



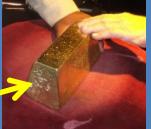
Part 2 -- Gold Mines in South Africa



End Time Issue Ministries

Dr James A Robertson PrEng





Gold mining, a precision industry















Gold mining, massive machinery, energy, force







Gold mining, a precision industry



The Gold is in thin veins which must be carefully located and traced and blasted out of extremely hard rock



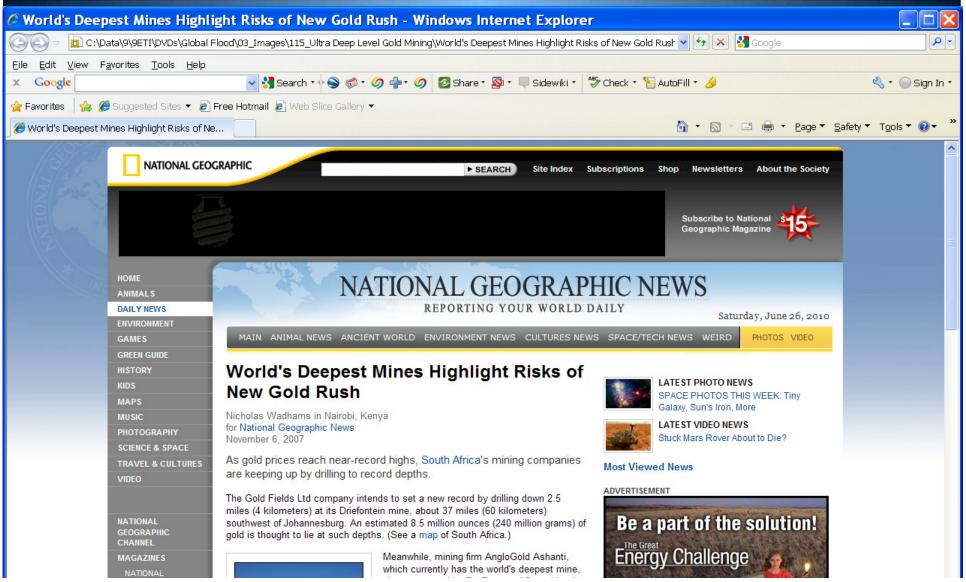
- Locating the Gold is a major activity with exploration drilling from the surface
- The Gold bearing rock (ore) must be kept separate from the waste rock, dilution is a major cost driver
- The ore is crushed very finely and the gold is extracted chemically with a very precise process
- The gold is then extracted from the chemical mix and smelted in a furnace from which rough gold bars are produced
- Fine gold is extracted and then sold for manufacturing of jewellery, electronic circuitry, etc



South Africa has produced 40% of recent world Gold production from these mines

Deepest Gold Mine over 3.9 kilometers deep

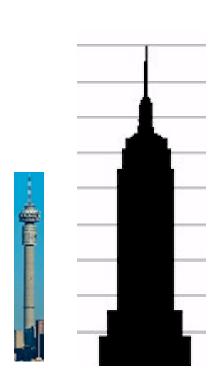




Deepest Gold Mine over 3.9 kilometers deep



- > 14.5 x Hillbrow Tower
- > 4.7 x Burj Khalifa
- > 2 kilometers BELOW sea level





The same geological formation as Northcliff and the Magaliesberg



Northcliff

Magaliesberg



+/- 50 km North

Gold Mine



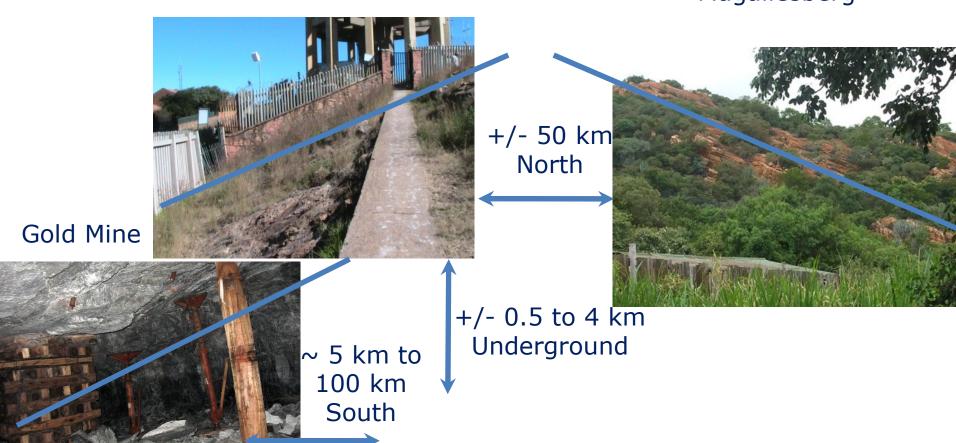
~ 5 km to 100 km South +/- 0.5 to 4 km Underground

