DBHD	**D**eep **B**ig **H**ole **D**isposal = Nuclear Repository	vs.	**MINES**	Horizontal Storage **Mines** (nagra, Posiva Oy ...)
Geology :	Rocksalt (LAYER better not in Salt-Dome)		Geology :	Saltdomes or Claystone or Granit
Closure :	Mountain-Pressure does Rocksalt (gas-tight)		Closure :	NO gas-tight closure possible !!!
	Starts after demolishing the support rings			Concrete shrinks during hydratation
	Takes 80 to 120 years by Mountain Pressure			Bentonit falls together over the time
Efficiency :	very efficient - describing the relation		Efficiency :	very in-efficient - describing the relation
	between opened m3 to storage m3			between opened m3 to storage m3
Drill-Tec. :	SBM - Shaft-Bore-Maschine (HK DE)		Drill-Tec. :	old and in-efficient machine technology
	works widely in a full automatic manner			very very slow building process
Depth :	down to maximum - 2.800 Meters		Depth :	app. - 1.400 Meters
Cooling :	Building site with water cooling - 5 °C		Cooling :	it is not possible to cool down such huge
	Building site with air cooling + 10 °C			structures - therefore they stay un-deep
Hand-Work :	possible, work-environment with + 18 °C		Hand-Work :	possible, work-environment with + 28 °C
Containers :	GNS Castors D=2,6 m - wall-thickness 0,45 m		Containers :	Pollux Containers - but they are not fill-able
	widely safe in a radiological manner			and have insufficient radiological shielding
Capacity :	Storage-Capacity is high (3.520 Mg/Tons)		Capacity :	Storage capacity is theoretically very high
	app. 352 Castors in each DBHD (8x DBHD)			All high level waste concentrated in one place

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Earth-Quakes :	Earth-Quake SAFE because of moveable		Earth-Quakes :	Earth-Quake Safe - Single Containers
	Single-Concrete-Pellets and Stretching-Fuges			in many many single small chambers
Ice-Ages :	survives deepest new ice age scarfs easily		Ice-Ages :	is likely to be opened by new ice ages
Corrosion :	Very slow, then Concrete, then Rocksalt		Corrosion :	Slow, but then leaking out all gases
Safety :	Over all safety level 100 %		Safety :	Over all safety level 20-40 %
Development :	2014 to 2020 by Diploma Engineer Goebel		Development :	DBE, GNS, Andra, NWMO, nagra, etc.
	Data by German Nuclear Rep. Commission			follow the long overdue old mine idea
Status :	3 CAD Draft Plans existing (DE/CH, CA, Int.)		Status :	many small pre-scetches existing
	Some rough execution plans with cooling			many element-parts scetches existing
	systems for the building site existing now			old mine Gorleben existing
Calculations :	Long-Term-Proof-Calculation is undone !		Calculations :	much element-parts data existing
	Thermodynamic 20 % done., Geomechanic,			but no long term full system calcultion
	Geochemics and Corrosion undone (Comsol)			all calculations accepted full IOD 129 loss
Boundries :	Mix of older and younger Castor containers		Boundries :	no gas-tight mine closure possible !!!
	to keep the thermal border temperatures			never ever build such old mine ideas
Costs :	app. 5,4 Mrd. EUR for the total amount		Costs :	app. 30 Mrd. EUR - many empty corridors
	of highly radioactive materials DE+CH			De-assembling of activated spent fuel bundles
	(plus Castors and plus rail transports)			and repacking them into smaller containers

DBHD	**D**eep **B**ig **H**ole **D**isposal = Nuclear Repository	vs.	**MINES**	Horizontal Storage **Mines** (nagra, Posiva Oy ...)
	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 (BK3) containers entice
	Container-Inventory : "spent fuel bundles"			to tempt to strive for "tightest packing"!
	Eternal preservation of spatial plutonium			DBE Tec copyists 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			cheap material-density stratification > Corrosion
	Uranium-Lead-Cast Iron-Concrete-Rocksalt			Uranium 19,1 - Steel 7,85 - Rocksalt 2,16 g/cm3
	19,1 --- 11,34 --- 7,2 --- 2,6 --- 2,16 g/cm3			UNSHIELDED 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 22 MPa
	in the max. depth of - 2.800 Meters			in a depth of - 1.000 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.	**MINES**	Horizontal Storage **Mines** (nagra, Posiva Oy ...)
Border-	The temperature at the border : Container		Border-	The temperature at the border : Container
Temperature	to Host rock geology is of importance !		Temperature	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. - 1.000 Meters
	Environment-Temperature there + 93 °C			Environment-Temperature there + 33 °C
	PLUS XL Decay Heat from HL-Waste			Plus Decay Heat from HLW (big spaces)
Melting-	Uranium (Nature-Uranium) app. 1.132 °C		**Melting-**	Uranium (Nature-Uranium) app. 1.132 °C
Temperatures	Zirkaloy Hull-Tubes app. 3.000 °C		**Temperatures**	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			Melting-Temp. Rocksalt app. 801 °C
Concrete up	Aluminium Seals Castors app. 600 °C			Melting-Temp. Claystone app. 1.800 °C
to + 400 °C	Concrete (Concrete-Pelletes) app. 1.400°C			dry-out scarfs in Claystone
particulary	Magnetit-Ad-Mixture app. 1.250 °C			Melting T. Hard-Rock app. 700 bis 1.250 °C
press-resistant	Melting-Temp. Rocksalt app. 801 °C			stress-strain cracks in Hard-Rock
	Choosen max. Border-Temperature + 250 °C			**Possible Border-Temperature app. + 140 °C**
	Thermodynamic Calculation required !			**Thermodynamic Calculation required !**
	Normal People judge + 100 °C as very			Normal People judge + 100 °C as very
	hot/hurting - But Metalsl and Stones see			hot/hurting - But Metalls and Stones see
	250 °C permanently as completely normal			also + 140 °C permanently as very normal
	Consequence: low volume expansion that			Consequence: low volume expansion causes
	is given space by the viscosity of rocksalt			**dry-out cracks** in the Clay-Stone host