII/DCP/CIB1  
B. Adkins, RII, DCP/CPB1

Submitted by: Deborah A. Seymour, RII/DCP/CPB1

## Regional Technical Assistance Request Form (NMSS)

---

Technical Assistance Request from J. Moorman to J. Kinneman, dated May ~~26~~<sup>30</sup>, 2012

Distribution w/attachment:

- L. Campbell, NMSS
- D. Tiktinsky, NMSS
- J. Moorman, RII
- C. Ogle, RII
- T. Reis, RII
- J. Yerokun, RII
- D. Seymour, RII
- K. O'Donohue, RII
- M. Lesser, RII
- S. Freeman, RII
- W. Gloersen, RII
- M. Shannon, RII
- B. Adkins, RII
- S. Sparks, RII

PUBLICLY AVAILABLE     
  NON-PUBLICLY AVAILABLE     
  SENSITIVE     
  NON-SENSITIVE  
 ADAMS:  Yes     
 ACCESSION NUMBER: MI 12151A385     
  SUNSI REVIEW COMPLETE     
  FORM 665 ATTACHED

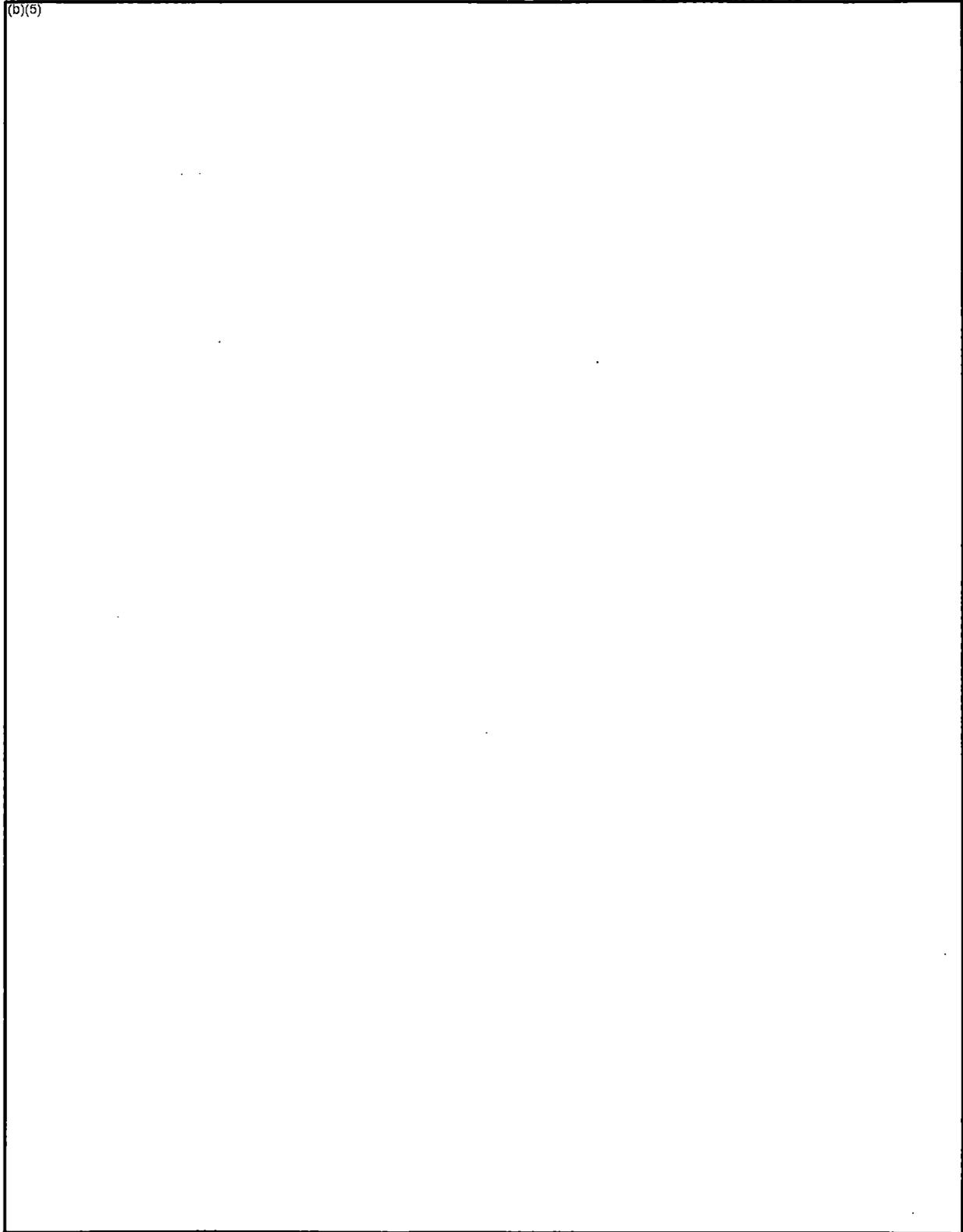
OFFICE	RII: DCP	RII: DCP	RII: DCI	RII: DCP		
SIGNATURE	Via e-mail	Via e-mail	Via e-mail	Via e-mail		
NAME	W. Gloersen	B. Adkins	C. Jones	D. Seymour		
DATE	5/29/12	5/29/12	5/25/12	5/29/12		
E-MAIL COPY?	YES	YES	YES	YES		

OFFICIAL RECORD COPY      DOCUMENT NAME: G:\CC\DCP\CPB1\MOX FFF\TARS\CGD\TAR - 2012-04-04 - CGD (ROI 2291 REV 11) - REV1.DOCX

Viewpoints and Comments

1.

(b)(5)

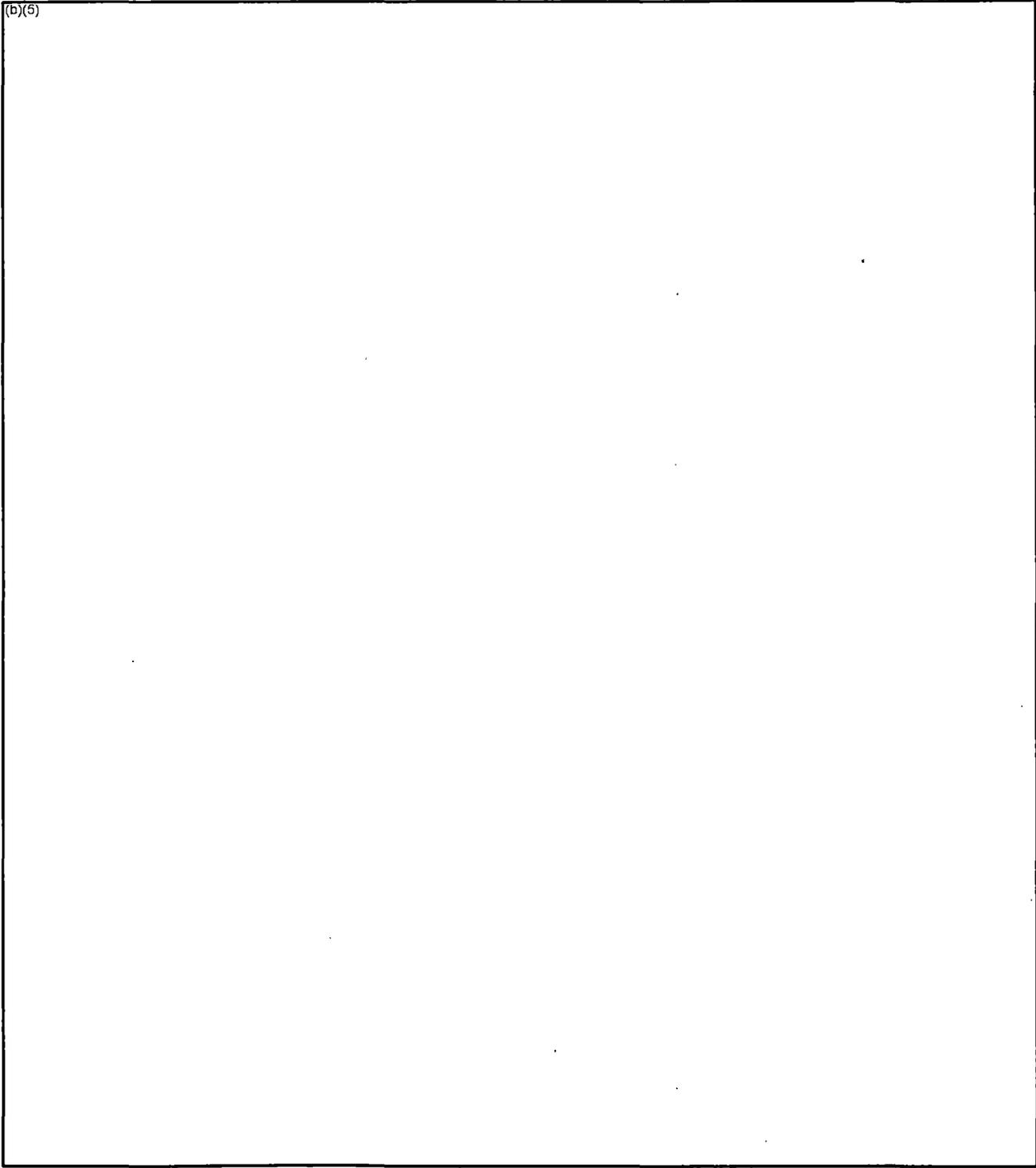


(b)(6)

2.

3.

