U.S. Department of Homeland Security
Region 7
11224 Holmes
Kansas City, MO 64131

FEMA

August 8, 2022

John Benson, Director
Iowa Department of Homeland Security and Emergency Management
7900 Hickman Road, Suite 500
Windsor Heights, IA 50324

Subject: Level 1 Finding, 2022 Quad Cities Generating Station Biennial Radiological Emergency Preparedness Exercise

Dear Mr. Benson:

The purpose of this letter is to officially inform you of the Federal Emergency Management Agency's (FEMA) identification of a Level 1 Finding that resulted from the Quad Cities Generating Station (QCGS) Radiological Emergency Preparedness (REP) exercise conducted on July 12, 2022. A Level 1 Finding is being assessed against the Clinton County Emergency Management Agency due to inadequate planning and performance under the following demonstration criteria per the FEMA Radiological Emergency Preparedness Program Manual (RPM) dated January 2016:

Criterion 1.e.1: Equipment, maps, displays, monitoring instruments, dosimetry, potassium iodide (KI) and other supplies are sufficient to support emergency operations (NUREG-0654/FEMA-REP-1, H.7, 10; I.7, 8, 9; J.10.a, b, e; J.11, 12; K.3.a; K.5.b).
Sufficient quantities of potassium iodide (KI) were not available for emergency workers and institutionalized individuals.
During the exercise, the Dosimetry Control Officer (DCO) relied upon a spreadsheet to allocate KI and dosimetry from storage at the Clinton County Emergency Operations Center (CCEOC) to prepare Dosimetry Kits for distribution to county emergency facilities and emergency workers (EW), including institutionalized individuals incarcerated at the Clinton County Law Enforcement Center (CCLEC). The DCO spreadsheet listed a total requirement of seven hundred (700) packages of KI. The actual inventory on hand during the exercise was six hundred (600) packages of KI. It was noted that the Clinton County Radiological Emergency Response Plan (RERP) listed a requirement of five hundred and twenty-four (524) packages of KI, which was not in agreement with the DCO spreadsheet. However, the DCO referred to the spreadsheet rather than the RERP in performing their duties during the exercise, therefore the quantity of KI was not sufficient based on the procedures used.

Sufficient quantities of Permanent Record Dosimeters were not available for emergency workers.
The DCO spreadsheet (noted above) listed a total requirement of seven hundred (700) Thermoluminescent Dosimeters (TLDs). The actual inventory on hand during the exercise was six hundred (600) TLDs. It was noted that the RERP listed a requirement of six hundred and fourteen (614) TLDs, which was not in agreement with the DCO spreadsheet. However, the DCO referred

to the spreadsheet rather than the RERP in performing their duties during the exercise, therefore the quantity of TLDs was not sufficient based on the procedures used.

Sufficient quantities of Direct-Reading Dosimeters (DRDs) adequate to read the administrative reporting limit as required by the plans and procedures were not available for emergency workers.
The DCO spreadsheet (noted above) indicated a need for six hundred and twelve (612) DRDs for emergency workers. The actual inventory on hand included five hundred and ten (510) Model 622 (0-20R) DRDs and two hundred and fourteen (214) Model 725 (0-5R) DRDs. However, the Model 622 DRD is not adequate to measure the administrative reporting limit of 0.5R established in the RERP. It is extremely difficult to discern the movement of the hairline indicator that would correlate to an exposure of 0.5R on the Model 622 DRD. Therefore, only the Model 725 DRDs are considered adequate to read the administrative reporting limit per the RERP. It was noted that the RERP listed a requirement of three hundred and forty (340) Model 622 DRDs and one hundred and fourteen (114) Model 725 DRDs – a total of four hundred and fifty-four (454) DRDs. However, the DCO referred to the spreadsheet rather than the RERP in performing their duties during the exercise, therefore the quantity of DRDs adequate to read the administrative reporting limit was not sufficient based on the procedures used.

The Clinton County RERP, Section K, Part II – Monitoring of Emergency worker Exposure states "Additional personnel dosimetry, enough to provide a 24 hour per-day capability, will be available to Dosimetry Control Officers through the Iowa Department of Homeland Security and Emergency Management." However, the RERP also states in Section H, Part IV - Inventory, Inspection, and Maintenance of Emergency Equipment that "[a] complete inventory of all emergency equipment appears in Attachment A. This inventory includes both distribution locations and inventory numbers of all radiation detection instruments, personal protection devices, and Potassium Iodide tablets for emergency responders in support of this plan." Therefore, it can be inferred that the additional dosimetry noted in K.II refers to a response that extends into multiple shifts, rather than the initial distribution of dosimetry to emergency workers that was demonstrated during the exercise. This supports the conclusion above that the quantity of DRDs adequate to read the administrative reporting limit was not sufficient.

