

SAFETY EVALUATION REPORT
U.S. NUCLEAR REGULATORY COMMISSION

DOCKET NO.: 70-3103

LICENSE NO.: SNM-2010

LICENSEE: LOUISIANA ENERGY SERVICES, LLC

SUBJECT: LICENSE AMENDMENT REQUEST REVISING QUALITY PROGRAM
REQUIREMENTS FOR REDUNDANT IROFS (LAR-20-01)
(ENTERPRISE PROJECT IDENTIFIER L-2020-LLA-0208)

BACKGROUND

In a letter dated September 8, 2020 (Reference 1), and as revised on July 13, 2021 (Reference 3), Louisiana Energy Services, LLC (LES), the licensee, submitted License Amendment Request (LAR), LAR-20-01, to request the U.S. Nuclear Regulatory Commission (NRC) to approve an amendment that would implement a new classification of items relied on for safety (IROFS) called Redundant IROFS. Based on a 10 CFR 70.72 evaluation, particularly an evaluation against the criterion in 10 CFR 70.72(c)(2), the licensee determined that an amendment was necessary. In addition to this new IROFS classification, the amendment request states that for administrative control (AC) IROFS that meet the definition of Redundant IROFS, the Quality Level Program for the equipment is being changed from QL-2AC to QL-2R, a new quality level.

Implementing this new definition and quality level requires changes to the Safety Analysis Report (SAR), Integrated Safety Analysis (ISA), ISA Summary and Quality Assurance Plan Description (QAPD). The proposed amendment includes a definition of Redundant IROFS which is “an AC IROFS or a group of AC IROFS, which is capable of preventing or mitigating the consequences associated with the applicable accident scenario individually or as a group” (Reference 2).

The purpose of this review is to determine whether the licensee’s ISA Program will continue to comply with Title 10 of the *Code of Federal Regulations* Part 70 (10 CFR 70), Subpart H, “Additional Requirements for Certain Licensees Authorized to Possess a Critical Mass of Special Nuclear Material” should the Commission approve the amendment. Furthermore, the purpose of the review is to determine whether the use of Redundant IROFS, as defined in this amendment, will represent “at least an equivalent replacement of the safety function” for IROFS listed in the ISA Summary, consistent with 10 CFR 70.72 (c)(2).

The review also confirms that the ISA Summary will continue to provide reasonable assurance that:

- 1) The licensee conducted an ISA of appropriate detail for each applicable process using methods and qualified staff adequate to achieve the requirements of 10 CFR 70.62, “Safety program and integrated safety analysis;”
- 2) The licensee identified and evaluated in the ISA credible events involving process deviations or other events internal to the facility (e.g., explosions, spills, and fires)

and credible external events that could result in facility-induced consequences to workers, the public, or the environment, that could exceed the performance requirements of 10 CFR 70.61, "Performance requirements," and

- 3) The licensee appropriately designated IROFS, evaluated those IROFS for preventing or mitigating the applicable accident sequences and applied its management measures program to demonstrate compliance with the performance requirements of 10 CFR 70.61.

REGULATORY REQUIREMENTS

The NRC staff evaluated LES's ISA Program as described in its SAR, ISA Summary, and QAPD to determine whether LES meets the following requirements:

- a) The regulations in 10 CFR 70.61 require that the licensee evaluate in its ISA compliance with the performance requirements of 10 CFR 70.61(a), (b), (c), and (d). Those requirements specify that the risk of each credible high-consequence event must be limited such that the likelihood of occurrence is highly unlikely, or its consequences are less severe than high consequence. The risk of each credible intermediate-consequence event must be limited such that the likelihood of occurrence is unlikely, or its consequences are less severe than intermediate consequence, and that controls necessary to meet the performance requirements be designated as IROFS.
- b) The regulations in 10 CFR 70.62 require the licensee to establish and maintain a safety program, including process safety information and the performance of an ISA that demonstrates compliance with the performance requirements of 10 CFR 70.61 and establishes management measures, as appropriate. The ISA must identify radiological hazards, chemical hazards, facility hazards that could affect the safety of licensed materials and thus present an increased radiological risk, potential accident sequences, the consequence and likelihood of occurrence of each potential accident sequence and each IROFS.
- c) The regulations in 10 CFR 70.65, "Additional content of application," require the licensee to submit an ISA Summary with the amendment that contains specific information to demonstrate compliance with 10 CFR 70.61.
- d) The regulations in 10 CFR 70.72, "Facility changes and change process," require the licensee to establish 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. Furthermore, without prior NRC approval, licensees cannot remove, without at least an equivalent replacement of the safety function, an IROFS that is listed in the ISA Summary and is necessary for compliance with the performance requirements of 10 CFR 70.61.

For this review, the NRC staff used the guidance in NUREG-1520, specifically the applicable acceptance criteria in Sections 3.4.3.1 and 3.4.3.2 (Reference 7). The acceptance criteria in Section 3.4.3.1 pertain to the performance of an ISA, while the criteria in Section 3.4.3.2 describe the content of an ISA Summary and its documentation.

