

January 23, 2012

Mr. Zachary Rad
Licensing Manager
Louisiana Energy Services, LLC
P.O. Box 1789
Eunice, NM 88231

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION, URENCO USA LICENSE
EXCEPTION REQUEST TO CONDITIONS 10.F OF MATERIALS LICENSE
SNM-2010 (LES-11-00100) (TAC NO. L33168)

Dear Mr. Rad:

We reviewed your licensing exception request transmitted by letter dated August 3, 2011, and the supplemental information supplied in letters dated October 14, 2011, and November 22, 2011. We find that additional information is needed before final action can be taken on your submittal. We are enclosing a Request for Additional Information and ask that you provide a response within 30 days of the date of this letter.

If you have any questions, please contact Mr. Michael Raddatz at 301-492-3108 or via e-mail at Michael.Raddatz@nrc.gov.

Sincerely,
/RA/

Brian W. Smith, Branch Chief
Uranium Enrichment Branch
Division of Fuel Cycle Safety
and Safeguards
Office of Nuclear Material Safety
and Safeguards

Enclosure:
As stated

Docket No. 70-3103
License No. SNM-2010

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Docket No. 70-3103
License No. SNM-2010

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OFFICE	UEB	MODB	FMB	UEB
NAME	MRaddatz	JBowen	LAllen	BSmith
DATE	01/04/12	01/23/12	01/04/12	01/23/12

OFFICIAL RECORD COPY

RAIs on CRDB Exception Request

1. Tables 3 and 6, Section 3.2 of CALC-C-00183, present lists of critical attributes for ACI design variables and refer to NCR 2009-0889, Evaluation of the Superstructure Footers to Meet QL-1G Requirements. Please provide this NCR and/or other information that will provide technical basis for these lists of critical attributes.
2. Section 4.2 of CALC-C-00183 states that Work Plan Number 1100-CIVIL-822-007 was used to direct the removal of the test coupons. It states that the work plan documents the process used for test coupon removal and ensures that the anchor bolt material will remain installed and was unaffected by the test coupon removal process. Please provide this work plan for Cylinder Receipt and Dispatch Building (CRDB) anchor bolt test coupon removal.
3. Section 4.2 of CALC-C-00183 states that the deviation in supplier documentation and associated installation traceability is technically acceptable, because all of the 49 test coupons for each size grouping of the anchor bolts were found to have hardness and/or tensile strength values which are above the minimum required values. It also states that all of the tested nuts passed proof-loading tests per the American Society of Testing and Materials (ASTM) F606-10a and that thread design requirements for both anchor bolts and nuts were verified to be acceptable, including diameter of the bolts, to ensure the installed components meet or exceed design requirements.

Please provide the above information in a tabular form that will summarize the design/minimum requirements versus the tested/counted values, such as hardness, tensile strength, number of threads in nuts and bolts, proof test results, etc., to make the information transparent. Also provide in the table the length information of the test coupons.

4. Attachment 1 of CALC-C-00183 refers to drawings LES-1100-C-STL-701-01, LES-1100-C-STL-702-01, and LES-1100-C-STL-703-01. Please provide these three drawings.
5. Please provide the methodology used to select the lot size and then from lot size to sample size in Table 1, "Test and Inspection Sampling Plans", Attachment 1 of CALC-C-00183. Also define the term Tightened Plan.
6. Please provide Concrete Placement Reports, WGI Form No. PSP 11.03-1, and LES Form No. EG-3-6000-03-F-1 that have been referenced in Attachment 1A of CALC-C-00183.
7. Attachment 1A of CALC-C-00183 documents the reviews of work plans to verify that anchor bolts were installed in accordance with the acceptance criteria in the work plans. The reviews were conducted by D. H. but his qualification information has not been provided. Please provide the qualification details of (D.H.)¹.
8. Please provide the following references from Section 6.0 of CALC-C-00183.

