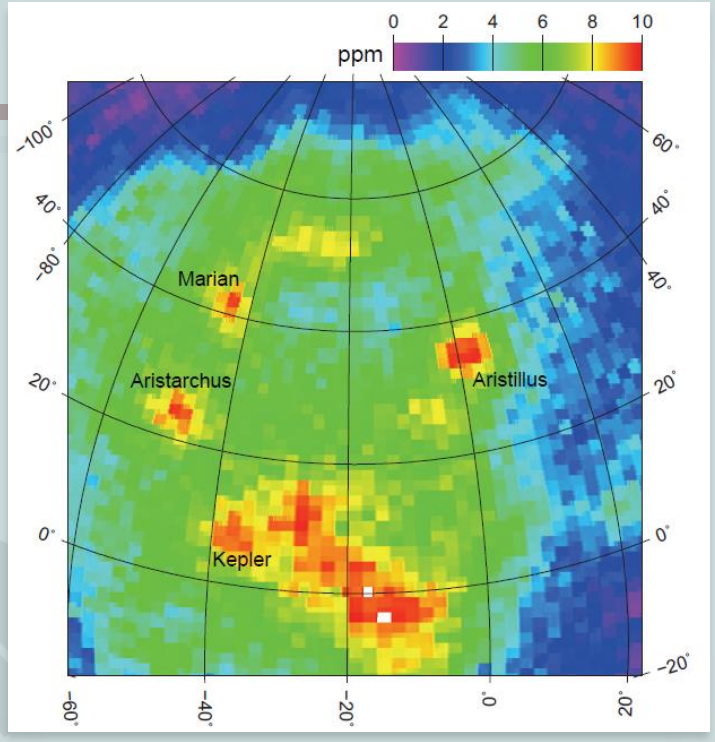
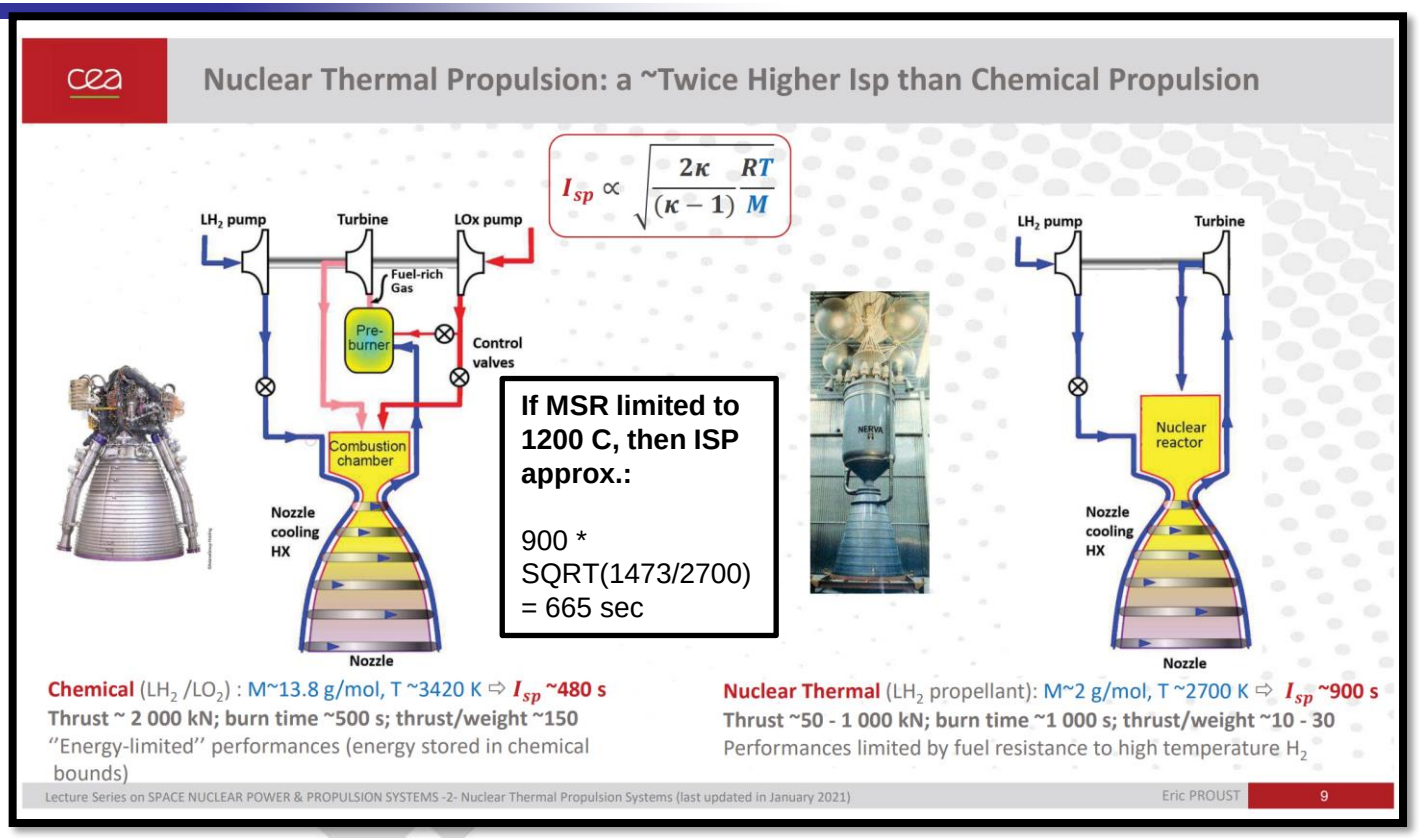
Lunar Power