The same geological formation as Northcliff and the Magaliesberg





Magaliesberg



Hard metamorphosed rock



Northcliff – vitrified (ceramic) Quartzite – intense heat and pressure

Gold mine- vitrified (ceramic) Quartzite - intense heat and pressure

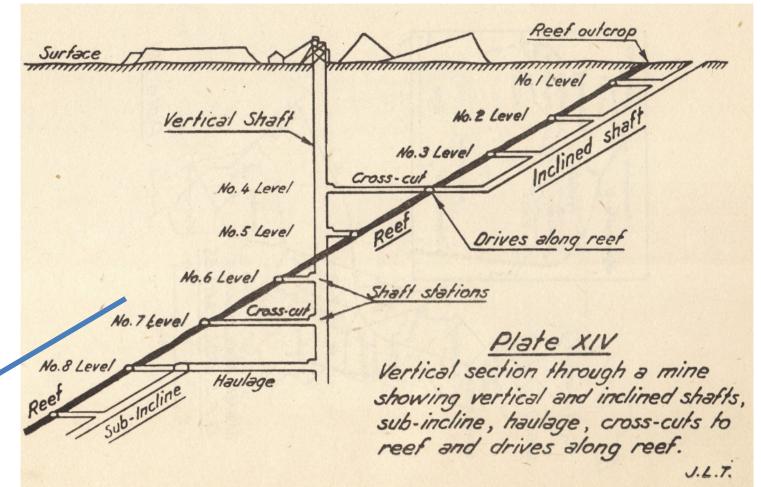


Dipping at about 30 degrees



Horizontally deposited under water but now dipping about thirty degrees

How did this Happen?





