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Background & History

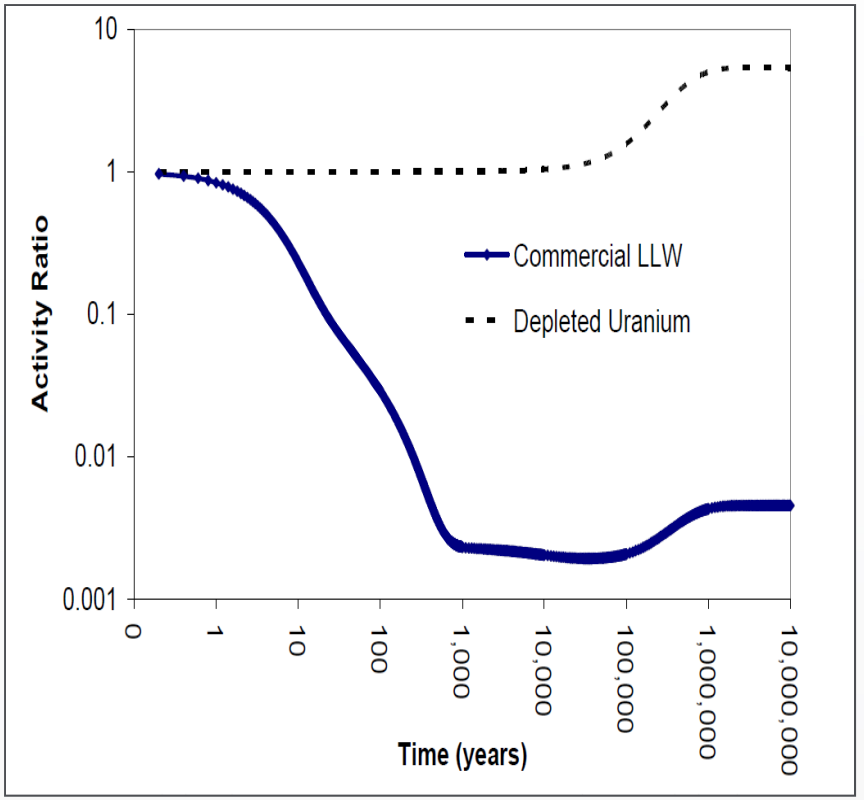
- In 1982, the NRC promulgated 10 CFR 61 defining uranium as Class A LLW.
- Analysis supporting the rulemaking only considered the typical or expected types of waste in existence at that time.
- Only small quantities of Depleted Uranium generated at that time by the commercial sector prior to 1982.
- In 2003, Louisiana Energy Services (LES) proposed constructing the National Enrichment Facility near Eunice, New Mexico.
- Commissioners directed its staff to determine whether or not DU could be safely disposed of in a near surface disposal facility.

Background & History

- Commissioners later directed its staff to begin a rulemaking to specify requirements for a site-specific analysis to ensure safe disposal of large quantities of DU (SECY-08-1047).
- NRC developed guidance for Agreement States to use if proposals for disposal of DU were requested by a licensee .
- Guidance suggested that disposal of DU may be appropriate in a near surface disposal facility under certain conditions (i.e., robust engineered barriers and disposal at greater depths).
- Final rulemaking expected to provided to Commissioners in the very near future.