Criterion 3.a.1: The OROs issue appropriate dosimetry, KI, and procedures, and manage radiological exposure to emergency workers in accordance with the plans/procedures. Emergency workers periodically and at the end of each mission read their dosimeters and record the readings on the appropriate exposure record or chart. OROs maintain appropriate recordkeeping of the administration of KI to emergency workers. (NUREG-0654/FEMA-REP-1, K.3.a, b; K.4).
The emergency worker (EW) radiological briefing did not include information regarding the increased radiation risk or additional requirements related to lifesaving, protection of valuable property, or protection of large populations missions.
The DCO provided a radiological briefing to two (2) EWs during the exercise, as allowed in the Extent of Play Agreement. The briefing did not include information regarding the increased radiological risk and exposure limits for the missions noted above, or the requirement and process to obtain authorization to conduct those missions as required in the RERP. After the briefing, the two (2) EWs were interviewed by the evaluator and were not aware of the higher radiological risks and increased exposure limits related to those missions, or of the requirement and process to obtain authorization to conduct those missions. The Extent of Play Agreement for this exercise specified "[if] the emergency workers provided are not tasked in life saving activities, then the exposure

limits for life and property saving missions will be explained by the Dosimetry Control Officer." The DCO told the evaluator that if an EW were assigned to conduct life or property saving missions, they would be given an additional briefing. However, the DCO did not provide any details regarding what information would be included in the additional briefing.

The capability to provide emergency workers with adequate Direct-Reading Dosimeters (DRDs) was not demonstrated.
Two models of DRDs were available for emergency workers, the Model 622 (0-20R) and Model 725 (0-5R), as noted under criterion 1.e.1 above. The administrative exposure limit for emergency workers was 500mR and the turn-back value was 5R. The Model 622 is not adequate to measure the administrative exposure limit, because it is extremely difficult to discern the movement of the hairline indicator that would correlate to an exposure of 0.5R. The Model 725 is adequate to measure both the administrative exposure limit and the turn-back value specified on the RERP. As noted under criterion 1.e.1 above, the DCO spreadsheet used during the exercise to allocate dosimetry to EWs listed a requirement of six hundred and twelve (612) DRDs. However, there were only two hundred and fourteen (214) Model 725 DRDs available. The plans and procedures used during the exercise did not specify which DRDs would be issued for specific locations or functions.

Additionally, if any emergency workers were tasked with undertaking life-saving missions or protecting valuable property or large populations, the issuance of additional higher-range DRDs would be necessary as the lifesaving activities and protection of large population dose limit per the plans and procedures is 25R (higher than either the Model 622 DRD or Model 725 DRD can read). The DCO stated that this would occur separately at the Emergency Worker Monitoring and Decontamination location. The DCO did not explain during the EW briefing or through interview with the evaluator what higher range dosimetry would be issued, the process for how it would be issued, what circumstances would necessitate its use, or the additional information that would be provided to the EW. Ten (10) Model 740 (0-100R) DRDs were available at the CCEOC but were not briefed by the DCO.

Criterion 3.b.1: KI and appropriate instructions are available if a decision to recommend use of KI is made. Appropriate record-keeping of the administration of KI for institutionalized individuals is maintained. (NUREG-0654/FEMA-REP-1, J.10.e, f).
Sufficient quantities of potassium iodide (KI) were not available for institutionalized individuals at the Clinton County Law Enforcement Center (CCLEC).
The DCO spreadsheet, noted above under criterion 1.e.1 and used during the exercise to determine allocations of KI for emergency workers and institutionalized individuals, listed a requirement for thirty (30) packages of KI for the CCLEC. The DCO spreadsheet did not specify whether the thirty (30) packages listed were intended for the jail staff, institutionalized individuals, or both. Neither the County RERP nor the applicable County Standard Operation Procedures (SOPs) specify a quantity of KI for institutionalized individuals at the CCLEC. The thirty (30) packages of KI noted on the DCO spreadsheet, even if all were provided to the institutionalized individuals, is significantly less than the required amount because the average inmate population is approximately eighty (80) individuals, with a maximum population of one hundred and seventeen (117) as confirmed by the acting Clinton County Emergency Management Director. In addition, there are fifty-four (54) holding cells that could potentially be occupied during a radiological emergency. The inadequate quantity of KI as indicated in the DCO spreadsheet, and confirmed when verifying

the inventory during the exercise, could endanger the health and safety of institutionalized individuals.