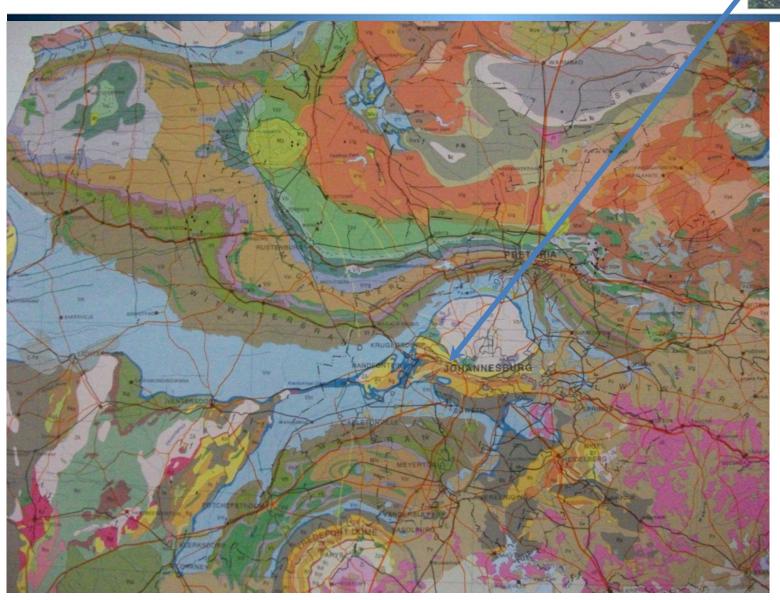
Dipping at about 30 degrees





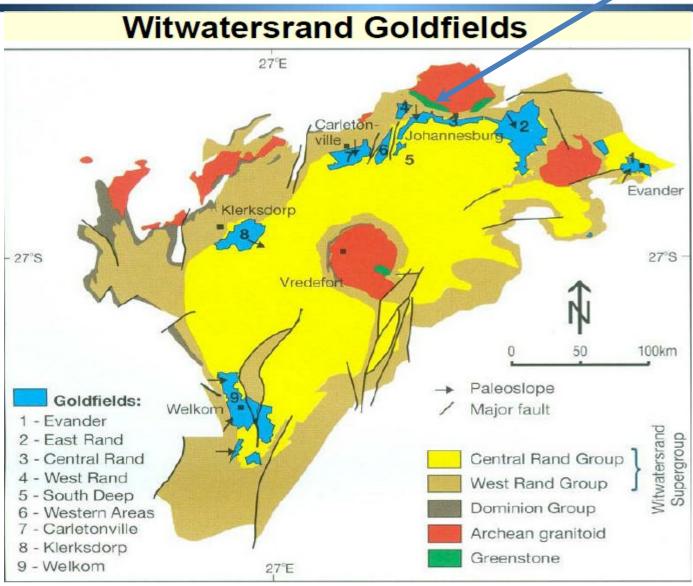
Highly complex geology





Gold fields Dispersed and highly faulted





Highly faulted

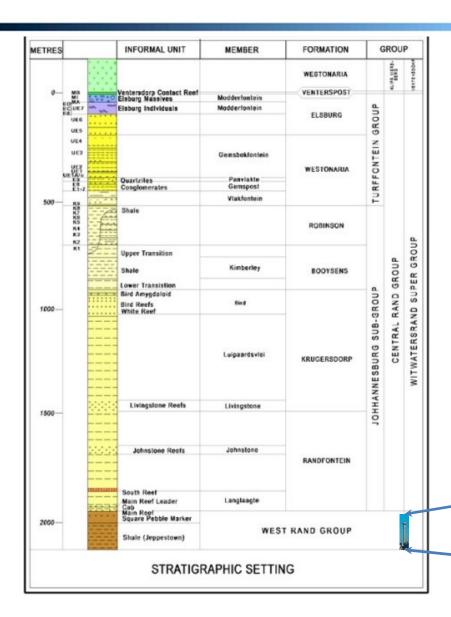


➤ Top cut off level ➤ THE WITWATERSRAND SUPERGROUP Horizontal deposits on to NORTH HTUC В KAROO SUPERGROUP Pretoria Group TRANSVAAL SUPERGROUP Chuniespoort Group VENTERSDORP SUPERGROUP Line of section 30 km Central Rand Kimberley Reef Group WITWATERSRAND SUPERGROUP West Rand Group Evander Goldfield Fault

g. 20 North-south section across the Evander Basin (modified after E.B. Tweedie, 1986).

Great depth and extent Stratigraphic column



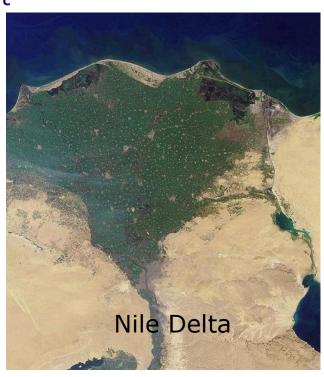


- Stratigraphic column over 2,000m vertical depth = 7.4 x Hillbrow Tower
- ▶ i.e. The body of water in which this material was deposited was able to receive the discharge of two (2) kilometers vertical depth of sediment
- And there had to be a source of material for two kilometers of deposition
- And the deepest mines are close to four (4) kilometers deep, that is over two (2) kilometers BELOW current SEA LEVEL

Massive hydraulic action

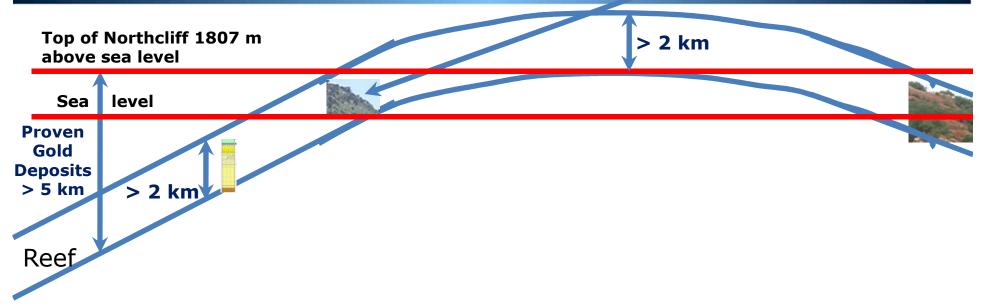


- Required a very large body of water in terms of depth, extent and erosion sources
- NOT a stream deposited formation or delta the ore bodies are of reasonably uniform thickness and wide extent
- A VERY VERY VERY LARGE SEA
- Widespread uniform deposition implies
 - > widespread uniform sea
 - high velocity deposition