(b)(5)



1. MOX Services Project Procedure PP9-03, Design Control, Revision 19

NRC FORM 680 (11-2992) NRCMD 10.159	U.S. NUCLEAR REGULATORY COMMISSION		FOR PROCESSING USE ONLY 1. DPO CASE NUMBER DPO-2012-001
	<b>DIFFERING PROFESSIONAL OPINION</b>		

**INSTRUCTIONS:** Prepare this form legibly and submit three copies to the address provided in Block 14 below.

2. DATE RECEIVED 6/27/2012	3. NAME OF SUBMITTER Melvin C Shannon	4. POSITION/TITLE Senior Resident Inspector/MOX Facility	5. GRADE 14
-------------------------------	--	---	----------------

6. OFFICE DIVISION BRANCH/SECTION CCI/DCP/Branch 1/MOX	7. BUILDING see page 2	8. MAIL STOP	9. SUPERVISOR Deborah Seymour
---	---------------------------	--------------	----------------------------------

10. DESCRIBE THE PRESENT SITUATION, CONDITION, METHOD, ETC. WHICH YOU BELIEVE SHOULD BE CHANGED OR IMPROVED.  
(Continue on Page 2 or 3 as necessary.)

Based on an E-mail from OGC, Shaw Areva MOX Services is not required to meet 10 CFR 70.72 for reporting changes that do not require pre-approval. 70.72 (d) (2) requires the licensee to submit to the MRC annually, within 30 days after the end of the calendar year during which the changes occurred, a brief summary of all changes to the records required by 70.62.

The reason MOX Services does not report is because 10 CFR 70.72 states that "The Licensee shall..." and MOX Services is considered to be an "applicant" not a licensee.

This position was documented by OGC in the attached E-Mail.

11. DESCRIBE YOUR DIFFERING OPINION IN ACCORDANCE WITH THE GUIDANCE PRESENTED IN NRC MANAGEMENT DIRECTIVE 10.159.  
(Continue on Page 2 or 3 as necessary.)

Based on the above position, the applicant can make changes during the 10+ year construction period and would not have to submit any of those changes to the NRC for potential review until after the facility receives a license. They also would not be required to establish a configuration management system to track changes. The need for submitting changes on a yearly basis is so that the NRC has the opportunity to inspect and evaluate the changes in a timely manner.

10 CFR 70.60 states that "The regulations in 70.61 through 70.76 apply, in addition to other applicable Commission regulation, to each "applicant" or licensee that is or plans to be authorized to possess greater than a critical mass of special nuclear material, and engaged in...fabrication of mixed-oxide fuel..."

It is my opinion that the regulations require that the licensee and/or applicant in this case, report changes made per 10 CFR 70.72. To date the applicant has not reported any changes although construction has been ongoing for 5 years and approximately 18,000 engineering change requests have been processed.

12. Check (a) or (b) as appropriate:

a. Thorough discussions of the issue(s) raised in item 11 have taken place within my management chain; or

b. The reasons why I cannot approach my immediate chain of command are:

SIGNATURE OF SUBMITTER <i>Melvin C Shannon</i>	DATE 6/27/2012	SIGNATURE OF CO-SUBMITTER (if any)	DATE
---	-------------------	------------------------------------	------

13. PROPOSED PANEL MEMBERS ARE (in priority order):	14. Submit this form to:
1.	Differing Professional Opinions Program Manager
2.	Office of
3.	Mail Stop:

**15. ACKNOWLEDGMENT**

THANK YOU FOR YOUR DIFFERING PROFESSIONAL OPINION. It will be carefully considered by a panel of experts in accordance with the provisions of NRCMD 10.159, and you will be advised of any action taken. Your interest in improving NRC operations is appreciated.	SIGNATURE OF DIFFERING PROFESSIONAL OPINIONS PROGRAM MANAGER (DPOPM) <i>Renee Anderson</i>	
	PRE-CONDITIONS MET	DATE OF ACKNOWLEDGMENT 7/6/2012



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION II  
245 PEACHTREE CENTER AVENUE NE, SUITE 1200  
ATLANTA, GEORGIA 30303-1257

January 9, 2013

MEMORANDUM TO: Deborah A. Seymour, Chief  
Construction Projects Branch 1  
Division of Construction Projects

FROM: William B. Gloersen, Senior Construction Project Inspector /RA/  
Construction Projects Branch 1  
Division of Construction Projects

Denise E. Edwards, Construction Project Inspector /RA/  
Construction Projects Branch 1  
Division of Construction Projects

SUBJECT: REVIEW OF MIXED OXIDE FUEL FABRICATION FACILITY (MFFF)  
PERFORMANCE FOR THE 3<sup>rd</sup> QUARTER 2012 (JULY-SEPTEMBER),  
DOCKET NO. 70-3098

On December 18, 2012, staff from Region II Division of Construction Projects, the Division of Construction Inspection, and the Office of Nuclear Materials Safety and Safeguards, performed a quarterly review of the MFFF inspection results to identify any needed changes to the MFFF master inspection plan. The quarterly review covered the time period of July 1 through September 30, 2012.

Based on the results of this review, one change to the MFFF master inspection plan was identified.

- MOX Services has selected a new vendor for the development of the remaining safety programmable logic controllers (SPLCs). The staff recommended the addition of the following three software quality assurance inspections of MOX Services' oversight of the new SPLC vendor (AREVA): (1) software planning phase; (2) software requirements phase; and (3) factory acceptance test phase.

Docket No. 70-3098  
Construction Authorization No.: CAMOX-001

CONTACT: W. Gloersen, RII/DCP/CPB1  
404-997-4443

Memorandum to Deborah A. Seymour from William B. Gloersen and Denise E. Edwards dated January 09, 2013.

**SUBJECT: REVIEW OF MIXED OXIDE FUEL FABRICATION FACILITY (MFFF)  
PERFORMANCE FOR THE 3<sup>rd</sup> QUARTER 2012 (JULY– SEPTEMBER), DOCKET  
NO. 70-3098**

cc:

F. Brown, RII, DRAC  
J. Munday, RII, DCP  
R. Haag, RII, DCP  
D. Seymour, RII, DCP  
W. Gloersen, RII, DCP  
K. Steddenbenz, DCP  
J. Yerokun, RII, DCI  
S. Freeman, RII, DCI  
A. Masters, RII, DCI  
K. O'Donohue, RII, DCI  
M. Bailey, NMSS  
P. Silva, NMSS  
D. Tiktinsky, NMSS  
K. Morrissey, NMSS

January 9, 2013

MEMORANDUM TO: Deborah A. Seymour, Chief  
Construction Projects Branch 1  
Division of Construction Projects

FROM: William B. Gloersen, Senior Construction Project Inspector /RA/  
Construction Projects Branch 1  
Division of Construction Projects

Denise E. Edwards, Construction Project Inspector /RA/  
Construction Projects Branch 1  
Division of Construction Projects

SUBJECT: REVIEW OF MIXED OXIDE FUEL FABRICATION FACILITY (MFFF)  
PERFORMANCE FOR THE 3<sup>rd</sup> QUARTER 2012 (JULY-SEPTEMBER),  
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Docket No. 70-3098  
Construction Authorization No.: CAMOX-001

CONTACT: W. Gloersen, RII/DCP/CPB1  
404-997-4443

PUBLICLY AVAILABLE     NON-PUBLICLY AVAILABLE     SENSITIVE     NON-SENSITIVE  
ADAMS:  Yes    ACCESSION NUMBER: ML13010A242     SUNSI REVIEW COMPLETE     FORM 665 ATTACHED

OFFICE	RII:DCP	RII:DCP											
SIGNATURE	DEE	WBG											
NAME	D. Edwards	W. Gloersen											
DATE	01/09/2013	01/09/2013											
E-MAIL COPY?	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	NO

OFFICIAL RECORD COPY    DOCUMENT NAME: \\nrc.gov\nrc\2\Office\CC\IDCP\CPB1\MOX  
FFF\Assessments\2012\3rd Quarter\Assessment letter for Q3 2012.docx

REGION II FUEL FACILITY CONSTRUCTION INSPECTION PLAN  
Form Revision Date: September 18, 2013

Licensee	Dates	Docket/Report No.	Lead Inspector	Accompanying Inspectors
Shaw AREVA MOX Services	11/18 - 11/22/2013	70-3098	W. Gloersen	B. Adkins; D. Tiktinsky, K. Morrissey

TYPE	TIMING	FOLLOW UP	NOTIFICATION	REPORT
* Routine	Back Shift	Allegations (Plan attached)	* Announced	* Integrated
Special	* Normal Shift	Events (Events Evaluation Attached)	Unannounced	Non-integrated
Team	Both Shifts	Open Items (List Attached)		

Total Onsite Hours	Back-shift hours	Licensee Contact	Telephone No.	Hotel	Telephone No
96	0	D. Gwyn	803-819-2780	Fairfield Inn Aiken, SC	803-648-7808

**NOTE: If the inspection goals cannot be accomplished as planned, discuss the changes with your management and annotate this inspection plan describing the change and reasons.**

Consult with the Senior Project Inspector for information on inspection emphasis for each functional area during the inspection cycle. On the reverse side of this form (REGION II Fuel Facilities Construction Inspection Areas), highlight the areas to be inspected and cross out those areas previously inspected during the current inspection cycle.

Inspector's Initials	wbg
----------------------	-----

Review the inspection activities and findings summary (in DIAMOND for MFFF) since the last LPR period or one year whichever is longer associated with the Construction Inspection Areas in which the inspection will be conducted. The purpose of the review is to identify trends, strengths, and weaknesses in licensee performance in the general areas to be inspected and to provide insights to appropriately focus the inspection focus. ***in an attachment, list the areas that will be inspected and indicate the basis (CAR, SAR, LA, etc.) against which performance will be judged.***

Inspector's Initials	wbg
----------------------	-----

Review the list of all open items, including, as applicable, allegation follow-up items for the facility and annotate the issues that will be reviewed for closure (the list is in DIAMOND for MFFF). Check with the Senior Project Inspector to see if there are items opened by other inspectors that should be ready for closure. If there are such items, bring back information for the inspector who opened the item to review in the office for closure. That inspector will provide a closure write-up to be included in the inspection report.

Inspector's Initials	wbg
----------------------	-----

Verify that the inspection is on the master inspection plan (MIP) and the CCI Inspection Schedule. The CCI Inspection Schedule can be accessed via the DCP home web page under the Planning and Scheduling link. Note: This is critical in meeting Region II Operating Plan goals. To add an inspection to the CIP schedule, it must be approved by the Senior Project Inspector.

