	DBHD	**D**eep **B**ig **H**ole **D**isposal = Nuclear Repository	vs.	**DBD**	**D**eep **B**orehole **D**isposal = Storage ?
	Geology :	Rocksalt (LAYER - better then Salt-Dome)		Geology :	Hardrock - Granit or similar or whatever
	Closure :	Mountain-Pressure does Rocksalt (gas-tight)		Closure :	**NO gas-tight closure possible !!!**
		Starts after building back the support rings			Concrete shrinks during hydratation
		Takes 80 to 120 years by Mountain Pressure			Bentonit falls together over the time
	Diameter :	D = 12 Meters, upper area, Entrance-Drill		Diameter :	max. D = 1,4 Meters on top
		D = 20 Meters, lower area, chain saw area			max. D = 0,5 Meters at bottom
	Drill-Tec. :	SBM - Shaft-Bore-Maschine (HK AG DE)		Drill-Tec. :	Rotary-Drill-Rig (Oil-Drill-Technology)
		works widely in a full automatic manner			slim and screwed tube-containers
	Depth :	down to a maximum of - 2.800 Meters		Depth :	app. - 3.000 Meters (D = 0,35 m)
	Cooling :	Building site with water cooling - 5,4 °C		Cooling :	no building site cooling possible
		Building site with air cooling + 10 °C			
	Hand-Work :	possible, work-environment with + 18 °C		Hand-Work :	NOT Possible - only from a long steel rope
	Containers :	GNS Castors D=2,6 m - wall-thickness 0,45 m		Containers :	Not existing yet wall-thickness app. 0,05 m ?
		widely safe in a radiological manner			in-sufficient safety in a radiological manner
	Capacity :	Storage-Capacity is high (3.520 Mg/Tons)		Capacity :	Storage-Capacity is very little
		app. 352 Castors in each DBHD (8x DBHD)			ca. 1-2 Mg (Mg/Tons) in each DBD

DBHD	**D**eep **B**ig **H**ole **D**isposal = Nuclear Repository	vs.	**DBD**	**D**eep **B**orehole **D**isposal = Storage ?	
Earth-Quakes :	Earth-Quake SAFE because of moveable		Earth-Quakes :	partly Earth-Quake safe	
	Single-Concrete-Pellets and Stretching-Fuges			only very few containers would be opened	
Corrosion :	Very slow, then Concrete, then Rocksalt		Corrosion :	fast, then upward leakage by gas pressure	
Safety :	Over all safety level 100 % plus XY		Safety :	Over all safety level only 40 to 60 %	
Development :	2014 to 2020 by Diploma Engineer Goebel		Development :	1970 by Sandia USA / 1990 by University	
	Data by German Nuclear Rep. Commission			of Sheffield UK / 2010 by Deep Isolation USA	
Status :	3 CAD Draft Plans existing (DE/CH, CA, Int.)		Status :	Only rough pre-scetches existing	
	Some rough execution plans with cooling			Dummy Test by Deep Isolation USA	
	systems for the building site existing now			with a D = 12 cm !!! Dummy Container	
Calculations :	Long-Term-Proof-Calculation is undone !		Calculations :	unclear, the author got no information	
	Thermodynamics 20 % done., Geomechanic,			Proof-Calculations nearly impossible	
	Geochemics and Corrosion undone (Comsol)			because hundreds of different geologies	
Boundries :	Mix of older and younger Castor containers		Boundries :	**NO gas-tight closure possible**	
	to keep the thermal border temperatures			please do not build such useless holes	
Costs :	app. 5,4 Mrd. EUR for the total amount		Costs :	never calculated for the total amount DE	
	of highly radioactive materials DE+CH			Probably expensive - because small units	
	(plus Castors and plus rail transports)			method + De-fixing & Re-packing of HLW	