STAFF EVALUATION

The NRC staff used the acceptance criteria in Chapters 3 and 11 of NUREG-1520 (Reference 7) for this review. The NRC staff's review is discussed in two parts: (1) process safety information, ISA Program and ISA Summary and (2) management measures.

Process Safety Information, ISA Program, and ISA Summary

The NRC staff reviewed the licensee's implementation of its ISA Program with respect to the proposed changes. Specifically, the NRC staff reviewed the proposed revisions to the SAR and ISA Summary and evaluated the potential effects of these changes on current commitments and the ISA Program. The NRC staff also reviewed the licensee's proposed changes to its QAPD (References 1–4) to determine if the requirement for 10 CFR 70.61(e) is maintained should the NRC approve the license amendment. The NRC staff further evaluated these documents to determine if the proposed changes demonstrate compliance with the performance requirements in 10 CFR 70.61(a)-(d), the content requirements of 10 CFR 70.65 and the change process requirements of 10 CFR 70.72.

The NRC staff finds that the licensee commits to compile and maintain an up-to-date database of process safety information and that the proposed revisions to the quality assurance (QA) program requires Redundant IROFS to have elements that fulfill this commitment. These QA elements include design control, design documentation, and records. Therefore, based on the commitment in the SAR and the QA program documentation requirements, the NRC staff finds that the licensee has met the acceptance criteria for providing written safety information as outlined in Section 3.4.3.1 of NUREG-1520 (Reference 7).

In response to a request for additional information (RAI) dated February 12, 2021 (Reference 2), the licensee stated that, "No new IROFS have been identified for inclusion in the Licensing Basis Documents..." However, the licensee stated that as higher enrichments are considered, accident scenarios that rely on sole IROFS will be likely candidates for applying Redundant IROFS. Because the licensee has yet to identify Redundant IROFS, the NRC staff reviewed an example of how Redundant IROFS will be incorporated in the SAR and ISA Summary. Based on the example, the NRC staff finds that there is the potential for Redundant IROFS to replace existing sole and multiple IROFS. According to the licensee's ISA and configuration management programs, that change would be evaluated per 10 CFR 70.72. Furthermore, in response to an RAI, dated October 28, 2021, the licensee stated that Section 3.4.6 of the SAR, "Completion of the Design of IROFS," is the programmatic element that requires the performance of procedure, EG-3-3100-02, "IROFS Boundary Definition" for all IROFS, including Redundant IROFS. The NRC staff reviewed the procedure, EG-3-3100-02 to confirm that the procedure requires the licensee to evaluate the implementation of all IROFS per 10 CFR 70.72.

Based on a review of the SAR, the ISA Summary, the licensee's RAI responses and procedure, EG-3-3100-02, the NRC staff finds that the licensee has met the acceptance criteria for conducting and maintaining an ISA, evaluating changes, and conservatively and consistently applying its ISA methodology to process safety areas as outlined in Sections 3.4.3.1 and 3.4.3.2 of NUREG-1520 (Reference 7).

Management Measures

The NRC staff performed a review of the proposed changes which include modifications to the SAR, ISA Summary and QAPD. Because the licensee is licensed under 10 CFR Part 70, the

licensee must comply with the performance requirements established in 10 CFR 70.61 and identify and manage IROFS in accordance with 10 CFR 70.62 (c) and (d). Furthermore, because the licensee has committed to a QA program in compliance with American Society of Mechanical Engineers (ASME) NQA-1 1994, IROFS are subject to management measures applied in accordance with the current LES QAPD. The LES QAPD provides a graded approach to quality level in compliance with ASME NQA-1 requirements. In addition, the QAPD establishes the approach and design requirements for IROFS and specifies that IROFS will comply with design requirements, as applicable. These requirements are listed as: (1) Institute of Electrical and Electronics Engineers (IEEE)-323 "Standard for Qualifying Class 1 E Equipment for Nuclear Power Generating Stations", (2) Regulatory Guide 1.180, "Guidelines for Evaluating Electromagnetic and Radio-Frequency Interference in Safety-Related Instrumentation and Control Systems," and (3) Regulatory Guide 1.105, "Setpoints for Safety-Related Instrumentation." Section 3.4.39 of the SAR states, "IROFS will comply with Design Requirements," and describes the different categories of IROFS and how the requirements mentioned above apply to them (Reference 1).

The NRC staff finds that the applicability of Redundant IROFS for accident sequences could result in the designation of an IROFS as redundant for one sequence while being a sole or multiple IROFS for another. Furthermore, the licensee, once adding a Redundant IROFS, could designate the original sole or multiple IROFS as Redundant, as well. Therefore, the quality level for all IROFS for an accident sequence would be QL-2R. In this case, according to the proposed revision to the QAPD, the quality assurance level of some elements would become QL-3. QL-3 equipment, according to the LES QAPD, is considered non-safety. These elements include design control, procurement, control of measuring and test equipment, and inspection, test and operations status.