Inspector's Initials	wbg
----------------------	-----

**For fuel facility construction inspections, conduct an inspection pre-brief with the appropriate CPB1 Senior Project Inspector:**

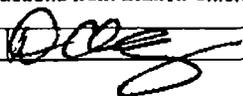
- As applicable, discuss allegation follow-up, the allegation inspection plan, and allegation history.
- Discuss the most recent performance history for the facility to ensure that the appropriate inspect on resources are being effectively managed.
- Discuss all open items that will be reviewed during the inspection.
- For the MOX FFF Project, as applicable, specify the specific principal systems, structures, and components (PSSCs) that will be reviewed and ensure that the appropriate planning guidance in the PSSC inspection verification plan (IVP) has been incorporated into this inspection plan. (Programmatic Inspection)
- As applicable, ensure contractor support, including the SOW, has been coordinated with the NMSS Project Manager.
- As applicable, check the events for the site (in cone) and determine which events need follow-up.

Inspector's Initials	wbg
----------------------	-----

**Project Inspector Certification** that: 1) inspection focus is consistent with branch targeting information and licensee performance trends from an up-to-Date PIM, 2) planned inspection is based on acceptable performance measures, and 3) direct inspection effort to be expended during this inspection is consistent with the inspection effort goals established in the current branch targeting information, the latest LPR/APR and resources already expended during the fiscal year.

Project Inspector's:	wbg	Date:	11/7/2013
----------------------	-----	-------	-----------

**Additional inspection instructions from Branch Chief:**

Branch Chief's Signature:		Date:	11/13/13
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**Region II Fuel Facilities Construction Inspection Areas**

**I. QUALITY ASSURANCE**

**Program Development and Implementation (88106)**

<b>Planned Hours:</b>	96	<b>Completed Hours:</b>			
1.	Organization				
2.	Classification of SSCs				
3.	Training				
4.	Management Assessments				
5.	Follow up on Previously Identified Issues and Events				

**Design and Document Control (88107)**

<b>Planned Hours:</b>		<b>Completed Hours:</b>			
1.	Design Control				
2.	Document Control				
3.	Quality Assurance Records				
4.	Follow up on Previously Identified Issues and Events				

**Control of Materials, Equipment, and Services (88108)**

<b>Planned Hours:</b>		<b>Completed Hours:</b>			
1.	Procurement Control System				
2.	Identification and Control of Materials, Parts & Components				
3.	Control of Special Processes				
4.	Handling, Storage and Shipping				
5.	Nonconforming Materials, Parts and Components				
6.	Programmatic review of Commercial Grade Item Dedication				
7.	Follow up on Previously Identified Issues and Events				

**Inspection, Test Control & Control of Measuring Equipment (88109)**

<b>Planned Hours:</b>		<b>Completed Hours:</b>			
1.	Documentation and Control of Inspection Activities				
2.	Test Control Activities				
3.	Control of Measuring and Test Equipment				
4.	Status of Inspection and Test Activities				
5.	Follow up of Previously Identified Issues and Events				

**Problem Identification, Resolution and Corrective Action (88110)**

<b>Planned Hours:</b>		<b>Completed Hours:</b>			
1.	Procedures				
2.	Identification and Classification of Conditions Adverse to Quality				
3.	Documentation and Reporting of Conditions Adverse to Quality				
4.	Follow up, Closure and Trending				

**10 CFR 21 Inspection - Facility Construction (88111)**

<b>Planned Hours:</b>		<b>Completed Hours:</b>			
1.	Posting Requirements				
2.	Procurement Documents				
3.	Evaluation of Deviations				
4.	Notifications				
5.	Maintenance of Records				
6.	Follow up on Previously Identified Issues				

**Software Validation (88112)**

<b>Planned Hours:</b>		<b>Completed Hours:</b>			
1.	Documentation				
2.	Software Life Cycle				
3.	Training				
4.	Post Installation Configuration Management Procedures and Controls				
5.	Follow-up, Closure and Trending of Hardware and Software Failures				

**Control of the Electronic Management of Data (88113)**

<b>Planned Hours:</b>		<b>Completed Hours:</b>			
1.	Control of Electronic Data				
2.	Record Creation and Maintenance				
3.	Follow up on Previously Identified Issues				

**Supplier/Vendor Inspection (Construction Phase) (88115)**

<b>Planned Hours:</b>		<b>Completed Hours:</b>			
1.	Vendor/Supplier Inspection				
2.	Procurement Documentation Control				
3.	Corrective Actions				
4.	Surveillance of QA Program Implementation				
5.	Follow up on Previously Identified Issues				

**Inspection of Safety Function Interfaces (88116)**

<b>Planned Hours:</b>		<b>Completed Hours:</b>			
1.	Interface Controls				
2.	Management Measures				
3.	Follow up on Previously Identified Issues				

**II. CONSTRUCTION**

**Geotechnical/Foundation Activities (88131)**

<b>Planned Hours:</b>		<b>Completed Hours:</b>			
1.	Quality Assurance Inspection Procedures				
2.	Technical Requirements				
3.	Test Fill Program				
4.	Audit Program				
5.	Control of Geotechnical/Foundation Activities				
6.	Document Control				

**Structural Concrete Activities (88132)**

<b>Planned Hours:</b>		<b>Completed Hours:</b>			
1.	Quality Assurance Inspection Procedures				
2.	Technical Requirements				
3.	Control of Structural Concrete Construction Activities				
4.	Special Consideration				
5.	Audit Program				
6.	Document Control				

**Structural Steel and Supports Activities (88133)**

<b>Planned Hours:</b>		<b>Completed Hours:</b>			
1.	Quality Assurance Inspection Procedures				
2.	Technical Requirements				
3.	Audit Program				
4.	Control of Structural and Steel and Supports Activities				
5.	Document Control				
6.	Handling and Storage of Materials				

**Piping Systems Relled on for Safety (88134)**

<b>Planned Hours:</b>		<b>Completed Hours:</b>			
1.	Quality Assurance Inspection Procedures				
2.	Audit Program				
3.	Training				
4.	Observation of Piping Activities				
5.	Control of Piping Activities				
6.	Piping Installation				
7.	Design Control				
8.	Quality Related Records				
9.	Nonconformance/Deviation Reporting				
10.	Personnel Qualification Requirements				
11.	Audit Reports				

**Pipe Supports and Restraints (88135)**

<b>Planned Hours:</b>		<b>Completed Hours:</b>			
1.	Review of Quality Assurance Implementing Procedures				
2.	Review of Work Procedures				
3.	Observation of Work and Work Activities				
4.	Review of Records				

**Mechanical Components (88136)**

<b>Planned Hours:</b>		<b>Completed Hours:</b>			
1.	Review of Quality Assurance Implementing Procedures & Work Procedures				
2.	Observation of Work and Work Activities				
3.	Design Control and Configuration Management				
4.	Training and Management Controls				
5.	Personnel Qualification Requirements				
6.	Nonconformance/Deviation Reporting				
7.	Audit Program and Reports				

**Electrical Cable (88137)**

<b>Planned Hours:</b>		<b>Completed Hours:</b>			
1.	Review of Implementing Procedures				
2.	Observation of Work and Work Activities				
3.	Record Control and Review				
4.	Nonconformance/Deviation Reporting				
5.	Audit Records				
6.	Addition Inspection				

**Electrical Components and Systems (88138)**

<b>Planned Hours:</b>		<b>Completed Hours:</b>			
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1. Review of QA Implementing Procedures
2. Specific Technical Requirements
3. Follow-up Procedure Review
4. Additional Inspection
5. Inspection of Electrical Systems and Components
6. Inspection Activities
7. Additional Inspection
8. Record Control and Review
9. Work and Inspection Records
10. Personnel Qualifications Requirements
11. Nonconformance/Deviation Reporting
12. Change Controls Records
13. Audit Records

**Ventilation and Confinement Systems (88139)**

<b>Planned Hours:</b>		<b>Completed Hours:</b>			
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1. Review of Construction Implementing Work Procedures
2. Observation of Work and Work Activities
3. Personnel Training and Qualification Requirements
4. Record Control and Review

**Instrumentation and Control Systems (88140)**

<b>Planned Hours:</b>		<b>Completed Hours:</b>			
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1. Procedure Review
2. Work observation
3. Record Control and Review

**Procedures – Fire Prevention and Protection (88141)**

<b>Planned Hours:</b>		<b>Completed Hours:</b>			
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1. Review of Fire Prevention procedures
2. Review of Fire Suppression Procedures
3. Review of Fire Fighting Procedures
4. Personnel Training Requirements
5. Procedure Control and Review
6. Inspection and Testing of Fire Suppression Devices
7. Review of Ignition Sources
8. Audit Records

**Underground Fire Water Loop and Equipment Installation (88142)**

<b>Planned Hours:</b>		<b>Completed Hours:</b>			
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1. Review of Quality Assurance Implementing Procedures
2. Procedure Controls
3. Observation of Work and Work Activities
4. Record Control and Review

**Nuclear Welding General Inspection Procedure (55050)**

<b>Planned Hours:</b>		<b>Completed Hours:</b>			
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1. Base Material and Filler Metal Compatibility of Welding
2. Welding Procedures
3. Welder Performance Qualification
4. Production Welding
5. Pre-heat and Post Weld Heat Treatment
6. Examination of Welds

**Structural Welding General Inspection procedure (55100)**

<b>Planned Hours:</b>		<b>Completed Hours:</b>			
-----------------------	--	-------------------------	--	--	--

1. Base Material and Filler Metal Compatibility for Welding
2. Welding Procedures
3. Welder Performance Qualification
4. Production Welding
5. Pre-heat and Post Weld Heat Treatment
6. Examination and Inspection of Welds

**III. PRE-OPERATION**

To be Developed

**FACILITY:** Mixed Oxide Fuel Fabrication Facility

**DATES:** November 18 – 22, 2013

**LEAD INSPECTOR:** W. Gloersen  
B. Adkins  
D. Tiktinsky  
K. Morrissey

**INSPECTION REPORT NO.:** 70-3098/2013-004

**INSPECTION PROCEDURES:** IP 88106 - Quality Assurance: Program Development and Implementation  
IP 88107 - Quality Assurance: Design Control

Note: At present, there is no specific inspection procedure for inspectors to charge inspection time to conduct a 10 CFR 70.72 facility change and change process inspection. A detailed appendix is attached to this inspection plan (which would be analogous to a 10 CFR 70.72 inspection procedure) and is intended to provide guidance to the inspectors and technical reviewers during the conduct of this inspection activity.

