

Fuel Facility Event Report

License No. SNM-2020	Docket No. 07003103	Event No. EN56302	NMED Event No. NA
Licensee: Louisiana Energy Services dba URENCO USA (UUSA)		Event Type: Possible loss of a sole IROFS	
Event Date: 1/5/23	Report Date: 1/5/23	Inspection Report No.: 2023-001	

1. REPORTING REQUIREMENT.

- | | |
|---|--|
| <input type="checkbox"/> 10 CFR 20.2201 (Theft or Loss) | <input checked="" type="checkbox"/> 10 CFR 70 Appendix A (Reportable Events) |
| <input type="checkbox"/> 10 CFR 20.2202 (Notification of Incidents) | <input type="checkbox"/> 10 CFR 71.95 (Transportation Events) |
| <input type="checkbox"/> 10 CFR 20.2203 (Dose Limits) | <input type="checkbox"/> 10 CFR 73.71 (Safeguards Events) |
| <input type="checkbox"/> 10 CFR 40.60 (Source Material) | <input type="checkbox"/> 10 CFR 74.11 (Material Control & Accounting) |
| <input type="checkbox"/> 10 CFR 70.50 (Radiological Events) | <input type="checkbox"/> 10 CFR 95.57 (Information Security) |
| <input type="checkbox"/> 10 CFR 70.52 (Criticality) | |
| <input type="checkbox"/> License Condition _____ | |
| <input type="checkbox"/> Other _____ | |

2. REPORT EVALUATION. ☒ Preliminary ☐ Follow-up ☐ Closeout

- ☒ Timing of Notification: ☒ 1 hour ☐ 4 hours ☐ 24 hours ☐ 30 days
☒ Reported in accordance with regulations/license conditions: ☒ Yes ☐ No
☒ Type/Quantity of RAM Involved None
☒ Preliminary Occupational Dose None
☒ Preliminary Public Dose None
☐ Calculation:
☐ Excessive Radiation Levels or Concentrations ☐ Part 20 Concentrations
☐ Unrestricted Area Contamination
☒ Description of Event On Thursday, January 5, 2023, at 11:05 MST, the control room received a call that a crane operator had operated the UBC pad crane (a bridge type crane that runs along rails located at the sides of the UBC pad) over a strap laying on the crane track. The initial inspection of the crane determined that a component of the crane had been damaged. The component was initially identified as a device to sweep debris from the crane rails and not an item relied on for safety (IROFS) related component. At 14:45 MST, a Shift Manager inspected the crane and determined that the damaged component was part of IROFS27e. The damaged component was one of the restraints that prevent the crane from lifting off the rails during a natural phenomena hazard (e.g., a seismic event). These restrains are credited as a sole IROFS with preventing a high consequence accident sequence (i.e., breach of a cylinder).
☐ Cause of Event _____
☒ Immediate Corrective Actions Adequate Yes, moved crane to a safe area.
☐ Potential Severity Level III, II, I
☐ Other _____

3. REGION II RESPONSE.

- | | |
|---|---|
| <input type="checkbox"/> Discuss with Criticality Safety Team | Inspector/Date _____ |
| <input type="checkbox"/> Immediate Site Inspection | Inspector/Date _____ |
| <input type="checkbox"/> Special Inspection | Inspector/Date _____ |
| <input checked="" type="checkbox"/> Telephone Inquiry (with licensee) | Inspector/Date <u>Sippel/Startz on 1/6/23</u> |
| <input checked="" type="checkbox"/> Review at Next Routine Inspection | Inspector/Date <u>OPS Feb 2023</u> |
| <input type="checkbox"/> Preliminary Notification Number _____ | <input type="checkbox"/> Not Required |
| <input type="checkbox"/> Morning Report Number _____ | <input type="checkbox"/> Not Required |
| <input type="checkbox"/> Medical Consultant _____ | <input type="checkbox"/> Not Required |
| <input type="checkbox"/> Other Federal/State agencies requested _____ | <input type="checkbox"/> Not Required |

