SALTSTONE DISPOSAL FACILITY PERFORMANCE ASSESSMENT PROGRAM – IMPACTS OF SDU 6

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A Performance Assessment (PA) is a key risk assessment tool used to inform disposal and closure decisions

- Required by DOE Manual 435.1-1 for low-level waste disposal facilities
- Models fate and transport of constituents disposed in facility over long periods of time to determine potential future interactions with the environment and public
- Utilizes informed inputs and assumptions
- Modeling period begins at disposal facility closure
How does a PA inform?

- PA describes calculation of most defensible dose consequences or chemical concentrations over time
  
  - Focus on determining peak dose or chemical concentration - worst one-year period
  
  - Reflects potential variation in parameters and identifies key parameters for which the model has the greatest sensitivity (importance)
SRR maintains active PAs for:

F-Tank Farm

H-Tank Farm

Saltstone Disposal Facility (SDF)
Both DOE and NRC regulations provide performance objectives (POs) for the future Member of the Public (MOP) of 25 mrem/yr (not including radon and progeny in air) and future hypothetical inadvertent human intruder (IHI) of 500 mrem/yr.

- Calculate contaminant concentrations at points 1-meter and 100-meters from closed disposal facility.
- 100-meter data used to evaluate against MOP PO.
- 1-meter data used to evaluation against IHI PO.
UWMQ Program

- Unreviewed Waste Management Question (UWMQ) Program is in place to meet the requirements of DOE Manual 435.1-1 regarding PA change control
- Structured process for evaluating facility changes and new data
- Ensures that new data, information and proposed activities are reviewed against existing baseline
- A UWMQ Evaluation may lead to Special Analysis (SA) which is a more detailed evaluation
Current PA was developed by SRR and reviewed by DOE-SR, DOE-HQ (LFRG), SCDHEC, EPA, NRC and the public and was issued in 2009.

Since 2009 SRR has developed two SAs (in FY2013 and FY2014) to evaluate changes in the anticipated closure conditions versus those in the PA.

SAs have been reviewed as part of normal DOE oversite and NRC NDAA § 3116 monitoring.
Current Saltstone Facilities

SDU 1
Saltstone Production Facility

SDU 2

SDU 3

SDU 4

SDU 5

SDU 6

SDU=Saltstone Disposal Unit

We do the right thing.

8-22-2016
Projected Saltstone Facilities

- Pink dots represent 1-meter facility boundary in modeling.
- Other dots represent 100-meter facility boundary in modeling.
- 100-meter boundary is divided into sectors to evaluate large amount of modeling results.
- Letters represent various 100-meter boundary sectors.
FY2014 SA Doses by Sector

Years After Closure

Dose (mrem/yr)

Sector A
Sector B
Sector C
Sector D
Sector E
Sector F
Sector G
Sector H
Sector I
Sector J
Sector K
Sector L

Sector B
Sector K
Predicted SDU 9 Groundwater Flow
Predicted SDU 6 Groundwater Flow
SDU 6 Evaluation

- Condition of SDU 6 floor and roof differs from data used in the FY2014 SA
- Measures in progress to ensure leak tightness during operations are ignored in modeling
- Modeling assumes that the SDU 6 floor and roof are fully degraded leading to a bounding model compared to actual conditions
- Sector I peak dose increases approximately 10% (to 7 mrem/yr); however, no change to predicted overall facility peak dose in Sector K (12.6 mrem/yr)
Conclusions

- Current as-built condition of SDU 6 floor and roof does not impact the closed facility calculated peak dose, the ability to meet performance objectives, or the conclusions of closure documents.
- Newly collected data and information is continually being evaluated against the predictive modeling for potential impacts.
- The entire process is monitored and reviewed by DOE per DOE Order 435.1 and by NRC per NDAA § 3116.