Additional information related to the Level 1 Finding.
Although not included in this Level 1 Finding, there have been several similar self-identified issues and Level 2 Findings noted under these criteria at the CCEOC and CCLEC since 2018. These include:

- In 2018, a state-identified 3.a.1 issue for the CCEOC due to an incomplete dosimetry briefing, outdated EW handbooks and dosimetry record cards provided to EWs, and incorrect DRDs (0-200mR vs 0-5R) provided to EWs.
- In 2021, a 3.a.1 Level 2 Finding for the CCEOC due to incorrect DRDs (0-200mR vs 0-5R) provided to EWs. It was also noted in this issue that it is difficult to discern the 0.5R administrative limit when using 0-20R DRDs.
- In 2021, a 3.a.1 Level 2 Finding for the CCLEC due to incorrect DRDs (0-200mR vs 0-5R) provided to EWs, and jail leadership's lack of basic knowledge of requirements for dosimetry and KI for emergency workers.
- In 2021, a 3.b.1 Level 2 Finding for the CCLEC due to jail leadership's lack of knowledge of procedures for administering KI to institutionalized individuals, and the lack of related instructions in the County RERP or applicable SOPs.

The recurring and similar nature of the prior findings and those noted in this Level 1 Finding indicate a need to develop, maintain and demonstrate an increased level of proficiency.

In addition, based on the information provided, the state has not followed the correct process to extend the shelf life of the statewide supply of KI per the "Guidance for Federal Agencies and State and Local Governments – Potassium Iodide Shelf Life Extension" published by the Food and Drug Administration (FDA) in 2004. This was specifically addressed in the Extent of Play Agreement as not to be evaluated during the exercise, because FEMA was in the process of verifying the FDA guidance was still current. The FDA guidance has since been confirmed as current and requires two tests be conducted to show efficacy of the KI allowing a two-year extension and verification of the shelf life for the tested lot. The documentation provided by the state indicated only one of those tests has been completed, and the state extended the shelf life by five years rather than two. As noted in the Clinton County RERP, the Iowa Department of Homeland Security and Emergency Management (HSEMD) is responsible to purchase and maintain adequate supplies of KI for both state and local emergency workers' use. Therefore, in order to remediate the issues under criteria 1.e.1 and 3.b.1 noted above, HSEMD will also need to either correct the process used to extend the shelf life or obtain new supplies of KI statewide.

In accordance with 44 CFR 350.9(d) and the FEMA REP Program Manual, FEMA Region 7 conducted a Participant Briefing two days after the exercise to discuss the preliminary results of the evaluation. The potential issues listed above were discussed, and it was noted that they had not yet been classified as Level 1, Level 2, or Plan issues. The meeting participants, including representatives from the state, counties, and licensee, were given the opportunity to ask questions and provide their perspectives on the potential issues.

Because of the potential impact of a Level 1 Finding on the protection of the public health and safety, it must be corrected no later than November 9, 2022 (within 120 days from the date of the exercise) through appropriate remedial actions including remedial exercises, drills, or other actions. In accordance with the 2016 FEMA REP Program Manual, Part III.6.g.(1), if the remedial

exercise or other actions can be successfully completed by September 25, 2022 (within 75 days of the biennial exercise), FEMA will include the results and findings of the remedial exercise or other actions in the final After Action Report for the biennial exercise. Specific actions to correct the issues noted in this Level 1 Finding will include at a minimum updating relevant plans and procedures, obtaining sufficient quantities of KI for emergency workers and institutionalized individuals, obtaining sufficient quantities of Thermoluminescent Dosimeters (TLDs) and adequate Direct-Reading Dosimeters (DRDs) for emergency workers, and a redemonstration of criterion 3.a.1.

Please acknowledge receipt of this letter and propose a schedule for remedial actions no later than August 18, 2022.

Your cooperation in this matter is sincerely appreciated. Please contact Thomas Morgan, FEMA Region 7 RAC Chair, at (816) 808-2756 or via email at Thomas.Morgan5@fema.dhs.gov for any additional information.

Sincerely,

ANDREA K SPILLARS

Digitally signed by ANDREA K SPILLARS
Date: 2022.08.08 15:20:20 -05'00'

Andrea Spillars
Regional Administrator
FEMA Region 7

cc: Tom Warnock, FEMA HQ
Darren Bates, FEMA HQ
Jacob Nicholson, IA HSEMD
Jeremy Sroka, IA HSEMD
Allan Barker, NRC Region III
Michael Muth, Constellation