Given that, as described, all Redundant IROFS are relied on to prevent accidents that could exceed the performance requirements, the QA level should support their availability and reliability per 10 CFR 70.61(d). Furthermore, Redundant IROFS must represent "at least an equivalent replacement of the safety function" for IROFS listed in the ISA Summary per 10 CFR 70.72 (c)(2). Therefore, to provide reasonable assurance that management measures will be applied to IROFS to ensure compliance with the performance requirements in 10 CFR 70.61 and the equivalency requirement of 10 CFR 70.72 (c)(2), the NRC staff recommends the following license conditions:

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| License Condition 36 | The Redundant IROFS Class, as defined in the Safety Analysis Report, will only be applicable to and implemented on equipment used to support Administrative Control IROFS. |
| License Condition 37 | All IROFS are required to adhere to Section 16 of the latest version of the Quality Assurance Program Description identified by License Condition 10(f). |
| License Condition 38 | If equipment is required for administrative control IROFS that are applied to multiple accidents scenarios, the category of QL-2R will only apply if the IROFS is a Redundant IROFS for all accident scenarios to which it applies. If the IROFS applies to accident scenarios for which it is not a Redundant IROFS, the higher category of QL-2AC must be used for the IROFS. |

License Condition 39 LES shall submit an amendment request to the NRC prior to making changes to the elements of the quality assurance level QL-2R, that would further reduce or alter the quality assurance level.

Based on License Conditions 36–39, the review of the SAR, ISA Summary, and QAPD, the NRC staff finds that the licensee has met the acceptance criteria for management measures as outlined in Sections 3.4.3.1 and 3.4.3.2 of NUREG-1520 (Reference 7).

ENVIRONMENTAL REVIEW

The NRC staff has determined that the requested amendment for use of Redundant IROFS belongs to a category of actions which the Commission, by rule or regulation, has declared to be a categorical exclusion, after first finding that the category of actions does not individually or cumulatively have a significant effect on the human environment. The change will not impact any effluents, will not result in any changes to radiation exposures, does not have construction impacts, and does not increase the potential for radiological accidents. Therefore, the amendment is categorically excluded from the requirements to prepare a site-specific environmental assessment consistent with Title 10 of the Code of Federal Regulations (10 CFR) Section 51.22(c)(11). In accordance with 10 CFR 51.22(d), neither an environmental assessment nor an environmental impact statement is warranted for this action.

CONCLUSIONS

Based on the findings and License Conditions 36–39, the NRC staff has reasonable assurance that:

- 1) The licensee’s ISA Program will continue to be in compliance with 10 CFR 70, Subpart H, “Additional Requirements for Certain Licensees Authorized to Possess a Critical Mass of Special Nuclear Material”
- 2) Redundant IROFS, as defined, represent “at least an equivalent replacement of the safety function” for IROFS listed in the ISA Summary per 10 CFR 70.72(c)(2).

The NRC staff also concludes that the ISA Summary will continue to provide reasonable assurance that:

- 1) The licensee conducted an ISA of appropriate detail for each applicable process, using methods and qualified staff adequate to achieve the requirements of 10 CFR 70.62, “Safety program and integrated safety analysis;”
- 2) The licensee identified and evaluated in the ISA credible events involving process deviations or other events internal to the facility (e.g., explosions, spills, and fires) and credible external events that could result in facility-induced consequences to workers, the public, or the environment, that could exceed the performance requirements of 10 CFR 70.61, “Performance Requirements,” and
- 3) The licensee appropriately designated IROFS, evaluated those IROFS for preventing or mitigating the applicable accident sequences and applied its management measures program to demonstrate compliance with the performance requirements of 10 CFR 70.61.

REFERENCES

1. Louisiana Energy Services, LLC, "License Amendment Request Revising Quality Program Requirements for Redundant IROFS (LAR-20-01)," September 8, 2020 (Agencywide Documents Access and Management System (ADAMS) Accession Number ML20262H070).
2. Louisiana Energy Services, LLC, "Response to LAR 20-01 RAI Regarding Quality Program Requirements for Redundant IROFS," February 12, 2021 (ADAMS Accession Number ML21053A189).
3. Louisiana Energy Services, LLC, "Revised License Amendment Request, Quality Program Requirements for Redundant IROFS (LAR-20-01)," July 13, 2021 (ADAMS Accession Number ML21203A095).
4. Louisiana Energy Services, LLC, "Response to Request to Clarify Additional Information Regarding Quality Level for Redundant IROFS," October 28, 2021 (ADAMS Accession Number ML21307A319).
5. U.S. Nuclear Regulatory Commission, "Louisiana Energy Services – Request for Additional Information Regarding Quality Level for Redundant Items Relied on for Safety," January 22, 2021 (ADAMS Accession Number ML21019A146).
6. U.S. Nuclear Regulatory Commission, "Louisiana Energy Services – Request to Clarify Addition Information Regarding Quality Level for Redundant Items Relied on for Safety," September 27, 2021 (ADAMS Accession Number ML21230A384).
7. U.S. Nuclear Regulatory Commission, "NUREG-1520 Standard Review Plan for Fuel Cycle Facilities License Applications, Revision 2," September 30, 2015 (ADAMS Accession Number ML15176A258).

PRINCIPAL CONTRIBUTOR

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