Massive depth and extent of water Massive surface vertical displacement







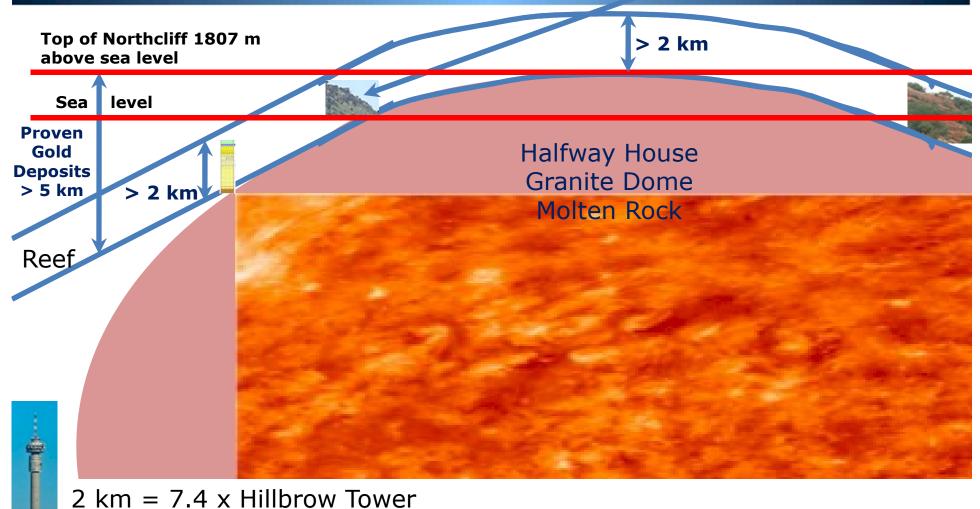
2 km = 7.4 x Hillbrow Tower

5 km = 18.6 x Hillbrow Tower

Massive depth and extent of water Massive surface vertical displacement

 $5 \text{ km} = 18.6 \times \text{Hillbrow Tower}$

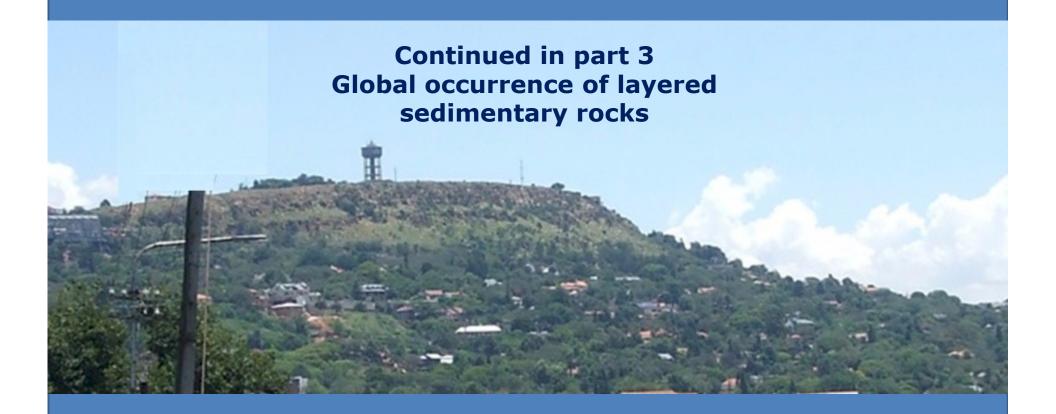




Summing up



- > Huge depth and extent
- Horizontally deposited but now sloping steeply
- Massive faulting
- > Can only result from deposition in water over a large area
- Subject to intense pressure and temperature
- Where did it come from?
- ➤ How did it happen?



Contact me <u>James@ETI-Ministries.org</u> Website <u>www.ETI-Ministries.org</u>