- Thorium has been detected on Moon by Chang e 2 also.
- One kilogram of Thorium taken from Earth to begin with can provide 2.6 thermal MW plant for a year.
- Imagine ten such plants in ten different locations with ten kg of Thorium taken from Earth and the associated salt, which will eventually become self-sustaining with Lunar Thorium.
- Only the first such plant will require neutron producing radioactive material to commence the chain reaction.
- The U233 thus produced can provide any further neutrons for additional reactors, thus becoming self-sustaining.
- For power on Lunar surface however, this is only ONE of the promising options. Different location may find different solutions, such as beamed power from SBSP, or a combination there of, as whatever would be ideal for that locale.

Space Propulsion

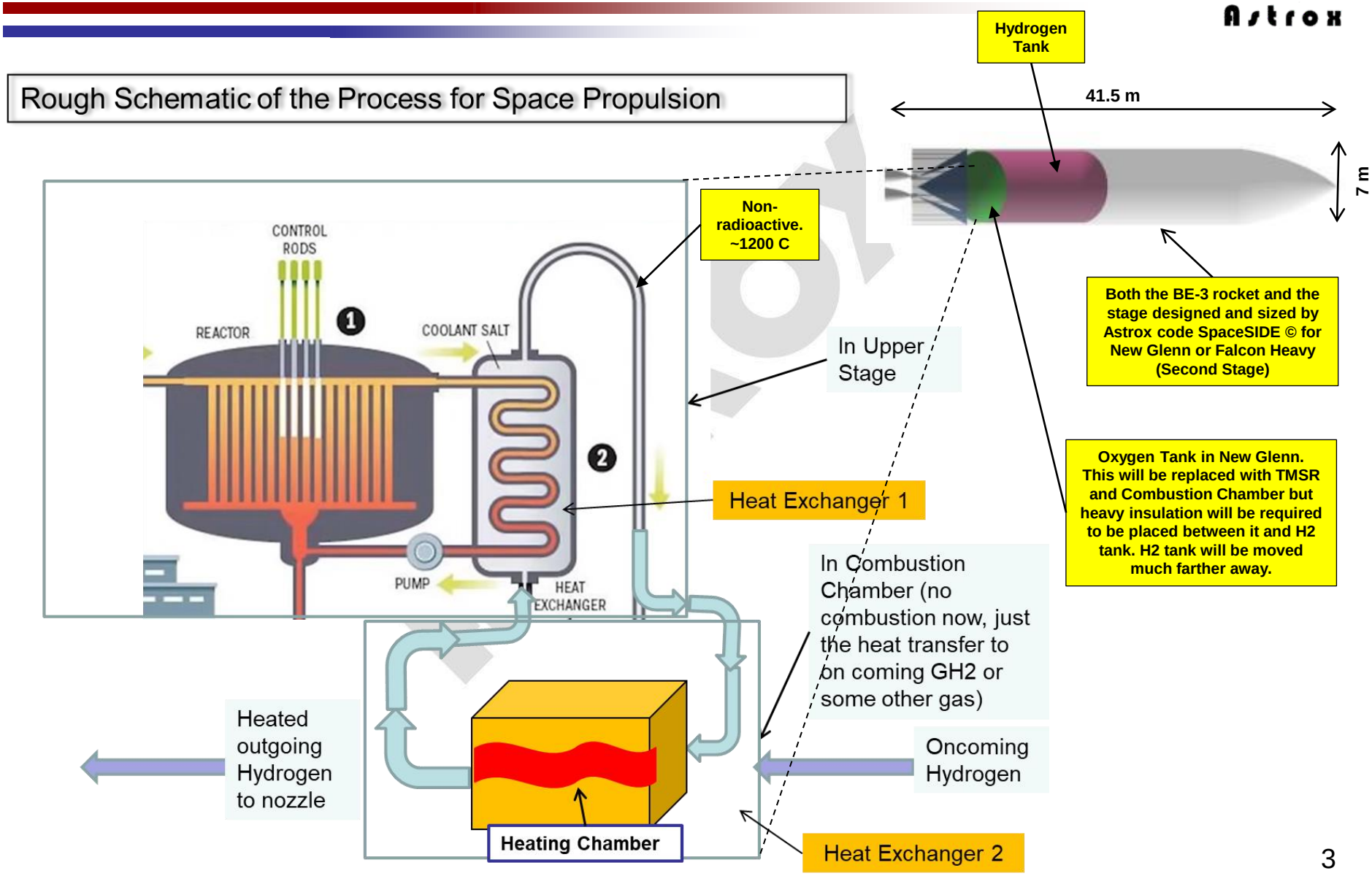


Courtesy: John Livingston

With considerable reduction in size and weight compared to NERVA type solutions, MSR maybe more attractive at system level.

