

July 1, 2011

Mr. Wyatt Padgett  
Licensing Manager  
Louisiana Energy Services, L.L.C.  
P.O. Box 1789  
Eunice, NM 88231

SUBJECT: APPROVAL OF REVISION TO REQUEST FOR APPROVAL TO USE AMERICAN WELDING SOCIETY (AWS) D1.1 ALTERNATE WELD INSPECTION METHODOLOGY FOR CASCADES 1, 2, AND 3, LICENSING AMENDMENT REQUEST (LAR) 11-04 (TAC NO L33126)

Dear Mr. Padgett:

As a result of welding defects identified on the upper steelworks of Cascades 3, 4, and 5, you initiated Condition Reports, evaluated the extent of condition, and developed a resolution, which included alternative acceptance criteria from the AWS D1.1. On March 22, 2011, Louisiana Energy Services (LES) transmitted a Licensing Amendment Request (LAR) for approval of an alternate weld acceptance methodology to be utilized for Cascades 1, 2, and 3. This request was revised by correspondence transmitted on March 29, 2011, which deleted Cascade 3 from the request. A final revision to the LAR was transmitted on April 11, 2011, which added a compliance item commitment to Section 3.4.22 of the Safety Analysis Report (SAR) for Cascades 1 and 2, which are operating. This commitment documents the use of the alternative acceptance criterion for Cascades 1 and 2. Your transmittal on May 5, 2011, clarified that the LAR does not include fillet welds on the H-frame steel of Cascades 1 and 2. The H-frame structures were fabricated by an entity separate from that which provided the remainder of the upper steel pieces.

We have reviewed your submittals, completed a Safety Evaluation Report (SER), and concluded your alternative welding acceptance is acceptable. The SER is attached. License Condition (LC) 10 has been modified to reflect this action and Amendment 46 is attached. Any future use of this methodology would require separate approval.

The modification to the LES Standard Practices Procedure Plan (SPPP), Revision 8A, forwarded under correspondence dated February 11, 2011 (ML1104605810), is documented under LC 10 (TAC NO L33109). Our review was completed and forwarded to you under correspondence dated April 4, 2011 (ML110810646). Additionally, page changes to the SPPP, transmitted by correspondence dated March 8, 2011 (TAC NO L33120) (ML110730014), have been reviewed and are acceptable. On November 12, 2010, you transmitted an update to the Louisiana Energy Services Fundamental Nuclear Material Control Plan (FNMCP), identified as Revision 12 (TAC NO L33058). We sent a Request for Additional Information (RAI) on March 8, 2011, and received your response on April 7, 2011. We reviewed the responses and found them to be acceptable. We have amended License Condition 10 to reflect these modifications. Work performed under these TACs are closed.

An environmental assessment for this action is not required, since this action is categorically excluded under Title 10 of the *Code of Federal Regulations* (10 CFR) Section 51.22(c)(11).

W. Padgett

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In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice", a copy of this letter and its enclosures will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records component of NRC's Agency wide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

If you have any questions, please contact Mr. Ty Naquin at 301-492-3187 or via email [Tyrone.Naquin@nrc.gov](mailto:Tyrone.Naquin@nrc.gov).

Sincerely,

**/RA/**

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

License No. SNM-2010

Enclosure:

1. Safety Evaluation Report
2. Amendment 46 to SNM-2010

cc:

William Szymanski/DOE  
Gary Don Reagan/Hobbs  
Cindy Padilla/NMED  
Glen Hackler/Andrews  
Gary Schubert/Lea County  
Michael Marriotte/NIRS  
Jon Goldstein/NMED  
Tannis Fox/NMED  
Lindsay Lovejoy/NIRS

Alton Dunn/Jal  
Daniel Stenger/H&H  
Betty Rickman/Tatum  
Matt White/Eunice  
Richard Ratliff/Texas  
CO'Claire/Ohio  
Joseph Malherek/PC  
Gary King/NMAG

Gregory Smith/LES  
David Trujillo/Lovington  
Clint Williamson/LES  
John Parker/NMED  
Lee Cheney/CNIC  
Roger Mulder/Texas  
Ron Curry/NMED  
Glen Smith/NMAG

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If you have any questions, please contact Mr. Ty Naquin at 301-492-3187 or at [Tyrone.Naquin@nrc.gov](mailto:Tyrone.Naquin@nrc.gov).