For this inspection, the inspectors should charge their time to IP 88106 and, as appropriate, IP 88107.

1. **Inspection Objectives** – refer to the appendix attached to this inspection plan.
2. **Inspection Scope** – refer to the appendix attached to this inspection plan.
3. **Inspection Activities** – refer to the appendix attached to this inspection plan.
4. **Inspection Références (CAR, QA Plan, LA, Environmental Report, etc.)** – refer to the appendix attached to this inspection plan.

**01. Inspection Objectives**

01.01 To determine that an appropriate configuration management system has been established to evaluate, implement, and track each change to the site, structures, processes, systems, equipment, components, computer programs, and activities of personnel before the change is implemented.

01.02 To determine that the evaluation of the change determines, before the change is implemented, if an amendment to the license is required to be submitted in accordance with §§ 70.34.

01.03 To conduct performance-based reviews focusing on configuration changes involving dominant risk systems and components.

01.04 To determine that the licensee maintains records of changes to its facility carried out under §§ 70.72

01.05 To verify that these records include a written evaluation that provides the bases for the determination that the changes do not require prior Commission approval.

01.06 To verify that these records are maintained until termination of the license.

**02 Inspection Requirements**

The inspectors and technical reviewers should select the applicable requirements below when reviewing their inspection samples from Appendix A. For the purposes of this inspection, it is not mandatory that all inspection requirements in Section 02 be completed.

**02.01 Programmatic and Administrative Controls:**

02.01.1 Verify that MOX Services has established a configuration management system to evaluate, implement, and track each change to the site, structures, processes, systems, equipment, components, computer programs, and activities of personnel. Verify that the configuration management system is documented in written procedures and assures that the following are addressed prior to implementing any change (if applicable):

02.01.1.1 The technical basis for the change;

02.01.1.2 Authorization requirements for the change;

02.01.1.3 The impacts or modifications to the integrated safety analysis, integrated safety analysis summary, or other safety program information, developed in accordance with §§ 70.62.

02.01.2 Verify that the licensee has provisions for documenting completion of required reviews, evaluations, and approvals before implementing the change.

02.01.3 Determine that procedures for the configuration management program have been established to:

02.01.3.1 Identify the authority and responsibilities of the organizations or personnel responsible for:

02.01.3.1.1 Performing the design work

02.01.3.1.2 Conducting independent design verifications

02.01.3.1.3 Approving design input requirements

02.01.3.1.4 Conducting safety evaluations, including nuclear criticality, chemical, fire safety, and radiological and environmental protection

02.01.3.1.5 Final approval of a change.

02.01.3.2 Train applicable personnel in the configuration control program procedures, including the engineering, operations, and maintenance staffs.

02.01.3.3 Define the requirements for auditing design activities, including auditing, reporting and follow-up.

02.01.4 Verify that the administrative controls for design document control have been established for the following:

02.01.4.1 Controlling changes to approved design change documents.

02.01.4.2 Controlling or recalling obsolete design change documents such as revised drawings and modification procedures.

02.01.4.3 Marking the as-built documents for design changes on an interim basis, including document review, approval, and safeguarding the document and related papers until all marked-up changes have been incorporated on the revised documents.

02.01.4.4 The program directs users of this as-built document to use, and refer to, the marked-up copy, for the purpose of testing, maintenance, and future design change activities, until the revised as-built, document incorporating all the marked-up changes, is officially issued.

02.01.4.5 Revision of documents incorporating all marked-up changes, are issued and distributed in a timely manner.

02.01.4.6 Release and distribution of approved design change documents.

02.01.5 Verify that administrative controls and responsibilities have been established commensurate with the time frame for implementation, to ensure that design changes and modifications will be incorporated into:

02.01.5.1 Plant procedures

02.01.5.2 Plant drawings

02.01.5.3 Safety bases documents

02.01.6 Verify that administrative controls have been established to collect and transmit design documentation records to records storage.

02.01.7 Verify that responsibilities and methods have been established for reporting design changes/modifications to the Nuclear Regulatory Commission (NRC) in accordance with 10 CFR 70.72 and chapter 16 of the License Application (LA).

**02-02-Performance-Based Reviews:**

02.02.1 Select a major modification and conduct a field walk-down to verify that:

02.02.1.1 The "as-built" modification matches the design documents.

02.02.1.2 Appropriate plant procedures have been updated (if applicable).

02.02.1.3 Appropriate plant personnel were trained (if applicable).

02.02.1.4 Components important to safety have been identified and, if applicable, incorporated into the preventive maintenance program.

02.02.1.5 The change does not conflict with license application requirements.

02.02.1.6 Any nuclear criticality safety control identified in the change has been implemented, whether active, passive, or administrative.

02.02.2 Select three change packages and verify that any open items have been evaluated and accepted by the appropriate authority, and the open items have been prioritized, scheduled for completion in a timely manner, and are being tracked. If applicable, review the test results and verify that they are consistent with the established acceptance criteria and those criteria appear reasonable.

**02.03 Facility Change Records:**

02.03.1 Select any three change packages and verify that the licensee maintains records of changes to its facility carried out under §§ 70.72 or Chapter 16 of the LA.

02.03.2 Verify that these records include a written evaluation that provides the bases for the determination that the changes do not require prior Commission approval.

02.03.3 Verify that these records are maintained until termination of the license.

**03 Inspection Samples**

Please refer to Appendix A of this Inspection Plan Attachment for a list of inspection samples.

*The inspectors will do smart-sampling of this list for the inspection.*

**04 Inspection Guidance**

*DAE 11/13/13*

**General Guidance**

The inspectors should verify that the design change was appropriately classified and the controls of that classification were applied in accordance with the MOX Project Quality Assurance Plan (MPQAP). Requirements for the facility's safety committees to review proposed design changes and modifications are further defined in the MFFF license application. The inspectors must also verify that the licensee has fulfilled the requirements for evaluation of proposed design changes and modifications in accordance with 10 CFR 70.72 and Chapter 16 of the LA.

For additional guidance, the inspectors should refer to Regulatory Guide 3.74, Guidance for Fuel Cycle Facility Change Processes, January 2012.

As specified in 10 CFR 70.72(c), licensees may make changes without prior NRC approval if the changes are not prohibited by regulation, license condition, or order and if the changes do not do one or more of the following:

- Create new types of accident sequences that, unless mitigated or prevented, would exceed the performance requirements of 10 CFR 70.61 and that have not previously been described in the ISA summary (see 10 CFR 70.72(c)(1)(i)).
- Use new processes, technologies, or control systems for which the licensee has no prior experience (see 10 CFR 70.72(c)(1)(ii)).
- Remove, without at least an equivalent replacement of the safety function, an IROFS that is listed in the ISA summary and is needed for compliance with the performance requirements in 10 CFR 70.61 (see 10 CFR 70.72(c)(2)).
- Alter any IROFS listed in the ISA summary that is the sole item preventing or mitigating an accident sequence that exceeds the performance requirements in 10 CFR 70.61 (see 10 CFR 70.72(c)(3)).
- Is not otherwise prohibited by 70.72, construction authorization condition, or order

For changes that require NRC approval, the licensee must submit a license amendment request under 10 CFR 70.72(d)(1). The licensee must briefly summarize all changes to the safety program made in the previous year for which it did not receive prior NRC approval and submit them in an annual report to the NRC under 10 CFR 70.72(d)(2). Licensees must track all changes that affect the ISA summary and annually submit revised ISA summary pages under 10 CFR 70.72(d)(3).

As required by 10 CFR 70.72(f), licensees must maintain records of the changes to their facilities until license termination. These records must include written evaluations that document the bases for licensee determinations that prior NRC approval was not required to implement changes. In some cases, the analyses will be minimal because the changes involve no known hazards. Often, it's clear that no safety implications or new types of accident sequences are associated with the proposed changes. In such cases, use of an initial screening mechanism to assess the safety impact of a change may be sufficient. Screening is the first stage review of a change to determine whether any further evaluation is necessary. Screening may include the use of a checklist of characteristics to determine the existence of safety implications. Typical checklist questions for screening would include the following:

- Does the change require the addition of accident sequences to the ISA summary?
- Will the change remove an IROFS?

Examples of activities that the licensee/applicant must evaluate under the requirements of 10 CFR 70.72 include the following:

1. Facility, design, and process changes
2. All changes to the facility safety program, including the ISA, process safety information, and management measures, and
3. Proposed activities that involve changes to procedures or new procedures not previously evaluated as part of a facility, design, or process change.

Examples of prior approval under 10 CFR 70.72(c) includes the following:

1. New Types of Accident Sequences (10 CFR 70.72(c)(1)(i))
2. New Processes, Technologies, or Control Systems (10 CFR 70.72(c)(1)(ii))
  - a. The NRC does not require prior approval for changes involving processes, technologies, or control systems for which the licensee has prior experience.
  - b. "Prior experience" refers to experience in normal or pilot plant operations and not just experience gained as part of limited-duration or scale research and development or testing.
3. Equivalent Replacement of the Safety Function (10 CFR 70.72(c)(2))
  - a. Will the replacement IROFS prevent or mitigate all accident sequences that required the original IROFS to meet the 10 CFR 70.61 performance requirements?
  - b. Will the replacement IROFS be equally reliable to, or more reliable than, the original IROFS?
  - c. Will the replacement IROFS maintain the preferred hierarchy of controls (i.e., engineered passive controls, engineered active controls, administrative controls, and operator actions)?
4. Alteration of a Sole IROFS (10 CFR 70.72(c)(3))
  - a. Modification of a sole IROFS for testing, calibration or other management measures does not constitute alteration of the IROFS as long as the licensee performs the operation as specified in approved work instructions and procedures.

