Used Fuel Disposition Campaign

KOSINA Collaboration

Ed Matteo

UFD Working Group
University of Nevada/Las Vegas
June 7-9, 2016

Sandia National Laboratories is a multiprogram laboratory managed and operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Corporation, for the United States Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000. SAND2016-4049 PE

What is KOSINA?

KOSINA Project

- BMWi/PTKA launched the R&D project KOSINA on July 1 , 2015

  (Konzeptentwicklung für ein generisches Endlager für wärmeentwickelnde Abfälle in flach lagernden Salzschichten in Deutschland und Überprüfung des entwickelten Sicherheits- und Nachweiskonzeptes)

  = development of a concept for a generic repository for heat generating waste in bedded salt in Germany as well as the review (adaptation) of existing safety and safety demonstration concepts

- Partners: BGR, GRS, IfG, and DBE TEC
- Duration: 32 months (end of project: February 28, 2018)

W. Bollingerfehr – 03/2016
7th Project Meeting KOSINA
Hanover, 16.03.2016

8

DBE TECHNOLOGY GmbH

KOSINA Overview – Moving the German Disposal Concept from Domal Salt to Bedded Salt

Objectives

- major objective:
  - development of a technical site-independent concept for a repository for heat generating waste and spent fuel on the basis of generic geologic models for bedded salt including a safety and safety demonstration concept
- detailed objectives:
  - development of a generic geologic model (+ parameters)
  - development of a safety and safety demonstration concept
  - development of technical repository designs
  - demonstration of geomechanical integrity

➢ provide a technical-scientific basis for the safety oriented evaluation of repository systems in different host rocks according to the site selection law.

W. Bollingerfehr – 03/2016
7th Project Meeting KOSINA
Hanover, 16.03.2016

9

DBE TECHNOLOGY GmbH

Structure of KOSINA Work Packages

Work Program

WP 1: Compilation of basic planning data and requirements (all)

WP2: Development of generic geologic models and derivation of model parameters (BGR and IfG)

WP3: Development of safety / safety demonstration concepts (GRS)

WP4: Analysis of geo-mechanical integrity (BGR und IfG)

WP5: Development of repository designs for 4 variants (DBE TEC)

WP6: Analysis of radiological consequences (GRS)

WP7: Evaluation of operational safety (DBE TEC)

WP8: Synthesis report (all)

KOSINA Current Status

Achievements

- ✓ **WP1:** Set of basic design data and requirements accomplished (waste inventory, legal design requirements, description of geological situation for bedded salt, survey of existing safety and demonstration concepts)
- ✓ **WP2:** Generic geologic model and model parameters developed for type bedded salt
- ✓ **WP3:** Draft outline of a safety and safety demonstration concept
- ✓ **Interim Report** (December 2015) on basic data and repository design requirements, on geologic models as well as on the outline of a safety and safety demonstration concept published

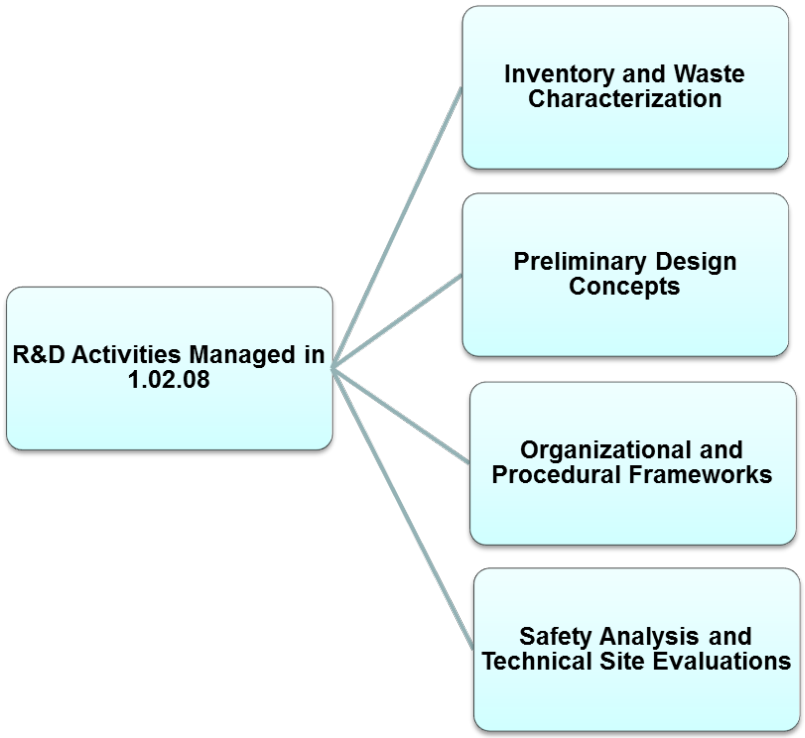
KOSINA Future Work

Outlook

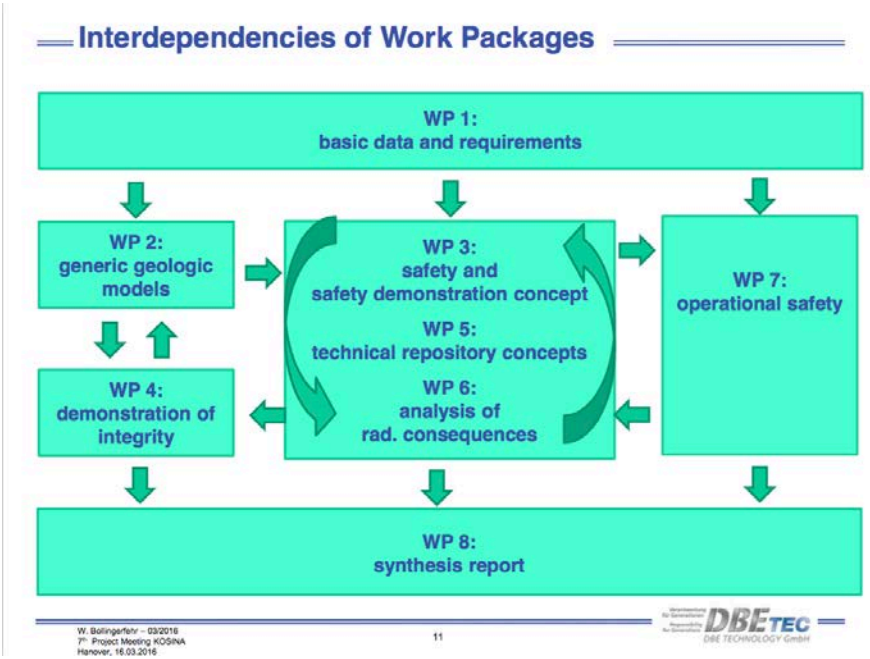
- step by step implementation of work program according to project schedule
- R&D project KOSINA is going to fill a gap on repository design and safety demonstration concepts
- R&D project KOSINA results will not be fully available for the final report of the Repository Commission (June 2016)
- However the expected results/final report will be available when a new site selection process is going to be implemented (2017/18)

Comparison between D-rep and KOSINA

D-Rep Work Package Structure



KOSINA Work Package Structure



Potential Overlap between D-rep and KOSINA

Potential areas of collaboration with KOSINA:

- ***Inventory – comparison of the OWL (online waste library) inventory by means of comparison with the German data management plan.***

- ***Safety Analysis – FEPS comparison and/or a PA comparison***

- ***Design Concepts –current plan to study salt discontinuities. This concept has potential to be expanded into an investigation of localized permeability effects localized in the vicinity of discontinuities.***