DBHD	**D**eep **B**ig **H**ole **D**isposal = Nuclear Repository	vs.	**DBD**	**D**eep **B**orehole **D**isposal = Storage ?	
	Evidence of SUB-CRITICALITY in the repository			Evidence of SUB-CRITICALITY in the repository	
	21 kg plutonium and TNT Ex = atomic bomb			21 kg plutonium and TNT Ex = atomic bomb	
	1 spent fuel container contains app. 300 kg PU			1 spent fuel container contains app. XY kg PU	
Spent fuel :	**Sub-criticality** due to casting lead into spaces		Spent Fuel :	Warning : smallest containers entice to	
	Container-Inventory : "spent fuel bundles"			tempt to strive for "tightest packing"!	
	Eternal preservation of spatial plutonium			Fake Isolation Berkley wants to : de-fix the	
	mixture within the individual fuel rods			6 meter long activated fuel-bundles !!!	
	Eternal preservation of distances between			into single 11 mm rods, and then re-pack	
	individual fuel rods through lead casting			them as tight as possible in Mini-Containers	
	Longest-lasting pressure sequence from:			Then proof of under-criticalness not longer	
	Castor und Beton-Pellet (2x dickwandig)			given. Atomic-Bomb-Construction DANGER	
	Very good material-density stratification			and most Containers are squeezed open	
	Uranium-Lead-Cast Iron-Concrete-Rocksalt			because small drill diameters 14 inch	
	19,1 --- 11,34 --- 7,2 --- 2,6 --- 2,16 g/cm3			allow them only minimum wall thinckness	
	Package resists mountain pressure with ease			ATTENTION - DANGER - Content RELEASE	
	max. mountain pressure up to 60 MPa			max. mountain pressure up to 65 MPa	
	in the max. depth of - 2.800 Meters			in a depth of - 3.000 Meters	
	Proof of subcriticality is required within a			Proof of subcriticality is required within a	
	physical calculation - that compares the			physical calculation that compares the	
	mountain pressure with a bomb explosion			mountain pressure with a bomb explosion	
	pressure - Since the approx. 300 kg PU			pressure - Since the PU is concentrated	
	are "widely distributed" in the DBHD			because of the tight packing method	
	storage, "**no critical mass is possible**"!			"**a critical mass can be reached !** "	

DBHD	**D**eep **B**ig **H**ole **D**isposal = Nuclear Repository	vs.	**DBD**	**D**eep **B**orehole **D**isposal = Storage ?	
Border-Temperature	The temperature at the border : Container to Host rock geology is of importance !		Border-Temperature	The temperature at the border : Container to Host rock geology is of importance !	
	Border-Temperature DBHD is + 250 °C			**Border-Temperature DBD is unknown**	
	Depth : down to app. - 2.800 Meters			Depth : down to app. - 3.000 Meters	
	Environment-Temperature there + 93 °C			Environment-Temperature there + 99 °C	
	PLUS XL Decay Heat from HL-Waste			Plus XL Decay Heat from HLW	
Melting-Temperatures	Uranium (Nature-Uranium) app. 1.132 °C		**Melting-Temperatures**	Uranium (Nature-Uranium) app. 1.132 °C	
	Zirkaloy Hull-Tubes app. 3.000 °C			Zirkaloy Hull-Tubes app. 3.000 °C	
	Lead-Casting of Castor**s app. 327 °C**			Fine-Grain Structural Steel 900 to 1.500 °C	
	Cast Iron (C-globular) Castor app. 1.480 °C			Hard-Rock app 700 bis 1.250 °C	
Concrete up to + 400 °C particulary press-resistant	Aluminium Seals Castors app. 600 °C Concrete (Concrete-Pelletes) app. 1.400°C Magnetit-Ad-Mixture app. 1.250 °C Melting-Temp. Rocksalt app. 801 °C		geological environment mostly unknown	Some clever hints for Ms. Muller and Team : done in hardrock California = hopeless case if in deep rocksalt USA south and complete fuel bundles with lead casting = possible	
	Choosen max. Border-Temperature + 250 °C			**Possible Border-Temperatuer app. + 550 °C**	
	Thermodynamic Calculation required !			**Thermodynamic Calculation required !**	
	Normal People judge + 100 °C as very hot/hurting - But Metalsl and Stones see 250 °C permanently as completely normal			Normal People judge + 100 °C as very hot/hurting - But Metalls and Stones see also + 550 °C permanently as very normal	
	Consequence: low volume expansion that is given space by the viscosity of rocksalt			Consequence: the volume expansion causes **Stress-strain cracks** in the hard-rock host	