#### Specific Guidance

For specific guidance on changes to the License Application, the program is described in Chapter 16 of the LA.

The following is a description of the change program:

The site, structures, processes, systems, equipment, components, computer programs, and activities of personnel are described in the LA. MOX Services may make changes to these items, as described in the LA, without prior NRC approval, if the change:

- Maintains the effectiveness of the design basis as described in the LA (e.g., does not impact compliance with 10CFR70.61 performance requirements);
- Does not result in a departure from a method of evaluation described in the LA used in establishing the design bases;

- Does not adversely affect compliance with applicable regulatory requirements (e.g., 10CFR20); and
- Is not otherwise prohibited by a license condition or order.

If a change to the LA is made, the relevant affected onsite documentation (e.g., IROFS testing procedure) will be updated promptly per written procedures. MOX Services maintains records of changes to its facility. These records include a written evaluation that provides the bases for the determination that the changes to the LA do not require prior approval. These records are maintained until termination of the license.

For additional specific guidance, please refer to Appendix B of this Inspection Plan Attachment for a suggested list of inspection questions for this 10 CFR 70.72 inspection.

#### 04.01 Programmatic and Administrative Controls

04.01.1 An onsite Safety Review Committee is typically charged by the facility's license application requirements to review design changes. The inspector should ensure that:

04.01.1.1 An administrative system exists that ensures formal review of all facility change proposals to assess whether (a) the proposed design changes result in changes to or creates new types of accident sequences that, unless mitigated or prevented, would exceed the performance requirements of §§ 70.61 and that have not previously been described in the integrated safety analysis summary; (b) uses new processes, technologies, or control systems for which the licensee has no prior experience; (c) does not remove, without at least an equivalent replacement of the safety function, an item relied on for safety that is listed in the integrated safety analysis summary; or (d) does not alter any item relied on for safety, listed in the integrated safety analysis summary, that is the sole item preventing or mitigating an accident sequence that exceeds the performance requirements of §§ 70.61.

04.01.1.2 Design Change Requests returned by onsite or offsite safety review committees because of a need for substantial technical revision, the resultant, revised safety evaluations were again reviewed en route to approval by the safety review committee(s) before design change implementation.

04.01.1.3 Measures have been provided for temporary updating of drawings pending formal issuance. A graded approach to this can be taken, depending on the complexity of the change, its safety significance, and the time needed to

complete the revisions. Where temporary mark-ups are used, the inspector should ensure that the drawing is "usable."

04.01.2 The following is a list of some of the items that should exist or be referenced in a completed design package:

- 04.01.2.1 Completed forms that initiated the design change.
- 04.01.2.2 Completed 10 CFR 70.72 or LA safety evaluation
- 04.01.2.3 Reference to documents that require revision as a result of the design change, such as drawings, vendor manuals, license application requirements, procedures, training programs, etc.
- 04.01.2.4 Documentation of the performance of independent verification.
- 04.01.2.5 Documentation of calculations and analyses used.
- 04.01.2.6 Equipment procurement documentation and applicable documents related to environmental and seismic qualifications.
- 04.01.2.7 Identification of work requests and installation procedures used, including completed post-modification tests
- 04.01.2.8 Documentation of component or system turnover at completion or post-modification testing.
- 04.01.2.9 Documentation of any nuclear criticality safety controls of chemical safety controls.

04.01.3 Historically, failure to conduct adequate written safety evaluations has been the subject of violations of NRC regulations. Responsibility should be assigned in writing by the facility to ensure that these evaluations will be performed.

For significant design changes that affect several plant systems, an integrated safety evaluation should be performed in addition to discipline-specific safety evaluations to ensure that a comprehensive review of the change against the design objectives of affected plant systems is conducted.

It has been found that the facility's philosophical approach to safety evaluations has sometimes placed significance on identifying potential failure modes, in lieu of

examining the potential consequences of system or component failures. The inspector should ensure that the facility's programs examine potential consequences of system or component failures, in conducting the safety evaluations for design changes and modifications (i.e., the question, "what would happen if..." is explored and answered during the conduct of safety evaluations).

04.02 Performance Based Reviews

No specific guidance provided.

04.03 Facility Change Records

No specific guidance provided.

**05 Inspection References**

- 05.01 10 CFR Part 70, "Domestic Licensing of Special Nuclear Material," U.S. Nuclear Regulatory Commission, Washington, DC
- 05.02 Mixed Oxide Fuel Fabrication Facility License Application, May 2013 (Chapter 16)
- 05.03 MOX Project Quality Assurance Plan (MPQAP), Revision 11, Change 3
- 05.04 U.S. Nuclear Regulatory Commission, " Final Safety Evaluation Report for the License Application To Possess and Use Radioactive Material at the Mixed Oxide Fuel Fabrication Facility in Aiken, SC," December 2010
- 05.05 U.S. Nuclear Regulatory Commission, Inspection Procedure 88071, Configuration Management Programmatic Review, July 28, 2006
- 05.06 U.S. Nuclear Regulatory Commission, Regulatory Guide 3.74, Guidance for Fuel Cycle Facility Change Processes, January 2012



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION II  
245 PEACHTREE CENTER AVENUE NE, SUITE 1200  
ATLANTA, GEORGIA 30303-1257

December 18, 2013

MEMORANDUM TO: Deborah A. Seymour, Chief  
Construction Projects Branch 1  
Division of Construction Projects

FROM: William B. Gloersen, Senior Construction Project Inspector /RA/  
Construction Projects Branch 1  
Division of Construction Projects

Denise E. Edwards, Construction Project Inspector /RA/  
Construction Projects Branch 1  
Division of Construction Projects

SUBJECT: REVIEW OF MIXED OXIDE FUEL FABRICATION FACILITY (MFFF)  
PERFORMANCE FOR THE 3<sup>rd</sup> QUARTER 2013 (JULY– SEPTEMBER),  
DOCKET NO. 70-3098

Staff from Region II Division of Construction Projects (DCP), the Division of Construction Inspection (DCI), and the Office of Nuclear Materials Safety and Safeguards (NMSS), have performed continuous reviews of MFFF inspection results during the 3<sup>rd</sup> quarter. The continuous reviews covered the time period of July 1 through September 30, 2013. On October 29, 2013, the Senior Resident Inspector (SRI) met with Construction Projects Branch 1 (CPB1) staff and senior management in DCI and DCP to discuss work package deficiencies. Based on information provided by the SRI, the management team recommended that a separate work package implementation inspection be conducted in 2014. The CPB1 Branch Chief contacted the MOX Services Compliance Manager to schedule this inspection. It was noted during the phone call that MOX Services was in the process of revising their work package structure, processes, and implementation. It was determined the work package inspection would be scheduled after MOX Services has revised and implemented the work package program. The master inspection plan (MIP) will be revised when more information is received from MOX Services regarding the implementation of their revised work package program.

In addition to the resident inspector inspection activities, a programmatic corrective action program (CAP) inspection was conducted during the quarter by construction inspection staff. Based on feedback from the CAP inspection team<sup>1</sup>, there were no inspection findings identified that would warrant consideration to change or revise the MIP for the MFFF project.

CONTACT: W. Gloersen, RII/DCP/CPB1  
404-997-4443

D. Edwards RII/DCP/CPB1  
404-997-4432

<sup>1</sup> e-mails documenting CAP inspection team feedback are located in: G:\CCI\DCP\CPB1\MOX FFF\Assessments\2013\3rd Quarter

Based on the above feedback from the inspection staff and SRI, it has been determined that an assessment meeting for the 3<sup>rd</sup> quarter 2013 will not be necessary. CPB1 staff will revise the MIP when more information is received from MOX Services regarding the implementation of their revised work package program.

Docket No. 70-3098

Construction Authorization No.: CAMOX-001

cc:

F. Brown, RII, DRAC  
J. Munday, RII, DCP  
R. Haag, RII, DCP  
D. Seymour, RII, DCP  
W. Gloersen, RII, DCP  
D. Edwards, RII, DCP  
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A. Masters, RII, DCI  
R. Musser, RII, DCI  
P. Silva, NMSS  
D. Tiktinsky, NMSS  
K. Morrissey, NMSS

Based on the above feedback from the inspection staff and SRI, it has been determined that an assessment meeting for the 3<sup>rd</sup> quarter 2013 will not be necessary. CPB1 staff will revise the MIP when more information is received from MOX Services regarding the implementation of their revised work package program.

