RAI 30:

Description of Deficiency: Staff cannot complete its evaluation of NUREG-1569, Acceptance Criterion 5.7.2.3(5).

Basis for Request: NUREG-1569, Acceptance Criterion 5.7.2.3(5), states: "Plans for documentation of radiation exposures are consistent with the approach in Regulatory Guide 8.7, "Instructions for Recording and Reporting Occupational Radiation Exposure Data, Revision 1" (NRC, 1992b)." In TR Section 5.7.2, the applicant discusses its external radiation exposure monitoring program, but does not provide information on its documentation for external radiation exposure monitoring.

Request for Additional Information: Consistent with NUREG-1569, Acceptance Criterion 5.7.2.3(5), please provide information on the applicant's documentation for external radiation exposure monitoring.

RAI 30 Response (09/25/14):

A new Section, 5.7.2.4, Exposure Reporting, has been added to reflect the recording and reporting of radiation exposure in accordance with RG 8.7.

Dosimeters are provided by a vendor that is accredited by National Voluntary Laboratory Accreditation Program (NVLAP) of the National Institute of Standards and Technology as required in 10 CFR § 20.1501. The dosimeters have a range of 1 mR to 1,000 R. Dosimeters are exchanged and read quarterly.

Results from personnel dosimetry will be used to determine individual DDE for use in determining TEDE in accordance with the instructions currently contained in the SHEQMS Volume IV, Health Physics Manual. External radiation exposure monitoring will be documented on NRC Form 5 or its equivalent.

CBR has data for other external dose parameters such as Shallow Dose Equivalent (SDE) and Lens Dose Equivalent (LDE) for the existing site. As with the DDE, it can be shown that the external doses are all less than 10 percent of the applicable limits. Extremity monitoring is required when the dose to the extremity is higher than the dose to rest of the body. This would be applicable to beta doses associated with aged yellowcake sources as discussed in Section 5.7.2.1.

5.7.2.3 Cumulative Exposures

Based on the proposed type of operations (i.e., wet process) and historical exposures at the current operations, no significant increase in risks associated with exposure levels are expected for employees that work at the MEA site and the current main operating CPF. The satellite facility will have a full-time staff dedicated to working at that site. However, there may be some employees who would work at both locations for specified periods of time. Regardless of work locations, all CBR employees would be monitored for occupational external exposure if the exposure is likely to exceed 10 percent of the occupational dose limit appropriate for the individual (e.g., adult or declared pregnant woman), as specified in 10 CFR 20 1201 (a). As stated above, all wellfield and facility personnel at the satellite facility will be included in the dosimetry program. The RSO would be responsible for determining the radiological monitoring requirements for all employees based on the facility radiation levels, worker job locations and tasks, and specific licensing requirements. The RSO would be responsible for reviewing the dosimetry results and comparing them with past data and regulatory exposure limits.

5.7.2.4 Exposure Reporting

The results of all radiation monitoring will be documented by the RSO and recorded as directed by Regulatory Guide 8.7. Routine and non-routine external and internal exposures will be recorded in the employee exposure database.

All monitoring data will be reviewed on an annual basis to assess trends and ensure that potential exposures to individuals for which monitoring is not required remains below 10% of the applicable standard.

In accordance with 10 CFR §19.13(b), monitored employees will be advised in writing on an annual basis of their calculated TEDE. Additionally, any employee may request a written report of their exposure history at any time. These reports will be provided within 30 days of the request and will provide the information outlined in 10 CFR §19.13.

Documentation of employee exposure reporting will include:

- Name

- SSN (where available)
- Gender
- Date of birth
- Monitoring period
- Licensee name and license number
- Quarterly deep dose
- Internal Exposures (Airborne Uranium, Radon Daughters)
- Deep, Committed Effective Dose Equivalent
- History

5.7.3 Satellite Facility Airborne Radiation Monitoring Program

The proposed airborne sampling location for the satellite facility is shown on **Figure 5.7-2**. The locations of the sampling points for radon, airborne uranium, and gamma surveys are based on experience with similar equipment and operations at the current CBR operations. Factors that would be considered are the stage of the process (some areas more prone to exposure than others), potential known release points associated with the equipment and operations, and airflow patterns (based on current CBR operations). The sites selected are expected to carry the highest potential for exposure (**Figure 5.7-2**). Proposed satellite facility survey and sampling locations address potential releases of radiological contaminants (specific release points in the process and resin storage areas) and in areas where sampling would identify any elevated exposure levels due to inadvertent contamination (i.e., office, change room, and restroom). Sampling points in the process area are similar to those in other proposed satellite facilities. During the first year of operation, CBR will assess the sampling locations and determine whether these locations provide data representative of the concentrations to which workers would be exposed.

The satellite facility would be subject to requirements of the SHEQMS Volume III, Operating Manual, which has a section on the operation of the ventilation system.

Locations of sample points are based, in part, on a determination of airflow patterns in areas where monitoring is needed. Once the ventilation system is installed and operational, and prior to process operations, a portable anemometer would be used to assess the ventilation patterns (i.e., direction and velocity) in the work areas. Specific attention would be given to areas perceived as having a higher risk for releases. Assessments would be made of any different configurations that may be used for the ventilation system. The RSO would work with those designing the ventilation system to minimize worker exposure and to locate monitors at the optimum locations, drawing upon experience from the current CBR operating facilities.

Once the final design has been completed, the RSO and operations staff would assess the most optimum locations for radiological sampling points. Once the facility is constructed and operational, another assessment would be made of the sampling points and results, the need for any changes to the monitoring points and frequency would be determined.

Monitoring locations and planned surveys would be consistent with RG 8.30. The airborne radiation monitoring program would allow for the determination of concentrations of airborne radioactive materials (including radon) during routine and non-routine operations, maintenance, and cleanup. The controls and monitoring program will be sufficient to limit airborne radiation exposures and airborne radioactive releases ALARA and will conform to regulatory requirements identified in 10 CFR Part 20.