Enclosure 2

(X) Others Informed: (X) NMSS () NSIR () EDO Staff () State () Region

() Other _____

() Report Referred to _____

Y/N	Initial Deterministic Screening
N	<p data-bbox="386 317 893 348">1. Led to an Alert or Site Area Emergency</p> <p data-bbox="334 380 396 411">Why:</p>
N	<p data-bbox="386 468 1393 531">2. Involved an event or condition such that the performance requirements of 10 CFR 70.61 were not met, as documented in the ISA summary</p> <p data-bbox="334 562 1442 741">Why: Potentially, accident sequences EE-SEISMIC and EE-TORNADO & HIGH WIND-SBM-CRDB SHELL-UBC STORAGE PAD credits an IE probability (-2) and IROFS27e (-3) for preventing an assumed high consequence event. IROFS27e was at a minimum degraded. If it was lost, then these sequences would be 'NOT UNLIKELY' per the licensee's ISA summary. However, their operability determination found that the IROFS would still be able to perform its function.</p>
N	<p data-bbox="386 772 1360 835">3. Involved operations that either exceeded safety limits or were not included in the licensing bases of the facility, safety analysis report, or the ISA summary</p> <p data-bbox="334 867 656 898">Why: (N/A if not applicable)</p>
N	<p data-bbox="386 940 1344 1003">4. Involved a major deficiency in design, construction, operation, or programmatic failures having potential generic safety implications</p> <p data-bbox="334 1035 656 1066">Why: (N/A if not applicable)</p>
N	<p data-bbox="386 1108 1393 1171">5. Led to the loss of multiple barriers in systems used to mitigate an actual event (e.g. Process Building exhaust ventilation system)</p> <p data-bbox="334 1203 656 1234">Why: (N/A if not applicable)</p>
N	<p data-bbox="386 1276 1425 1371">6. Led to a significant loss of the plant protection system involved in generating signals associated with the detection of off-normal conditions and events that could threaten safety (e.g. Criticality Accident Alarm System, fire protection system)</p> <p data-bbox="334 1402 656 1434">Why: (N/A if not applicable)</p>
N	<p data-bbox="386 1497 1393 1591">7. Led to a potential or actual radiological release with the potential for occupational exposure or exposure to members of the public in excess of applicable regulatory limits</p> <p data-bbox="334 1623 656 1654">Why: (N/A if not applicable)</p>
N	<p data-bbox="386 1717 1425 1812">8. Led to a potential or actual hazardous chemical release with the potential for occupational exposure or exposure to members of the public in excess of applicable regulatory limits AND the chemical was under NRC jurisdiction</p> <p data-bbox="334 1843 727 1875">Why: Based on initial walkdowns.</p>
N	<p data-bbox="386 1927 1039 1959">9. Led to a significant loss of physical security controls</p>

	Why: (N/A if not applicable)
N	10. Involved significant unexpected system interactions
	Why: (N/A if not applicable)
N	11. Involved repetitive failures or events with safety related equipment or deficiencies in operations performance
	Why: (N/A if not applicable)
N	12. Involved a potentially significant failure of the safeguards or security system to prevent, detect, or assess and respond to the theft, loss, or diversion of significant quantities of SNM
	Why: (N/A if not applicable)
N	<p>13. For INFOSEC issues:</p> <ul style="list-style-type: none"> i. The event involved a failure to control classified or safeguards information with substantial potential for disclosure to unauthorized individuals OR ii. A damage assessment was required to assess the significance of the event. <p>If YES to either criterion, continue through the event follow-up process to step (3B) Threat and Uncertainty Criteria. If a damage assessment will be performed, consider if an INFOSEC regional inspection (information gathering) is warranted prior to final recommendation for inspection type in Enclosure 2.</p>
	Why: (N/A if not applicable)

If "YES" to **any**, complete the "Why" section remarks and continue to step **(3B)** Threat and Uncertainty Criteria.