Docket No. 70-3098  
 Construction Authorization No.: CAMOX-001

cc:

- F. Brown, RII, DRAC
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PUBLICLY AVAILABLE     NON-PUBLICLY AVAILABLE     SENSITIVE     NON-SENSITIVE  
 ADAMS:  Yes    ACCESSION NUMBER: ML13353A618     SUNSI REVIEW COMPLETE     FORM 665 ATTACHED

OFFICE	RII:DCP	RII:DCP	RII:DCP				
SIGNATURE	DEE	WBG	DAS				
NAME	D. Edwards	W. Gloersen	D. Seymour				
DATE	12/18/2013	12/18/2013	12/18/2013				
E-MAIL COPY?	YES NO	YES NO	YES NO	YES NO	YES NO		

REGION II FUEL FACILITY CONSTRUCTION INSPECTION PLAN  
Form Revision Date: September 18, 2013

Licensee	Dates	Docket/Report No.	Lead Inspector	Accompanying Inspectors
SHAW AREVA MOX SERVICES	JULY 14 -18, 2014	07003098/2014003	COLEMAN ABBOTT	DENISE TERRY-WARD ROBERT BARNARD (Training) JASON CHRISTENSEN

TYPE		TIMING		FOLLOW UP		NOTIFICATION		REPORT	
X	Routine		Back Shift		Allegations (Plan attached)	X	Announced	X	Integrated
	Special	X	Normal Shift		Events (Events Evaluation Attached)		Unannounced		Non-Integrated
X	Team		Both Shifts	X	Open Items (List Attached)				

Total Onsite Hours	Back-shift hours	Licensee Contact	Telephone No.	Hotel	Telephone No.
96	0	LAURIE WOOD	803-819-8665	Fairfield Inn & Suites, Aiken, SC	803-648-7808

**NOTE: If the inspection goals cannot be accomplished as planned, discuss the changes with your management and annotate this inspection plan describing the change and reasons.**

Consult with the Senior Project Inspector for information on inspection emphasis for each functional area during the inspection cycle. On the reverse side of this form (REGION II Fuel Facilities Construction Inspection Areas), highlight the areas to be inspected and cross out those areas previously inspected during the current inspection cycle.

Inspector's Initials	CBA
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Review the inspection activities and findings summary (in DIAMOND for MFFF) since the last LPR period or one year whichever is longer associated with the Construction Inspection Areas in which the inspection will be conducted. The purpose of the review is to identify trends, strengths, and weaknesses in licensee performance in the general areas to be inspected and to provide insights to appropriately focus the inspection focus. *In an attachment, list the areas that will be inspected and indicate the basis (CAR, SAR, LA, etc.) against which performance will be judged.*

Inspector's Initials	CBA
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Review the list of all open items, including, as applicable, allegation follow-up items for the facility and annotate the issues that will be reviewed for closure (the list is in DIAMOND for MFFF). Check with the Senior Project Inspector to see if there are items opened by other inspectors that should be ready for closure. If there are such items, bring back information for the inspector who opened the item to review in the office for closure. That inspector will provide a closure write-up to be included in the inspection report.

Inspector's Initials	CBA
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Verify that the inspection is on the master inspection plan (MIP) and the CCI Inspection Schedule. The CCI Inspection Schedule can be accessed via the DCP home web page under the Planning and Scheduling link. Note: This is critical in meeting Region II Operating Plan goals. To add an inspection to the CIP schedule, it must be approved by the Senior Project Inspector.

Inspector's Initials	CBA
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**For fuel facility construction inspections, conduct an inspection pre-brief with the appropriate CPB1 Senior Project Inspector:**

- As applicable, discuss allegation follow-up, the allegation inspection plan, and allegation history.
- Discuss the most recent performance history for the facility to ensure that the appropriate inspection resources are being effectively managed.
- Discuss all open items that will be reviewed during the inspection.
- For the MOX FFF Project, as applicable, specify the specific principal systems, structures, and components (PSSCs) that will be reviewed and ensure that the appropriate planning guidance in the PSSC inspection verification plan (IVP) has been incorporated into this inspection plan. *-- Programmatic CAP - n.a.*
- N.A.*  As applicable, ensure contractor support, including the SOV, has been coordinated with the NMSS Project Manager.
- N.A.*  As applicable, check the events for the site (in conE) and determine which events need follow-up.

Inspector's Initials	CBA
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**Project Inspector Certification that:** 1) inspection focus is consistent with branch targeting information and licensee performance trends from an up-to-Date PIM, 2) planned inspection is based on acceptable performance measures, and 3) direct inspection effort to be expended during this inspection is consistent with the inspection effort goals established in the current branch targeting information, the latest LPR/APR and resources already expended during the fiscal year.

Project Inspector's:	William Gloersen <i>WGG</i>	Date:	7/7/14
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**Additional Inspection Instructions from Branch Chief:**

Branch Chief's Signature:	D. Seymou <i>D. Seymou</i>	Date:	7/9/14
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**I. QUALITY ASSURANCE**

Program Development and Implementation (88106)	
Planned Hours:	Completed Hours:
1. Organization	
2. Classification of SSCs	
3. Training	
4. Management Assessments	
6. Follow up on Previously Identified Issues and Events	

Design and Document Control (88107)	
Planned Hours:	Completed Hours:
1. Design Control	
2. Document Control	
3. Quality Assurance Records	
4. Follow up on Previously Identified Issues and Events	

Control of Materials, Equipment, and Services (88108)	
Planned Hours:	Completed Hours:
1. Procurement Control System	
2. Identification and Control of Materials, Parts & Components	
3. Control of Special Processes	
4. Handling, Storage and Shipping	
5. Nonconforming Materials, Parts and Components	
8. Programmatic review of Commercial Grade Item Dedication	
7. Follow up on Previously Identified Issues and Events	

Inspection, Test Control & Control of Measuring Equipment (88109)	
Planned Hours:	Completed Hours:
1. Documentation and Control of Inspection Activities	
2. Test Control Activities	
3. Control of Measuring and Test Equipment	
4. Status of Inspection and Test Activities	
5. Follow up of Previously Identified Issues and Events	

Problem Identification, Resolution and Corrective Action (88110)	
Planned Hours:	Completed Hours:
1. Procedures	96
2. Identification and Classification of Conditions Adverse to Quality	
3. Documentation and Reporting of Conditions Adverse to Quality	
4. Follow up, Closure and Trending	

10 CFR 21 Inspection - Facility Construction (88111)	
Planned Hours:	Completed Hours:
1. Posting Requirements	
2. Procurement Documents	
3. Evaluation of Deviations	
4. Notifications	
6. Maintenance of Records	
8. Follow up on Previously Identified Issues	

Supplier/Vendor Inspection (Construction Phase) (88115)	
Planned Hours:	Completed Hours:
1. Vendor/Supplier Inspection	
2. Procurement Documentation Control	
3. Corrective Actions	
4. Surveillance of QA Program Implementation	
5. Follow up on Previously Identified Issues	

**II. CONSTRUCTION**

Piping Systems Relied on for Safety (88134)	
Planned Hours:	Completed Hours:
1. Quality Assurance Inspection Procedures	
2. Audit Program	
3. Training	
4. Observation of Piping Activities	
6. Control of Piping Activities	
8. Piping Installation	
7. Design Control	
9. Quality Related Records	
10. Nonconformance/Deviation Reporting	
11. Personnel Qualification Requirements	
11. Audit Reports	

Mechanical Components (88136)	
Planned Hours:	Completed Hours:
1. Review of Quality Assurance Implementing Procedures & Work Procedures	
2. Observation of Work and Work Activities	
3. Design Control and Configuration Management	
4. Training and Management Controls	
5. Personnel Qualification Requirements	
6. Nonconformance/Deviation Reporting	
7. Audit Program and Reports	

Electrical Cable (88137)	
Planned Hours:	Completed Hours:
1. Review of Implementing Procedures	
2. Observation of Work and Work Activities	
3. Record Control and Review	
4. Nonconformance/Deviation Reporting	
5. Audit Records	
6. Addition Inspection	

Electrical Components and Systems (88138)	
Planned Hours:	Completed Hours:
1. Review of QA Implementing Procedures	
2. Specific Technical Requirements	
3. Follow-up Procedure Review	
4. Additional Inspection	
5. Inspection of Electrical Systems and Components	
6. Inspection Activities	
7. Additional Inspection	
8. Record Control and Review	
9. Work and Inspection Records	
10. Personnel Qualifications Requirements	
11. Nonconformance/Deviation Reporting	
12. Change Controls Records	
13. Audit Records	

**FACILITY:** SHAW AREVA MOX SERVICES

**DATES:** JULY 14 – 18, 2014

**LEAD INSPECTOR:** COLEMAN ABBOTT, RESIDENT INSPECTOR RII/DCP/CPB4

**INSPECTION REPORT NO.:** 07003098/2014003

**INSPECTION PROCEDURES:**

IP	Title	Responsible Inspector	Planned Hours
88110	Problem Identification, Resolution and Corrective Action	CA	32
		DTW	32
		RB (Training)	
		JC	32
TOTALS:			96

**Inspectors:** Coleman Abbott, Resident Inspector (team leader)  
Denise Terry-Ward, Construction Inspector  
Robert Barnard, Student Engineer  
Jason Christensen, Construction Inspector

**Licensee Contact:** Laurie A Wood, Compliance Manager, 803-819-8665  
[LAWood@moxproject.com](mailto:LAWood@moxproject.com)

**Entrance Meeting:** July 14, 2014 at 2:00 PM

**Team Meeting:** July 15 & 16, 2014 at 3:30 PM

**Daily Debrief:** July 15 & 16, 2014 at 4:00 PM

**Pre-Exit Meeting:** July 17, 2014 at 4:00 PM

**Exit Meeting:** July 18, 2014 at 10:00 AM (*subject to change*)

**1. Inspection Objectives**

- a. To determine that the corrective action program is in accordance with requirements of the NRC-approved QA program and is adequately defined by effective procedures that lead to the identification and correction of conditions adverse to quality and prevention of recurrence of significant conditions adverse to quality.
- b. To verify that the licensee reports to management the results of reviews conducted on audit reports, internal surveillance reports, corrective action reports, and management assessments and initiates corrective actions as necessary.
- c. To determine that significant conditions adverse to quality are evaluated for reportability and, if warranted, reported in accordance with 10 CFR Part 21, "Reporting of Defects and Noncompliance," in a timely manner.

