

Earth Science & Engineering Working Group

Initial Suite of Experiments?

What is missing?

Timeline?

Initial Suite of Experiments

	Ref #	Component Experiments
Shaft Access and Run-of-Mine Experiments	1	Paleohydrology / climatology WG 7
	2	Cloud Physics - Microgravity
Large Block Experiments - Pristine	3, 4, 5, 7	Characterization Experiments 0. Structure and pre-existing hydrology a. Fracture detection and mechanical, WG 8 transport & reaction characterization WG 7 b. Stress characterization WG 8 c. Inservice of physics d. Radiography of Earth
Large Block Experiments - Highly Perturbed	6, 9, 11, 13, 14, 15, 16, 17	THMCB Block a. Mechanics emphasis WG 8 b. Transport/reaction emphasis WG 7, WG 10
Remote Very Large Block/Reservoir-Scale Experiments	19, 20, 21, 22	THMCB Block WG 9 , (all below) WGs 7&8 a. Gas Storage b. Sequestration c. Hydrocarbon development d. Geogas e Ore formation
Drift Structure Experiments	23, 24, 25	Deep Excavation Mechanics a. Instrumented tunnel construction WG 8, WG 9 b. Tunnel sealing WG 8 c. Excavation technology WG 9 d. Large caverns
Deep Sampling & Earth-Probing Observatory	26, 27, 28	UUOBBER, WG 10, WG11 very deep/hot borehole cluster
	30, 31, 32	Seismic Observatory WG 8

What is missing?

- Emphasize characterization for caverns & physics
 - Reduce risk and \$\$
 - Transparent Earth
- Emphasize linkages with physics
 - State of the art cavern design and characterization for unique structures
 - Large span
 - Deep
 - Stability for occupancy
- Sedimentary –vs- igneous
 - Some experiments less relevant
 - e.g. CO₂ & hydrocarbons

Timeline?

- First characterization and work in support of physics caverns
- Characterization work for initial engineering/science tests (Non-destructive)
- Disruption of those tests after characterized (Destructive)
- Large volume tests – maybe start early if industrial support