If "NO" to **all**, "Why" section remarks are not required but may be added for clarification. Continue to step **(3A)** No Reactive Inspection Required.

Event Follow Up

Background

On Thursday, January 5, 2023, at 11:05 MST, the control room received a call that a crane operator had operated the UBC pad crane (a bridge type crane that runs along rails located at the North and South sides of the UBC pad) over a strap laying on the crane track.



Google Maps photo of the UBC pad. Showing the UBC pad crane (yellow), and the rails it runs along (darker lines on the top and bottom of the pad).

At 14:45 MST, a Shift Manager inspected the crane and determined that the damaged component was part of IROFS27e. The damaged component was one of the restraints that prevent the crane from lifting off the rails during a natural phenomena hazard (e.g., a seismic event, high winds). These restraints are credited as a sole IROFS in accident sequence EE-SEISMIC and EE-TORNADO & HIGH WIND-SBM-CRDB SHELL-UBC STORAGE PAD with preventing a high consequence event (breach of a cylinder).

Accident Identifier: EE-SEISMIC

(See Table 4.1-2) For the uncontrolled event excessive seismic motions imposed on SBMs, Interconnecting Corridor, the CRDB (Shell and Bunker), the CAB and the UBC Storage Pad crane beyond normal building code design capacity that could lead to building collapse, crane collapse or beyond the capacity of UF₆ piping cascade systems, or other UF₆ bearing components, breaching of UF₆ systems, autoclaves or cylinders, and ultimately a UF₆ release. This excludes the CRDB's Chemistry Laboratory (including associated rooms) and Mass Spectrometry Laboratory.

An initiating event index of (-2) has been conservatively assumed. Information on the annual frequency of earthquakes is provided in Section 3.2.6.4.

The event is assumed to have high consequences for both site workers and the public.

For the controlled event, the mitigating measures are (1) a design feature of buildings containing UF₆ process systems for seismic, tornado, high wind, roof snow load, and roof ponding and site flooding due to local intense precipitation (IROFS27e) applied to SBMs 1001 and 1003 (including associated UF₆ Handling Area buildings), all UF₆ Handling Areas (beyond SBM-1003), Interconnecting Corridor, the CRDB Shell and UBC Storage Pad crane; (2) a design feature of the CRDB Bunker for seismic and tornado missile loads, (IROFS27c); (3) a design feature of the autoclave which limits the total seismic releases (IROFS28); and (4) a design feature of the centrifuges to minimize releases (IROFSC23) applied to the centrifuges in all SBMs.

NOTE: Although there are multiple IROFS for this accident identifier, each IROFS is the sole item preventing or mitigating a chemical release specifically from the area to which the item applies. It is assumed the failure of any of those IROFS would result in exceeding the performance requirements of 10 CFR 70.61.

The failure probability index of (-3) was selected for IROFS27e, IROFS27c, IROFS28, and IROFSC23. This corresponds to a single passive engineered IROFS per NUREG-1520.

Likewise, for accident sequence EE-TORNADO & HIGH WIND-SBM-CRDB SHELL-UBC STORAGE PAD:

Accident Identifier: EE-TORNADO & HIGH WIND-SBM-CRDB SHELL-UBC STORAGE PAD (T)

(See Table 4.1-2) Excessive tornado and high wind loads leading to building failure of the SBMs, Interconnecting Corridor, the CRDB Shell, or the UBC Storage Pad crane and potential UF₆ release from process systems.

The uncontrolled event is excessive tornado loads and high wind loads above normal building or crane code design levels leading to building or crane failure and impacts on UF₆ process systems leading to UF₆ release. The event is assumed to have high consequences to the worker and public. Without explicit design basis, conservatively assumed initiating event index of (-2) which is appropriate for normal building code design.