## **2. Inspection Scope:**

- a. The scope of this inspection will primarily involve a detailed review of the applicant's corrective actions in accordance with the Quality Assurance (QA) program and problem identification and resolution (PI&R) inspection. The inspectors will determine whether MOX Services has an adequate threshold for identifying issues and entering them in their corrective action program. The inspectors will review corrective actions taken for issues, and verify that they are adequate.
- b. IP 88110 requires three of the four areas as requirements to be completed in order to satisfy this inspection. Most of the QA elements for MOX, including their program procedures, have already been reviewed by NRC inspectors. This inspection should focus on changes to those documents, corrective actions and or open items regarding previous issues, and the application of the QA program to "new" or "recent" construction activities. Therefore, this inspection will not focus on 02.01 Procedures except for recent changes to the procedures, but will include reviews in the other three areas, which are: 02.02 Identification and Classification of Conditions Adverse to Quality; 02.03 Documentation and Reporting of Conditions Adverse to Quality; and 02.04 Follow-up, Closure and Trending.
  - i. Determine if procedures pertaining to the corrective action program are approved and adequately implemented.
  - ii. Determine if procedures contain provisions for identifying, reporting and documenting conditions adverse to quality.
  - iii. Determine if procedures exist that describe the follow-up, closure and trending processes and ensure implementation in a timely manner.
  - iv. Determine if measures are established to assure that conditions adverse to quality are promptly identified.
  - v. Determine if a process and instructions exist for documenting and reporting conditions adverse to quality to appropriate levels of management.
  - vi. Verify that the licensee reports to management the results of reviews conducted on audit reports, internal surveillance reports, corrective action reports, or management assessments and initiates corrective actions as necessary.
  - vii. Determine if proper implementation and closure of corrective action are completed in a timely manner.
  - viii. Determine if criteria are established for quality trending.
  - ix. Determine if trending information is distributed to affected organization management and used to identify significant conditions adverse to quality.

### 3. Inspection Activities:

<b>Team Members and Primary Focus Areas</b>	
<p>Coleman Abbott (Lead)</p>	<ul style="list-style-type: none"> <li>• CAP trending / self-assessments and audits Self-assessments CY12-M-CON-054 Project Trend Analysis (PP3-2)</li> <li>• Root Cause Reports RCA-13-001</li> <li>• Review (CRs/NCRs) for a sample of risk significant issues ASSIGNED to team (PP3-5 &amp; PP3-6)</li> <li>• Review corrective actions for a sample of issues assigned from the Corrective Action Audit (SA-13-A05), <i>if applicable</i></li> </ul>
<p>Denise Terry-Ward</p>	<ul style="list-style-type: none"> <li>• CAP trending / self-assessments and audits Self-assessments CY-13-M-CON-024 &amp; CY13-M-CSM-029</li> <li>• Root Cause Report RCA-12-001</li> <li>• Part 21 Evaluations/Screenings (Electrical) (PP3-2) Part 21 EVAL 2013 15; 17; 19</li> <li>• Review (CRs/NCRs) for a sample of risk significant issues associated with Electrical IROFS (ASSIGNED) (PP3-5 &amp; PP3-6)</li> <li>• Review corrective actions for a sample of issues assigned from the Engineering Audit (SA-13-A04), <i>if applicable</i></li> </ul>
<p>Jason Christensen</p>	<ul style="list-style-type: none"> <li>• CAP trending / self-assessments and audits Self-assessments CY12-A-ESH-052 &amp; CY13-A-PUD-008</li> <li>• Root Cause Report RCA-12-002</li> <li>• Part 21 Evaluations/Screenings (Mechanical) (PP3-2) Part 21 EVAL 2013 07; 08; 31</li> <li>• Review (CRs/NCRs) for a sample of risk significant issues associated with Mechanical IROFS (ASSIGNED) (PP3-5 &amp; PP3-6)</li> <li>• Review corrective actions for a sample of issues assigned from the Construction Audit (SA-13-A01), <i>if applicable</i></li> </ul>
<p>In addition to the primary focus areas, each team member will be assigned one or more of each of the following (specific assignments will be made during the prep week):</p> <ul style="list-style-type: none"> <li>• Apparent cause evaluations (at least 2)</li> <li>• Follow-up actions to NRC findings 70-3098/2012-01-03 (Two Examples of Failure to Identify and Correct Significant Conditions Adverse to Quality)</li> <li>• SCWE interviews (tentative)</li> </ul>	

A. Preparation (July 2<sup>nd</sup> – July 9<sup>th</sup>)

- a. All inspectors review associated IMC and IPs
  - IMC 2630: Mixed Oxide Fuel Fabrication Facility Construction Inspection Program
  - IP 88110: Problem Identification, Resolution and Corrective Action
  - IP 88111: 10 CFR, Part 21, Inspection-Facility Construction
- b. All inspectors review associated Inspection Reports & Sections
  - MIXED OXIDE FUEL FABRICATION FACILITY- NRC INSPECTION REPORT (Pages 51-54)
  - MIXED OXIDE FUEL FABRICATION FACILITY- NRC INSPECTION REPORT NO. 70-3098/2013-001 (Sections 3.a(1), 3.b(1), 3.c(4), 3.c(5))
  - MIXED OXIDE FUEL FABRICATION FACILITY- NRC INSPECTION REPORT NO. 70-3098/2013-03 (Section 3.c)
- c. All inspectors review MOX Project Quality Assurance Program and assigned procedures
  - MOX e-Room (b)(4)  
Username & password specific.
- d. All inspectors review assigned CAP documents / trend reports / RCA & ACA
  - MOX e-Room (b)(4)  
Username & password specific
- e. Obtain listing of Condition Reports for the past 12 months and assign (Coleman)
- f. Obtain copies of all site applicable procedures and assign (Coleman)
- g. Verify inspectors are up-to-date on site access training and on "good guy" list (Coleman)
- h. Contact MOX contacts to coordinate inspection, entrance meeting, schedule, and any other pertinent information.
  - Person and number to contact: **Laurie Wood (803-819-8665)**
  - Contact numbers to reach inspection team: **Coleman Abbott (b)(6)**

B. Inspection Tasks

- a. Obtain SRS security badges for those needing them (July 14 @ 9AM)
  - Robert Barnard ("orientation training" – Security Department)
- b. NRC Door Passcode (b)(6)
- c. Conduct entrance meeting – Monday, July 14, 2014 @ 2 PM – C. Abbott
- d. Inspection/work assignments
  - All team members should review and follow Inspection Plan
- e. Conduct daily team meetings and MOX de-briefings - ~~ALL~~ **3:30 PM?**
  - NRC Team Meetings scheduled daily @ 3PM (Tuesday & Wednesday)
  - MOX De-briefings scheduled daily @ 4PM (Tuesday & Wednesday)
- f. Conduct mid-week NRC management meeting @ 10AM Thursday
- g. Conduct MOX pre-exit meeting
  - Scheduled for: Thursday, July 18, 2013 @ 4PM – C. Abbott
- h. Conduct MOX exit meeting
  - Scheduled for: Friday, July 18, 2014 @ 10AM – C. Abbott (DATE tentative)
- i. Assemble inspection inputs and report preparation
  - G:\CC\DESK TOP GUIDES\DCI\APPROVED\WORD FILES

**4. Inspection References (SER, SAR, QA Plan, License Application):**

- 10 CFR Part 21, Reporting of Defects and Noncompliance
- Appendix B to Part 50—Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants
- 10 CFR Part 70, Domestic Licensing of Special Nuclear Material
- NUREG-1821, Final Safety Evaluation Report on the Construction Authorization Request for the Mixed Oxide Fuel Fabrication Facility at the Savannah River Site, South Carolina, March 2005
- Public Website Information for AREVA NC Gas Centrifuge Facility
- The Standard Review Plan for the Review of a License Application for a Fuel Cycle Facility - Final Report (NUREG-1520)

American Society of Mechanical Engineers (ASME) Quality Assurance (QA) standard NQA-1-1994, Quality Assurance Program Requirements for Nuclear Facilities, including supplements as revised by the ASME NQA-1a-1995 Addenda

MFFF License Application (Latest Revision)  
MPQAP, Revision 11, Change 3

**Time Code Information:**

For qualified inspectors charge prep, documentation time, and inspection time as used for each IP inspected.

<b>MOX – Corrective Action Inspection July 2014</b>			
	<b>Inspection Report #</b>	<b>Task</b>	<b>Procedure</b>
<b>Prep</b>	07003098/2014003	APP	----
<b>Inspection Travel</b>	07003098/2014003	AT	----
<b>Inspection Time</b>	07003098/2014003	CO	IP 88110
<b>Documentation</b>	07003098/2014003	APP	----

\*For basic qualified inspectors charge 50% of time for inspection time. The remainder of time should be charged to ZT0007.



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION II  
245 PEACHTREE CENTER AVENUE NE, SUITE 1200  
ATLANTA, GEORGIA 30303-1257

August 14, 2014

MEMORANDUM TO: Deborah A. Seymour, Branch Chief  
Construction Projects Branch 1  
Division of Construction Projects

FROM: William B. Gloersen, Senior Project Construction Inspector **/RA/**  
Construction Projects Branch 1  
Division of Construction Projects

SUBJECT: PERIODIC REVIEW OF INSPECTION ACTIVITIES AND APPLICANT  
PERFORMANCE DURING APRIL 1 – JUNE 30, 2014 – INSPECTION  
REPORT NUMBER 70-3098/2014-02

Inspection Manual Chapter (IMC) 2630, issued on May 9, 2014, Section 11.02.a, states that the Division of Construction Projects (DCP) staff, resident inspector(s), regional inspectors and the Branch Chiefs who participated in inspection activities during the inspection quarter and the Chief, Construction Projects Branch 1 (CPB1) may *optionally* conduct a periodic review using the inspection findings and inspection report conclusions compiled over the subject quarter.

Inspection Report Number 70-3098/2014-02, covering the period from April 1 through June 30, 2014, documented the following inspection activities:

1. Resident inspector inspection activities (M. Shannon) – no findings of significance identified.
2. Special Processes (welding) inspection activities (D. Harmon) – no findings of significance identified.
3. Facility change programmatic inspection activities (W. Gloersen, D. Tiktinsky, K. Morrissey) - Unresolved Item (URI) 70-3098/2014-02-01, Review of Equivalency Evaluations for Changes to NFPA 70-1999 Commitments, was identified.

