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LES-15-00055-NRC

Attn: Document Control Desk  
Office of Nuclear Material Safety and Safeguards  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555-0001

Louisiana Energy Services, LLC  
NRC Docket No. 70-3103

Subject: Exception Request For The Use of NRC Approved Digital Devices in IROFS Applications

- References:
- 1) LES-10-00086-NRC, Letter from LES to NRC, License Amendment Request to clarify License requirements for Administrative Control IROFS boundaries (LAR-10-04), May 2, 2010, as revised on May 16, 2010, May 23, 2010. and May 26, 2010 (ML101250326).
  - 2) Letter from NRC to LES, Approval of LES License Amendment Request for the National Enrichment Facility to clarify License requirements for Administrative Control IROFS and removal of IROFS C6, LAR-10-04, June 2, 2010 (ML101530652).
  - 3) LES-10-00167, Letter from LES to NRC, Exception Request for IROFS42, July 26, 2010 (ML102100197).
  - 4) Letter from NRC to LES, Approval of LES Exception Request for IROFS 42, September 14, 2010 (ML102170279).

In previous submittals, Louisiana Energy Services (LES), dba URENCO USA (UUSA), requested an exception to License Condition 20 for specific IROFS: IROFSC22, IROFS38 (Ref. 1) and IROFS42 (Ref. 3) to support initial operations. IROFSC22, IROFS38 and IROFS42 utilize QL-2AC Station Weigh Scales as Monitored Support Equipment. The NRC approved the specific Exceptions to License Condition 20 for the Station Weigh Scales for IROFSC22, IROFS38 (Ref. 2) and IROFS42 (Ref. 4). UUSA maintains these QL-2AC digital devices in accordance with the UUSA QAPD and therefore requests an Exception to License Condition 20 for the use of these QL 2AC Station Weigh Scales in IROFS applications.

Should there be any questions concerning this request, please contact Amy Johnson, UUSA Licensing and Performance Assessment Manager, at 575.394.6203.

Respectively,

Jay Laughlin  
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Enclosure: Exception Request

MEM501

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**ENCLOSURE**  
**Exception Request**

# **1 Introduction**

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## **1.1 Purpose**

This request is for an Exception to License Condition 20 for the previously NRC approved Monitoring Support Equipment (station weighing scales) for use in IROFS applications. This Monitored Support Equipment is classified and controlled, in accordance with the UUSA QAPD, as QA Level 2AC (QL-2AC) digital instrumentation. This Support Equipment relies on a Programmable Logic Controller (PLC). Attributes of the Monitored Support Equipment are controlled through the use of applicable management measures. Approval of this exception would reduce the number of NRC licensing actions requested by UUSA for IROFS using this equipment in the same manner.

## **1.2 Background**

URENCO USA (UUSA) submitted LAR-10-04 in order to reach a successful conclusion to issues identified during the Operational Readiness Review and focused specifically on Administrative Control IROFS that support initial plant operations. Within LAR-10-04 was an exception request for IROFSC22 and IROFS38 as the Monitoring Support Equipment for these IROFS relies on a PLC.

LAR-10-04 stated "In the future, where additional oversight and/or enhancement is deemed worthwhile to address any similar changes to other Administrative Control IROFS, LES will address such changes in the same manner as demonstrated in this submittal. Support Equipment and any other equipment for Administrative Control IROFS for future operational phases will be addressed consistent with this request."

Subsequently, UUSA submitted and the NRC approved a request for Exception to License Condition 20 for IROFS42.

# 2 Technical Analysis

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## 2.1 Proposed Change

UUSA requests an Exception from the requirements of License Condition 20 for station weigh scales as Monitored Support Equipment. Previous NRC approvals have been received for specific Exceptions to License Condition 20 for the Station Weigh Scales. Future IROFS may utilize the QL-2AC station weigh scales in the same manner.

License Condition 20 (LC 20) of SNM-2010 states that at the time of licensing, there were no IROFS specified as using software, firmware, microcode, programmable logic controllers, and/or any digital device, including hardware devices which implement data communication protocols (such as fieldbus devices and Local Area Network controllers), etc. Should the design of any IROFS be changed to include any of the aforementioned features, LC 20 requires the licensee to obtain Commission approval prior to implementing the change(s). LC 20 also requires the licensee's design change(s) to adhere to the accepted best practices in software and hardware engineering, including software quality assurance controls as discussed in the QAPD throughout the development process and be in accordance with the applicable guidance of specific industry standards and regulatory guides as cited in SAR Chapter 3.

## 2.2 Technical Basis for Change

### 2.2.1 Support Equipment

Administrative Control IROFS are safety functions provided by human actions as discussed in NUREG-1520:

*In 10 CFR Part 70, an administrative control is an IROFS if it is the human action necessary to meet safety performance requirements, and it is supported by management measures (training, quality assurance, procedures, etc.) that ensure that the action will be taken if needed.*

Monitored Support Equipment and attributes are used by the worker to perform the human actions that meet the safety performance requirements of Administrative Controls.

### 2.2.2 Materials License Condition 20

UUSA requests an Exception from the requirements of License Condition 20 for station weigh scales as Monitored Support Equipment. The NRC has previously approved specific Exceptions to License Condition 20 for the Station Weigh Scales for IROFSC22, IROFS38 and IROFS42 based on the information provided in Section 3.1 of this document.. Future IROFS applications would use the same QL-2AC station weigh scales as Monitored Support Equipment.