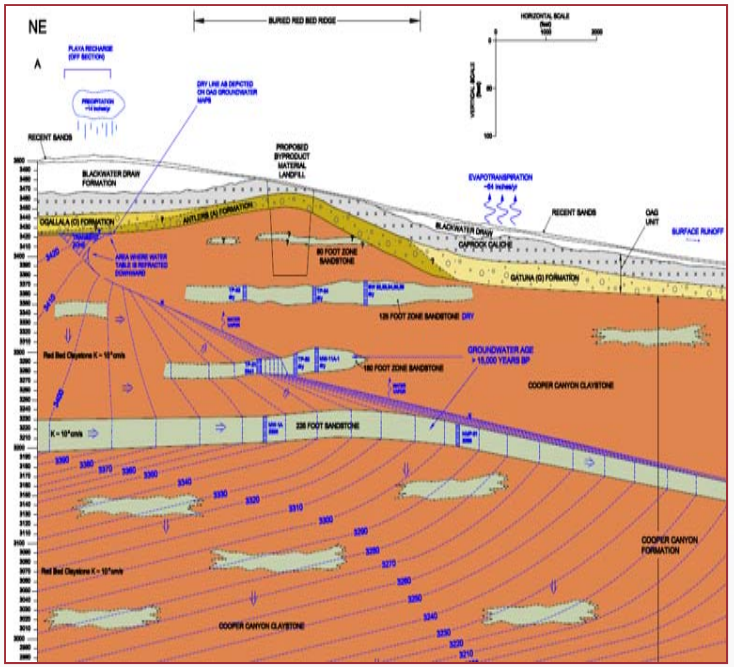
Activity Ratios & Period of Hazard

- The risk to public health related to disposal of DU is longer than other types of LLW due to the ingrowth of its progeny.
- The activity of some risk significant radionuclides increase by a much more significant amount than the overall activity.
  - ^{222}Rn and ^{210}Pb
  - DU with recycled U also contains mobile radionuclides
- Arid sites generally perform better than humid sites.
- Depth of disposal and engineered barriers key to protecting public health.



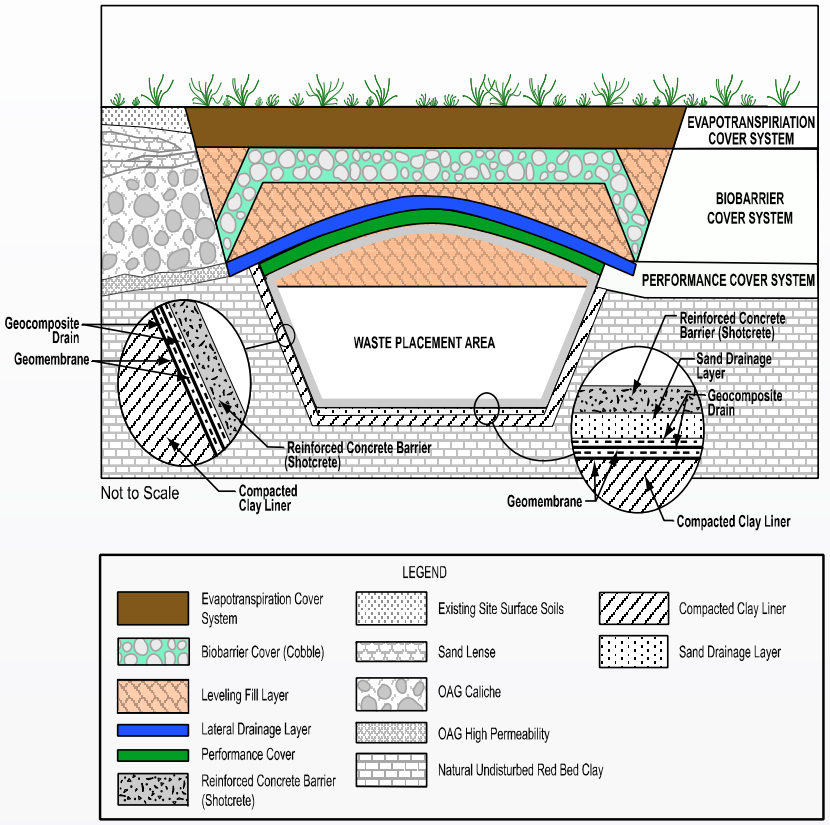
Technical Basis: Site Characteristics

- Texas reviewed and approved a major amendment authorizing disposal of DU in Andrews County in 2014.
- Waste to be disposed in the low permeability clays.
  - 500 to 800 feet of redbed clays;
  - Hydraulic conductivity of about 1E-09 cm/sec .
- Water table is 182 – 305 m (600 – 1000 ft) below grade.
- Annual rainfall less than 15 inches per year.
- Annual evapotranspiration potential of over 60 inches.
- Ideal for isolating long-lived radionuclides from the environment.



Technical Basis: Engineering Design

- Texas regulations require compliance for 1,000 years or peak dose, whichever is longer.
- A 10 m (33 ft) engineered cover
- A 0.3 m (1 ft) reinforced concrete barrier around the entire disposal unit.
- Waste disposal at deepest depth possible.
- Analysis demonstrated isolation of long-lived radionuclides possible in a well sited/engineered facility.



Conclusions

- Characteristics of DU differ and present additional challenges when compared to disposal of LLRW containing different radionuclides.
- A well-sited radioactive waste disposal facility located in an arid environment is more than capable for complying with a very stringent regulatory disposal requirements.
- Texas approval of a major amendment demonstrates that disposal of long-lived radionuclides in a well sited and engineered facility is capable of protecting public health for long periods of time into the future.

Questions

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