Based on the level of inspection effort during the quarter and the conclusion that no findings of significance were identified, the staff recommends that a periodic review not be conducted covering the period from April 1 through June 30, 2014. This recommendation is consistent with the performance review guidance contained in Section 11.02 in IMC 2630.

The staff will continuously monitor applicant performance during the July 1 through September 30, 2014 inspection report period and determine if additional inspections beyond the planned inspections are warranted. Requests for additional inspections or technical reviews will be evaluated as part of the continuous assessment process. If it is determined that additional inspections are needed, with management concurrence, the master inspection plan (MIP) will be revised to reflect the changes.

CONTACT: William Gloersen, RII/DCP/CPB1  
404-997-4443

August 14, 2014

MEMORANDUM TO: Deborah A. Seymour, Branch Chief  
Construction Projects Branch 1  
Division of Construction Projects

FROM: William B. Gloersen, Senior Project Construction Inspector /RA/  
Construction Projects Branch 1  
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CONTACT: William Gloersen, RII/DCP/CPB1  
404-997-4443

PUBLICLY AVAILABLE       NON-PUBLICLY AVAILABLE       SENSITIVE       NON-SENSITIVE  
ADAMS:  Yes      ACCESSION NUMBER: ML14226A549       SUNSI REVIEW COMPLETE       FORM 665 ATTACHED

OFFICE	RII: DCP						
SIGNATURE	WBH						
NAME	W. Gloersen						
DATE	08/14/2014						
E-MAIL COPY?	YES	YES	YES				

OFFICIAL RECORD COPY DOCUMENT NAME: G:\CC\DCP\CPB1\MOX FFF\Assessments\2014\MEMORANDUM to DAS regrading periodic review for 2nd quarter 2014 rev 1.docx

DOCKETED

October 20, 2011 (5:00 p.m.)

ML11299A085

OFFICE OF SECRETARY  
RULEMAKINGS AND  
ADJUDICATIONS STAFF  
Docket No. 70-3098-MLA

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION  
BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of

Docket No. 70-3098-MLA

SHAW AREVA MOX SERVICES

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

(Mixed Oxide Fuel Fabrication Facility)

October 19, 2010

INTERVENORS' INITIAL STATEMENT OF POSITION  
ON CONTENTIONS 9, 10, AND 11

Unclassified Controlled Nuclear Information  
Not for Public Dissemination

Unauthorized dissemination subject to civil and criminal  
sanctions under section 148 of the Atomic Energy Act of  
1954, as amended (42 U.S.C. 2168)

Reviewing Official: \_\_\_\_\_  
*Name/Organization*

Date: \_\_\_\_\_

Guidance Used: \_\_\_\_\_

OFFICIAL USE ONLY

May be exempt from public release under the Freedom of  
Information Act (5 U.S.C. 552), exemption number and  
category: 4 (commercial/proprietary) & 7 (law  
enforcement/security)

Department of Energy review required before public release

Name/Org: \_\_\_\_\_ /MOX Services Date: \_\_\_\_\_

Template Secy-037

DS-02

## INTRODUCTION

Pursuant to 10 C.F.R. § 2.1207(a)(1), the Atomic Safety and Licensing Board's ("ASLB's") July 26, 2011, Memorandum and Order, and the ASLB's September 9, 2011, Order, Intervenor -- Blue Ridge Environmental Defense League, Nuclear Watch South, and Nuclear Information and Resource Service -- hereby submit their Initial Statement of Position on Contentions 9, 10, and 11. This Initial Statement of Position is supported by the attached Direct Testimony of Dr. Edwin S. Lyman in Support of Contentions 9, 10, and 11 (October 19, 2011) (Exhibit INT000001).<sup>1</sup>

## FACTUAL BACKGROUND

The procedural history of this proceeding, original Fundamental Nuclear Material Control Plan ("FNMCP"), its 2009 application for an exemption from NRC item monitoring regulations, its withdrawal of the exemption application, and its 2010 submission of a revised FNMCP, was described in detail by the ASLB in its Memorandum and Order admitting Contentions 9, 10, and 11. *See* LBP-11-09, slip op. at 3-10 (April 1, 2011). Therefore it will not be repeated in its entirety here.

As admitted by the ASLB, Contention 9 asserts that:

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 items

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<sup>1</sup> This Initial Statement of Position does not address Contention 4. While the Intervenor do not concede that MOX Services has demonstrated satisfaction of the issues raised in Contention 4, they have chosen not to take a position on it in the evidentiary proceeding.

~~MAY CONTAIN UNCLASSIFIED OR PROPRIETARY INFORMATION~~  
~~Withhold in accordance with 10 C.F.R. 10 C.F.R. § 2.390~~  
**MAY CONTAIN UCNH**

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")).

Contention 10 asserts that:

The Revised FNCMP is inadequate to satisfy the alarm resolution requirements in 10 C.F.R. § 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.

Contention 11 asserts that:

At page 161 [of the Revised FNMCP], MOX Services claims that in the event of alleged theft of plutonium from the MFFF, 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. [footnote omitted]. 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 C.F.R. § 74.57(e)].<sup>2</sup>

## REGULATORY REQUIREMENTS

NRC regulation 10 C.F.R. § 70.22(b) requires that in order to obtain a license to process strategic special nuclear material ("SSNM"), an applicant must demonstrate compliance with MC&A requirements in 10 C.F.R. § 74.51. Section 74.51 requires in turn, that the applicant must meet "general performance objectives" as follows:

Each licensee who is authorized to possess five or more formula kilograms of strategic special nuclear material (SNM) and to use such material at any site . . . shall establish, implement, and maintain a Commission-approved material control and accounting (MC&A) system that will achieve the following objectives:

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<sup>2</sup> The original contention's citation to 10 C.F.R. § 75.57(e)(a nonexistent regulation) was a clerical error.

~~**MAY CONTAIN UNCLASSIFIED OR PROPRIETARY INFORMATION**~~  
~~-- Withhold in accordance with 10 C.F.R. 10 C.F.R. § 2.390~~  
**MAY CONTAIN UCNI**

- (1) Prompt investigation of anomalies potentially indicative of SSNM losses;
- (2) Timely detection of the possible abrupt loss of five or more formula kilograms of SSNM from an individual unit process;
- (3) Rapid determination of whether an actual loss of five or more formula kilograms occurred;
- (4) Ongoing confirmation of the presence of SSNM in assigned locations; and
- (5) Timely generation of information to aid in the recovery of SSNM in the event of an actual loss.

Section 74.51(b) provides that in order to achieve these general performance objectives, an applicant's MC&A system must "provide the capabilities described in §§ 74.53, 74.55, 74.57 and 74.59 . . ."

The specific regulations at issue in Contentions 9, 10, and 11 are 10 C.F.R. 74.55(b)(1), 74.57(b), and 74.57(e). Section 74.55(b)(1) provides that:

The licensee shall verify on a statistical sampling basis, the presence and integrity of SSNM items. The statistical sampling plan must have at least 99 percent power of detecting item losses that total five formula kilograms or more, plant-wide within:

- (1) Thirty calendar days for Category 1A items and 60 calendar 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).

Section 74.57(b) requires that: "Licensees shall resolve the nature and cause of any MC&A alarm within approved time periods."

Section 74.57(e) requires that a licensee "shall provide an ability to rapidly assess the validity of alleged thefts."

#### **STATEMENT OF INTERVENORS' POSITION**

As discussed in Dr. Lyman's testimony, the Revised FNMCP for Shaw Areva MOX Services' proposed ("MOX Services") Mixed Oxide Fuel Fabrication Facility ("MOX FFF") fails to satisfy the NRC's material control and accounting ("MC&A") regulations in 10 C.F.R. Part 74. Initially, as demonstrated by MOX Services' exemption application of December 17,

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2009, MOX Services' noncompliance with the Part 74 regulations was due to the size and inaccessibility of the MFF's four storage areas, *i.e.*, an inadequate design by MOX Services' predecessor, Duke Cogema Stone and Webster ("DCS"). Recent MOX Services internal documents show, however, that MOX Services is now crediting a design feature -- installation of a bar code reader and cameras on the crane inside the MFFF PuO<sub>2</sub> storage vault -- that allows it to comply with the regulations in all of the respects challenged by Contention 9. Yet, inexplicably, MOX Services continues to pursue an alternative approach for compliance with NRC's item monitoring regulations.

MOX Services' proposed alternative measures are completely inadequate, however, to demonstrate that it complies with NRC's MC&A requirements for item monitoring (10 CFR §74.55(b)), alarm resolution (10 CFR §74.57(b)), or rapid assessment of alleged thefts (10 CFR §74.57(e)). The grounds for Intervenors' position are discussed in detail in Dr. Lyman's Direct Testimony. In the absence of a commitment to comply with the requirements of the regulations, MOX Services' application for an operating license should be denied.

MOX Services' failure to propose to comply with these MC&A requirements in spite of its ability to do so is a matter of very serious concern, because the regulations constitute critical elements of the NRC's regulations for Category I fuel cycle facilities to help ensure that potential diversions of strategic special nuclear material are detected and assessed in a timely manner to enable a response before such material could be put to malevolent use. This is particularly important in the context of the bilateral MOX program with Russia, the intent of which is to increase world security by reducing the threat posed by stockpiles of separated plutonium. Yet due in part to major design flaws that render strict compliance with these NRC regulations

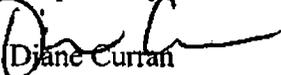
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impossible, MOX Services is proposing novel, poorly documented, untested and vague alternative approaches to compliance that fall far short of providing the necessary level of assurance that plutonium will be adequately protected. The ASLB should not condone what appears to be MOX Services' effort to dilute the requirements of the regulations without obtaining a waiver or exemption.

#### CONCLUSION

As discussed above and in Dr. Lyman's testimony, MOX Services has failed to demonstrate that it satisfies the NRC's regulatory requirements for material control and accounting. Therefore the ASLB should deny its operating license application.

Respectfully submitted,



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