¹ Initials used to preserve Personally Identifiable Information

- a. Reference 4: UUSA Congress Recording (CR) Procedure, EG-3-2100-09, "Identification, Disposition, and Resolution of Nonconforming Items."
 - b. Reference 46: UUSA (CR) 2011-1630, "NRC Identified Concern with the Technical Adequacy of Material Traceability documented in NCR 2009-0889, Evaluation of the CRDB Superstructure Footers to Meet QL-1G Requirements."
 - c. Reference 47: UUSA (CR) 2011-1632, "NRC Identified Concern with the Technical Adequacy of Quality Control Inspections Documented in NCR 2009-0889, Evaluation of the CRDB Superstructure Footers to Meet QL-1G Requirements."
 - d. Reference 48: UUSA (CR) 2011-1635, "NRC Identified Concern with the Technical Adequacy of Failure Modes Documented in NCR 2009-0889, Evaluation of the CRDB Superstructure Footers to Meet QL-1G Requirements."
9. Please clarify the following statement from the unnumbered section titled "Summary of Historical Record Reviews" of Attachment 5 of CALC-C-00183: "Most of the slab work was completed as a QL-1G activity after submittal of LAR 09-07, even though the Design Analysis of Record does not take credit for the slab on grade. Therefore, the Slab on Grade Drawings, NCS-1100-C-CON-003-00, NCS-1100-C-CON-003-01, and NCS-1100-C-CON-003-02 were ultimately revised to reflect QL-3 status (Reference NCR 2009-1689)." Also please provide these three drawings and NCR 2009-1689.
10. Please provide CR-2008-2135 that is referenced in Attachment 5 of CALC-C-00183. Also, provide the Work Plan associated with the first concrete placement for the CRDB Deep Piers at Station 24.8 that was started on June 24, 2008.
11. Please provide the following specifications cited in Attachment 3A of CALC-C-00183 that were used by LES to provide guidance for the mixing, delivery and placement of concrete and reinforcing bars for the CRDB Foundation/Footing System during installation.
- a. NCS-03312, "Placing Concrete and Reinforcing Bars", Rev. 4
 - b. NCS-03311, "Concrete Mix Design", Rev. 2
 - c. 114489-S-S-03310, "Mixing and Delivery of Concrete", Rev. 3
 - d. 114489-S-S-03312, "Placing Concrete and Reinforcing Bars", Rev. 4
 - e. 114489-S-S-03311, "Concrete Mix Design", Rev 4
12. Please provide the following Engineering Change Requests (ECRs) and Commercial Grade Dedication (CGD) Plan cited in Attachment 3A of CALC-C-00183.
- a. ECRs 1243, 1243A, 1243B, 2152, 2265, 2398, 1988, and 2504.
 - b. CGD Plan D-2009-003, Ready Mix Concrete

13. Please clarify the following statement from Attachment 3A of CALC-C-00183: "The differences between QL-1 and QL-3 Mixing and Delivery of Concrete per specification 114489-S-S-03310 are primarily intended as intermediary steps during concrete mixing and delivery to provide assurance that the final cured concrete will perform as intended." Similar statements have also been made in Appendix 3A regarding Placement of Concrete and Reinforcing Bars and Concrete Mix Design. Please also clarify these statements.
14. Please clarify the following statement from Attachment 1 of CALC-C-00183: "While chemistry, hardness and tensile/yield strength are not perfectly correlated, this will provide reasonable assurance that the materials used meet the design requirements for these 1-1/4" and 1" anchor bolts, if tensile and yield strength cannot be verified." Please provide the basis to support the conclusion of reasonable assurance despite the lack of direct correlation between the results of chemical analysis and mechanical properties.
15. Please clarify the following statement from Attachment 2 of CALC-C-00183: "A review of all CRDB Foundation Concrete Placement Records, Work Plans and associated inspection reports will be completed to develop a summary document which compares all vendor-supplied re-bar test data, material reports, test coupons and similar documentation to the specification requirements for the re-bar material qualities." A similar statement has also been made in Attachment 3 of CALC-C-00183. Please state if you have developed a concise summary report. If so, please provide that report.
16. Please provide ECRs 4679, 4679A, 5197, 5197A, 5197B, 5197C, and 5197D that have been referenced in LES-S-S-00002, Rev. 3 of LES-11-00164-NRC.
17. Calculation AN-ARC-711, Rev. 3, of LES-11-00164-NRC refers to Simpson Gumpertz & Heger's (SGH) calculation 098046-CD-01. R1, LES Procedure EG-3-4200-03, and Structural Design Criteria 114489-SDC-001-2. Please provide these three documents.
18. Please clarify the following statement from ARC-711-MP-0 of Calculation AN-ARCH-711, Rev. 3 of LES-11-00164-NRC: "The details shown in Attachment's 1 and 2 provide a preliminary design for the installation of micro piles that will stabilize the footings and allow them to resist the extreme design loading. The design provided in this calculation is preliminary, but is comprehensive enough for budget estimate and contractor bidding purposes." Please state if you had made a final design. If so, please provide the final design information.
19. Please provide NCR 2010-0757 which was referenced in Calculation AN-ARC-816. R2 of LES-11-00164-NRC.
20. Attachment 8A of LES-11-00164-NRC refers to 114489-S-Q-01401 and 114489-S-Q-01403. Please provide these two specification documents.
21. Please confirm that the procurement hold points referenced in the LES exception request related to Section 21.4, "Procurement Document Control," are limited to hold points that would have been required during the manufacturing process for CRDB foundation steel, anchor bolts, and concrete and do not include hold points that would apply to processes such as concrete pouring, inspections of rebar placement, etc.