Weight measurements for station weighing systems utilize four load cells for each scale. The load cells are connected in parallel, and are summed at an electrical junction. The summed signal is then amplified and conditioned to display a weight on the digital display. The amplifier also sends the signal to the Local Control Cabinet and the Plant Control System (PCS). There is no input to the amplifier from the PCS.

UUSA is hereby proposing the following language for the applicability of License Condition 20.

*Exception to License Condition 20 is granted for ~~IROFS38 and IROFSC22, as amended by correspondence dated May 23, 2010. Exception to License Condition 20 is granted for IROFS 42, as amended by correspondence dated July 26, 2010.~~ IROFS using the Station Weigh Scale digital processing equipment described in correspondence dated May 23, 2010, July 26, 2010, and April 22, 2015, and which has been qualified in accordance with the UUSA Quality Assurance Program Description.*

It is understood that this language does not give UUSA exception to the 10 CFR 70.72(c) change evaluation process. For the creation, change or deletion of IROFS, whether using this approved digital processing equipment or not, UUSA will continue to complete evaluations to determine whether prior NRC approval is required prior to implementing any change.

It is also understood that this exception only applies to the use of the station weigh scale equipment described in this and previous submittals, and that the use of different digital processing equipment in future IROFS applications would require NRC review and approval in accordance with the requirements of License Condition 20.

## **2.3 Conclusions**

The inclusion of Support Equipment within the IROFS boundaries enhances the monitoring and worker response associated with Administrative Controls. The Exception to License Condition 20 is acceptable as there are no significant safety hazards, as described in Section 3 below.



# 3 Safety Significance Determination

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## 3.1 Administrative Control

Administrative Control (AC) IROFS require worker action that relies on Monitoring Support Equipment within the IROFS boundary. Monitored Support Equipment included in IROFS boundaries meets QA Level 2AC requirements. This Monitored Support Equipment includes digital components and, therefore, requires exception to Material License Condition 20 requirements.

Monitored Support Equipment - The station weighing systems are considered Monitored Support Equipment and are therefore included in IROFS boundaries. The station weighing systems do not rely on the PCS for local weight indication at the individual cylinder stations.

Monitored Support Equipment Attribute - The specific attribute of the station weighing systems relied on by IROFS are an accurate and reliable indication of cylinder mass.

Each station weighing system consists of four load cells which determine the weight of the cylinder using strain gauges. When weight is placed on the frame, the strain gauge converts the deformation (strain) to an electrical signal. Each load cell sends an electrical signal to a junction box where the signals are electrically combined in a summing junction to provide a single output signal. This junction box is a very simple device consisting of five terminal blocks, one for each load cell, and one for the output signal. Incoming and outgoing signals from the junction box cannot be manipulated. The summed signal is then sent to the SD2100 Weighing Amplifier.

The SD2100 receives the summed signal from the junction box, amplifies it, and converts it to a digital signal so that it can be displayed in an appropriate weight format. The amplified signal from the SD2100 is then sent to the SD2200 CAN-bus display mounted on the outside of the station. In addition, the amplified signal from the SD2100 is sent to the RS485 bus, which relays the signal to the PCS.

The SD2100 has the capability of executing user defined code however, this feature is controlled under the UUSA configuration management program. Entering code into the SD2100 Weighing Amplifier would require a change in configuration of the device as currently installed. Management measures are in place to control the configuration of this device as documented in the NRC approved addition of QL2AC controls in the UUSA QAPD. Specifically, Procedure WC-2-1000-01, "Work Control Program," requires controls implemented through lower tier Work Control procedures to ensure work is executed in accordance with appropriate work instructions. These work instructions serve, in part, to ensure that the configuration is maintained through the work process. Furthermore, changing the current function of the SD2100 Weighing Amplifier (including introduction of new code) would require a plant modification in accordance with Engineering Procedure EG-3-4100-02 "Plant Modification". This procedure requires extensive reviews and approval for plant modifications, including application of the 70.72 review process. Any such change will require the aforementioned reviews prior to effecting a change.

Installed plant instrumentation provide accurate and reliable indication to the worker performing the safety function. This is within the boundary of the associated IROFS and is designated a QA level of QL2-AC. The attributes of the Support Equipment used to monitor or implement operator actions are verified using appropriate management measures to assure reliable use as needed. These attributes are within the Administrative Control IROFS Boundary. Any removal of

management measures designed to provide assurance of the attributes used by the worker or reduction in quality for Support Equipment would be considered a reduction in commitment and require regulatory approval prior to implementation. The attributes of other equipment may also be within the Administrative Control IROFS Boundary, though not the equipment itself, to ensure application of appropriate management measures, such as portable equipment calibration. Any removal of management measures designed to provide assurance of these attributes would also be considered a reduction in commitment and require regulatory approval prior to implementation.

### **3.2 Conclusion**

An exception to LC 20 for this Monitored Support Equipment is acceptable because the NRC has previously approved this equipment related to specific IROFS being implemented. This exception would allow this QL-2AC equipment to be used to support future IROFS developed through approved site processes and management measures without having to request specific exceptions for each IROFS. This would reduce the number of redundant licensing actions requested from the NRC.