For the controlled event, the mitigating measures are (1) a design feature of buildings containing UF₆ process systems for seismic, tornado, high wind, roof snow load, and roof ponding and site flooding due to local intense precipitation (IROFS27e) applied to SBMs 1001 and 1003 (including associated UF₆ Handling Area buildings), all UF₆ Handling Areas (beyond SBM-1003), Interconnecting Corridor, the CRDB Shell and UBC Storage Pad crane and (2) a design feature of the centrifuges to minimize releases (IROFSC23) applied to centrifuges in all SBMs. The application of these two sole IROFS ensures that a chemical release does not exceed the 10 CFR 70.61 performance requirements.

NOTE: Although there are multiple IROFS for this accident identifier, each IROFS is the sole item preventing or mitigating a chemical release specifically from the area to which the item applies. IROFS27e mitigates chemical releases due to building or crane collapse. IROFSC23 mitigates the chemical releases from centrifuges in all SBMs and beyond. It is assumed the failure of either of these IROFS would result in exceeding the performance requirements of 10 CFR 70.61.

The failure probability index of (-3) was selected for IROFS27e and IROFSC23. This corresponds to a single passive engineered IROFS per NUREG-1520.

Initial Screening

As reported, this satisfies question 2 of the Initial Deterministic Screening. (Although, an evaluation is being performed to determine if the IROFS is really failed, or just degraded.)

Section 2.a.i of ROI-0704, states, "If "YES" to any, complete the "Why" section and continue through the event follow-up process to step (3B) Threat and Uncertainty Criteria."

However, with the completion of the licensee's operability determination, question 2 is not satisfied, because the performance requirements would still be met.

Threat and Uncertainty Analysis

ROI-0704 Enclosure 4A, OPERATIONAL SAFETY, of the Threat and Uncertainty Matrix, is the applicable portion of the Threat and Uncertainty Matrix.

Because the licensee's engineering analysis of the seismic restraints determined that they **would** be able to perform their safety function, then the event is most similar to the following criteria in the Threat and Uncertainty Matrix.

Threat (Events) Type

1. Under 10 CFR Part 70, Subpart H, a licensee fails to meet the requirements of 10 CFR 70.61, "Performance Requirements," or Appendix A, "Reportable Safety Events," to 10 CFR Part 70, but the failure does not result in SL I - III violation or an IIT, AIT, or SIT.
2. A failure of safety systems or controls occur such that an acceptable safety margin has not been maintained, but the failure does not result in a SL I - III violation or an IIT, AIT, or SIT.
3. Under 10 CFR 70.72, a less significant failure to adequately evaluate a change to a facility results in implementation of the change without a required license or certificate amendment. The failure does not result in a SL I - III violation or an IIT, AIT, or SIT.
4. Under 10 CFR 70.24, a criticality accident alarm system fails to provide either detection or annunciation coverage of fissile material operations while fissile material was being handled, used, or stored.

Uncertainty (Failed Barriers)

Inspection

**Routine
Monitoring –
No Additional
Inspection
Recommended**

This is because if the licensee's analysis determines that the seismic restraints could still perform their safety function then the IROFS is not failed, but degraded, and the performance requirements of 10 CFR 70.61 were still met.

Event Management and Licensee Actions

The licensee moved the crane into a safe area where it was not above filled UF6 cylinders. The licensee also performed an engineering analysis/operability determination, and found that the crane's remaining restrains would perform their safety function with the damaged component.

Because this event is being managed, management can consider reducing the NRC response (i.e., from **AIT** to **SIT**, or from **SIT** to **Routine**), as applicable.

Staff Inspection Recommendation

Because the licensee's engineering analysis of the restraints determined that they would be able to perform their safety function, the details of the licensee's response to this event should be inspected during the next routinely scheduled OPS inspection. (Currently scheduled for the week of February 13th, 2023.)

These recommendations are based on:

- The criteria in the Initial Deterministic Screening (as informed by the licensee's operability determination)
- the criteria in Enclosure 4A, OPERATIONAL SAFETY, of the Threat and Uncertainty Matrix (see above)
- the licensee reporting that they moved the crane to a safe area

Management Review and Inspection Determination

Completed By: Timothy Sippel Date: 1/9/23

Approved By: _____ Date: _____

Branch Chief