22. As described in LES-11-00164-NRC, the exception request for Section 21.4 of the Quality Assurance Program Description stated that procurement documents were not generated or maintained in accordance with QL-1G requirements. Beyond the failure to evaluate the need for procurement hold points, please describe any other differences in the actual generation and maintenance of the procurement documents versus the QL-1G requirements. Note that retention and storage of records is covered under Section 21.18 and does not need to be addressed in the response to this question.
23. Attachments 8 and 8A of LES-11-00164-NRC provide the basis for not needing procurement hold points for anchor bolts and reinforcing steel. Please describe the procurement of concrete for the CRDB footers and provide the basis for why procurement hold points were not needed for concrete.
24. Please clarify if specification LES-S-S-03313 applies only to rebar fabrication or if it is also applicable to anchor bolt fabrication.
25. Please identify if any contractual agreements existed for the procurement of CRDB elements (rebar, anchor bolts, concrete) to allow LES access to supplier manufacturing facilities. Please provide references/excerpts of documents showing clauses to provide right of access. Attachment 8 of LES-11-00164-NRC cites right of access statements in Specification 114489-S-Q-04103-4 for Contract Number LES-SC-1051; however, it is not clear to whom the contract applies or to what activities the specification applies.
26. Please identify the CRDB footer placement activities/inspections that are considered critical attributes to CALC-C-00183 and provide a description of the basis for the decision, or reference to the basis if provided in CALC-C-00183. Please describe how "critical attributes," as used in the discussion of the exception request, is similar to or different from "critical characteristics."

Note: CALC-C-00183 identifies the following as a critical characteristic to the concrete placement:

Critical Characteristic Item 2: Concrete placed in accordance with specific design specifications and requirements. Specific Items are as listed on Concrete Placement Reports, WGI Form No. PSP 11.03-1.

Acceptance Criteria (Critical Characteristic Item 2) shall be met when initials and/or signatures with dates exist on the Concrete Placement Reports, WGI Form No. PSP 11.03-1, for the specific items listed below.

"Construction Joints"

"Weather Conditions"

"Testing"

"Compressive Test Cylinders"

"Allowable Drop Distance"

"Concrete Lift Thickness"

"Lateral Movement"

"Vibrator Speed"

"Consolidation"

"Water Addition"

"90 Minutes/ 300 Revolutions"

"Waterproofing"
"Placed to Proper Line and Grade"
"Proper Curing Applied"

However, Attachment 2 of LES-11-00164-NRC describes some of these attributes, such as construction joints, as items that were not considered critical attributes to ultimate footing performance.