Sincerely,

**/RA/**

Brian W. Smith, Chief  
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DISTRIBUTION:

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**ML111040079**

OFFICE	NMSS/FCSS/UEB	NMSS/FCSS/UEB	NMSS/FCSS/UEB
NAME	TNaquin	LCampbell	BSmith
DATE	04/ 14 /2011	04/24 /2011	07/1/2011

**OFFICIAL RECORD COPY**

DOCKET NO.: 70-3103  
LICENSE NO.: SNM-2010

LICENSEE: Louisiana Energy Services  
National Enrichment Facility  
Lea County, New Mexico

SUBJECT: SAFETY EVALUATION REPORT FOR REQUEST FOR APPROVAL TO USE  
AMERICAN WELDING SOCIETY (AWS) D1.1 ALTERNATE WELD INSPECTION  
METHODOLOGY FOR CASCADES 1, 2, AND 3, LICENSING AMENDMENT  
REQUEST (LAR) 11-04 (TAC NO L33126)

### PROPOSED CHANGES

On March 22, 2011, Louisiana Energy Services (LES) transmitted a Licensing Amendment Request (LAR) for approval to utilize an alternative weld acceptance criteria for Cascades 1, 2, and 3. Welding defects identified on the upper steelworks of Cascades 3, 4, and 5 resulted in Condition Reports to evaluate the extent of condition. A resolution, which included alternative weld acceptance methodology from the American Welding Society (AWS) D1.1, was formally developed to comply with the requirement to seek regulatory approval. Correspondence transmitted on March 29, 2011, deleted Cascade 3 from the original request. A final revision was transmitted on April 11, 2011, adding a compliance item commitment to Section 3.4.22 of the Safety Analysis Report (SAR) for Cascades 1 and 2. Your transmittal on May 5, 2011, clarified that the LAR does not include fillet welds on the H-frame steel of Cascades 1 and 2. The H-frame structures were fabricated by an entity separate from that which provided the remainder of the upper steel pieces.

### BACKGROUND

During March, April, and August of 2010, initial fillet weld inspections for Cascades 1, 2, and 3 were conducted. Subsequently, weld defects in assessments of upper cascade steelworks in Mini-Hall 1A and 1B were identified for Cascades 3, 4, and 5. These inspections were so-called 'through paint' inspections, i.e. the inspections were performed after painting had been completed. Condition Report (CR) 2010-3400 was written to evaluate the cause and make a determination on the adequacy of welds for Cascades 1 and 2, which were already operating. Results of the through paint weld inspection activities did not identify any instances impacting structural integrity for the Cascades' upper steelworks, but as part of the NRC Cascade 3 authorization inspections, the inspectors questioned whether use of an alternate method as prescribed by AWS D1.1, Section 6.8, was justified. TQ-2011-004 provided justification for the alternate weld assessment methodology and was provided to the NRC for review. The NRC noted that ANSI/AISC N690 Section Q1.0.1 requires approval from Regulatory Authority for use of an alternate weld inspection methodology, resulting in the submittal of this LAR. LES established alternate acceptance criteria for Cascades 1 and 2 for inspection through paint and completed the structural analysis in accordance with AWS D1.1 to demonstrate acceptability.

### REGULATORY REQUIREMENTS

Under 10 CFR 70.61, a licensee is required to ensure the risk of credible, high consequence events must be limited. Engineered controls, administrative controls, or both shall be applied to the extent needed to reduce the likelihood of such an event so that, upon implementation of such controls, the event is highly unlikely. The same principle applies to credible intermediate

ENCLOSURE

consequence events, such that, through the application of such controls, the event is unlikely. This includes that the risk of nuclear criticality events must be limited by assuring that under normal and credible abnormal conditions, all nuclear processes are subcritical.

Under 10 CFR 70.62, a licensee is required to establish and maintain a safety program including management measures that demonstrates compliance with the performance requirements of § 70.61. The licensee's management measures are required to ensure that engineered and administrative controls and control systems that are identified as IROFS are designed, implemented, and maintained, as necessary, to ensure they are available and reliable to perform their function when needed, to comply with the performance requirements of § 70.61.

Under 10 CFR 70.64, an applicant or licensee is required to apply baseline design criteria including quality standards and records to the design of new facilities and new processes, and to develop and implement the design in accordance with management measures.