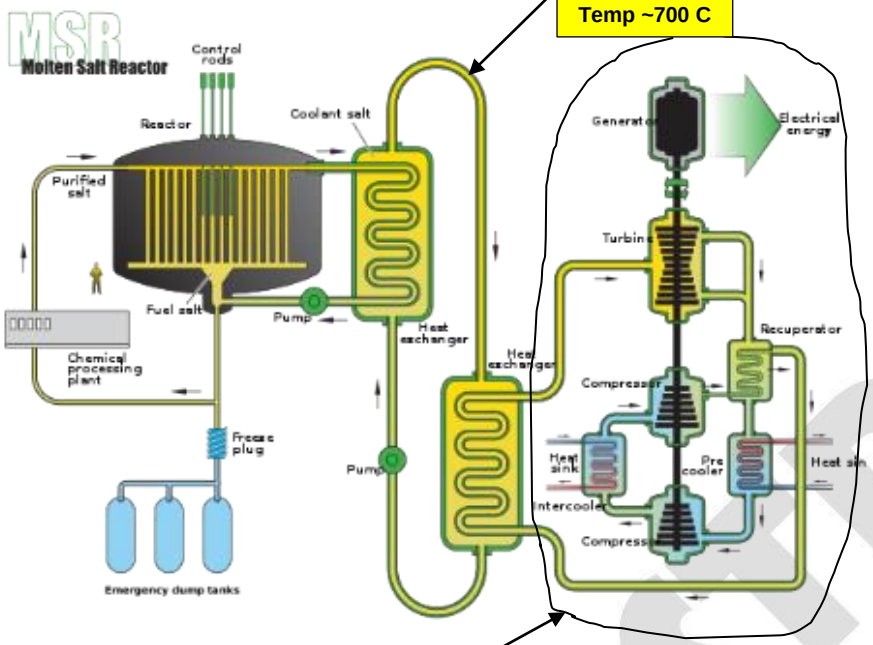
Space Propulsion – for journeys within CiSLunar space and to Moon/Mars

Astrox



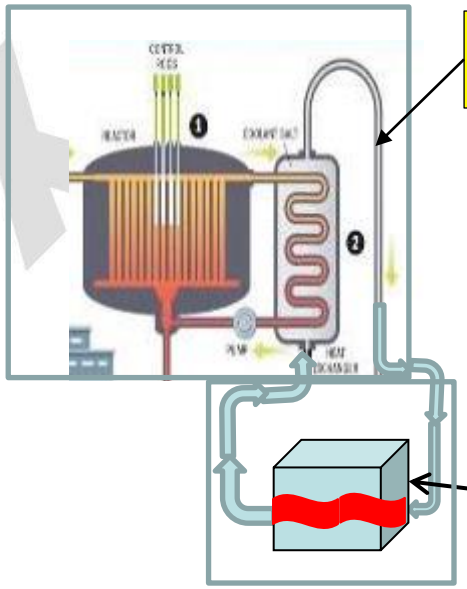
Repurposing TMSR on Moon/Mars

Non-radioactive. Temp ~700 C



Closed loop CO2 turbine cycle for electricity production for habitats. Taken separately or in the same payload bay.

Non-radioactive. Temp ~700 C



Lunar Regolith or Ice

- Repurposing allows for reuse of the reactor
- Temperature of the molten salt is reduced to ~700 C whereby the corrosion of containment/pipes would be nil to limited (as ORNL 2 MW reactor showed)

SUMMARY

For US and the World terrestrially:

- Thorium offers immense supply of energy that can last several thousand years
- No CO2 emissions or pollutants
- No high-pressure explosion possibility
- Twice the efficiency of conversion to electricity as PWR
- Natural and fail-safe (freeze valve) mechanisms
- <1% radioactive waste products compared to ~95% for PWRs of today
- No Plutonium that can be used for nuclear explosives
- Does not need to be near water supply (river/lake/ocean), so can be built even in desert (ideal for Moon/Mars)
- Can be refueled continuously with chemical processing in the loop – without having to shut down as in PWRs
- WHAT MORE DO WE WANT???
- I respectfully urge this Administration to take this idea seriously and provide funding for this RD&E


First Woman on Mars – Must Go Gingerly
AjayPK