27. Please clarify the following statement from Attachment 2 of LES-11-00164-NRC: "Concrete placement reports for the CRDB footings and SBM-1001 footings from the same timeframe were recorded on identical forms." Please verify that the forms used for signoffs performed for the CRDB footings were consistent throughout construction, or describe any changes that occurred to the reports during CRDB footer construction. Also, please clarify if the forms were identical to SBM-1001 concrete placement report forms.
28. Attachment 2 of LES-11-00164-NRC states that "...URENCO USA will rely primarily on the independent nature of the LES qualified field and construction engineering personnel for the quality inspection verification signoffs in the work packages for verification that the installation of components meets design requirements." Please confirm that the *quality inspection verification signoffs in the work packages* described in this statement are the signatures summarized in Attachment 2A of LES-11-00164-NRC (Inspection Personnel Matrix).
29. Please describe the qualifications of personnel signing as "Field Engineering" and "QC Inspector" on CRDB footer pre-placement inspection reports (see page 335 of CALC-C-00183). It is not clear from the "Identification of Personnel Performing Inspection" column on the Inspection Personnel Matrix in Attachment 2A of LES-11-00164-NRC which space(s) were signed by the identified party. Please describe the level of independence between personnel signing the field engineer space and those signing the quality control space. Also, provide records of personnel qualification for any personnel signing the "Field Engineering" and "QC Inspector" on CRDB footer pre-placement inspection reports (if not already provided) along with identification of the person's affiliation (LES/contractor).
30. Please describe the following field entries regarding the basis for personnel qualification provided in "Table 1: Inspection Personnel Qualification Matrix" in Attachment 3 of LES-11-00164-NRC: (1) "EG-D&C Phase Construction Engineer Training" for employee P.M.; (2) "D&C Phase Engineering Qualification Training" for employee E.S.; and (3) "D&C Phase Training" for employee H.T. In your explanation, please describe the nature of the training and by whom it was provided (college, LES, offsite training entity, etc.).
31. Please describe the minimum level of training provided by LES to field and construction engineers performing quality inspection signoffs in CRDB footer work packages. Attachment 3A of LES-11-00164-NRC provides varying documentation of personnel training.

32. Please identify the timeframe during which CRDB construction was underway, specifying when contracts for material and services (including design) were in place and when construction began and ended.
33. Attachment 9 of LES-11-00164-NRC describes the review of the CRDB contractor's QA/QC program. Section 2.0 of Attachment 9 states that the initial LES review of the contractor QA/QC Program, submitted on June 3, 2008, resulted in findings that initiated a work stoppage. Attachment 5 of CALC-C-00183, Rev. 0, states that on August 1, 2008, a field engineer generated CR-2008-2135 when the approved Project Quality Assurance Plan (PQAP) could not be found. As described in CALC-C-00183, the CR documented that the PQAP had not been approved. Please provide the following clarifications:
- a. Please identify if whether or not the contractor was performing work on the CRDB footers prior to LES's review/approval of its QA/QC Program. If so, please describe under what QA/QC controls the contractor was operating prior to LES's review of their program and what measures have been taken by LES to review the quality of the work prior to implementation of an approved PQAP.
 - b. Please provide a clear timeline to define the following:
 - i. receipt, review, and approval of PQAP submittals and revisions; and
 - ii. initiation/stoppage/resumption of CRDB work (for stoppages related to PQAP approval only).
34. Please describe the extent of the construction contractor involvement in the CRDB footer procurement process. Specifically, were anchor bolts, rebar, and concrete for the CRDB footers procured by LES, or did the contractor perform procurement of these items? If such items were procured by the contractor, what controls were in place to ensure the requisite quality of the items?
35. Attachment 9 of LS-11-00164-NRC states that "the URENCO USA site procedures for the placement of concrete and steel items were highly familiar to the Field and Construction Engineering personnel who had been using these procedures during construction of Building SBM-1001. This ensures that the work performed was highly similar to the QL-1 work done on the SBM with a few documented differences."
- Please describe the extent to which field and construction engineering personnel who worked on the CRDB footers had been involved in SBM-1001 construction (i.e., were all of the field and construction engineers who worked on the CRDB footers previously engaged in SBM-1001 construction?). Also, please identify if the contractor who worked on the SBM was the same as the one used for the CRDB footers, or if it was a different contractor.
36. Attachment 5 of CALC-C-00183, states that during the interval between August 1, 2008, and April 8, 2009, many program and process changes occurred. The CALC states that "LES procedures were implemented to replace Washington Group International (WGI) procedures which had been used initially." Attachment 9 of LES-11-0164-NRC states that "The URENCO USA site procedures for the placement of concrete and steel items

were highly familiar to the Field and Construction Engineering personnel who had been using these procedures during construction of Building SBM-1001.”

Please clarify what procedures were in use for SBM operations and for CRDB operations. Please provide a description of any transition in procedures, such as from contractor procedures to LES procedures. Please provide a copy of procedures used for CRDB construction (work planning and concrete and rebar placement only).