Under 10 CFR 50, Appendix B, a licensee is required to establish a quality assurance program to be applied to the design, fabrication, construction, and testing of structures, systems, and components of a facility.

## GUIDANCE

The NRC staff conducted its safety review in accordance with NUREG-1520, "Standard Review Plan for the Review of a Safety Analysis Report (SAR) for a Fuel Cycle Facility."

## STAFF REVIEW AND EVALUATION

The evaluation was conducted to assess the breadth of evaluation completed by LES to confirm the analysis of the integrity of fillet and groove welds for Cascades 1 and 2. This was done via an evaluation of representative welds from Cascade 4. The intent of the LES analysis was to establish a basis for qualifying the critical welds for Cascades 1 and 2, which are operating, using an analysis of representative welds (through paint and then again, bare metal) from Cascades that are not operating. The intent would be to validate acceptable criteria on cascades not in operation and then apply these to operating cascades and avoid shutting down production. The Center for Nuclear Waste and Regulatory Analysis (CNWRA) independently reviewed the LES analysis. This was completed in two separate reports, one on upper cascade steel and a second on battleship attachment welds, so-called due to the higher fatigue loading.

Welding used as a 'standard' from Cascade 4 was deemed to be representative of the critical welds of Cascades 1 and 2, due to the fact that the areas of weld evaluation from Cascade 4 were areas of higher utilization (upper cascade steel). In addition, all eight cascades constructed to date for the facility were fabricated by the same manufacturer, with identical drawings, similar utilization factors, and painted using the same paint and application process. The steel used as a basis for analysis contained 2,874 fillet welds, 522 groove welds, welds in the H-frames and mobile wall, and welds in the front and back frame connectors. The analysis considered an inspection of these welds through paint, against the evaluation of these same welds with paint removed.

The analysis identified cracks, porosities, undercuts, craters, and a lack of fusion. The primary concern with these discontinuities is the potential for fatigue crack initiation. Examination for Cascade 4, through paint, found 273 welds with nonconformities, whereas bare metal inspections identified 414 nonconformities. Although 141 indications were missed, the LES

analysis provided sufficient explanation to show no cases were identified where a structurally significant problem was found by bare metal inspection, after having been missed by a through paint examination. For Cascade 3, LES identified 20 nonconformities through paint and 31 via bare metal inspection. In each case, a basis was provided to a determination of a 'use-as-is' case.

For the review of battleship attachments, there were a total of 36 welds, including 28 fillet welds. In response to NRC Requests for Additional Information, an additional 176 welds on Cascade 4 were evaluated, comparing through-paint and bare metal inspections. In all welds reviewed, any flaws identified in bare metal inspections were identified in through-paint inspections.

## FINDINGS

The staff has determined that that the alternative acceptance criteria to examine welds through paint are acceptable to apply to Cascades 1 and 2. The basis is that: 1) all of the cascades were constructed by the same fabricator, from identical drawings, had similar utilization factors for similar joints, and the same paint was used for the welds in the comparison; and 2) the combination of structural redundancy, the low utilization factors for the welds in question, and an absence of fatigue loads on these welds. The staff has also determined that the proposed change in Section 3.4.22 of the SAR is acceptable.

## ENVIRONMENTAL REVIEW

Issuance of the requested amendment to the LES license is subject to the categorical exclusion provided in 10 CFR 51.22(c)(11) and will not have a significant impact on the human environment. The staff has determined that the exemption request meets the criteria for a categorical exclusion identified in 10 CFR 51.22(c)(11), in that:

- i. There is no significant change in the types or significant increase in the amounts of any effluents that may be released offsite;
- ii. There is no significant increase in the individual or cumulative occupational radiation exposure;
- iii. There is no significant construction impact; and
- iv. There is no significant increase in the potential for or no consequences from radiological accidents.

## CONCLUSIONS

Based on its review and evaluation of the information provided by LES in its LAR dated March 22, 2011, and supplemental information provided on March 29, 2011, and April 11, 2011, the NRC staff finds that the proposed revisions to the SAR to be acceptable, consistent with the requirements of 10 CFR Part 70, and should be approved.

## PRINCIPAL CONTRIBUTORS

Ty Naquin  
Asadul H. Chowdhury (CNWRA)  
Robert Mason (CNWRA)