

# Demonstration Rocket for Agile Cislunar Operations DRACO as a Technology Enabler

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Briefing Prepared for  
USRA/SPI Program on Space Nuclear Technologies

21 March 2024



## Program Objective: Demo a high-assay low enriched uranium (HALEU) NTR in space in FY27

- DRACO seeks to demonstrate **leap-ahead space propulsion** technology
  - Current space propulsion includes electric (high efficiency but low thrust) and chemical (high thrust but low efficiency)
  - **A Nuclear Thermal Rocket (NTR)** can achieve thrust similar to chemical systems, but with 2-3 times the efficiency

- NTRs have been built and tested before – 23 reactors in the NERVA/Rover program but only on the ground (right).
- **What is new in DRACO is the use of HALEU and conducting a rocket test in space.**

(1953) NERVA/Rover engine



(1962) President Kennedy at NERVA/Rover's Nuclear Rocket Development Center (1962)



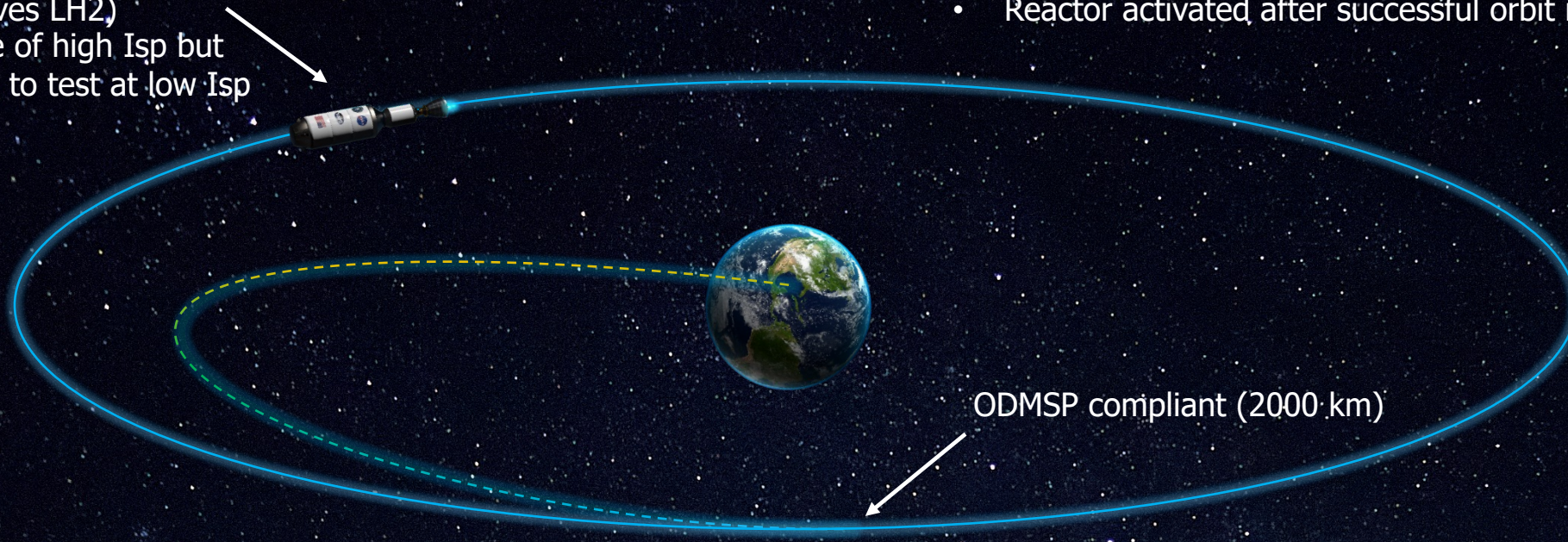
# DRACO Demonstration March 2027 – a “NERVA in the Sky”

## DRACO Vehicle

- Low thrust for demo (preserves LH2)
- Capable of high Isp but allowed to test at low Isp

## Nuclear Launch Safety

- DRACO vehicle is the launch vehicle payload
- Reactor includes inhibitors to prevent turning on reactor
- Reactor activated after successful orbit insertion



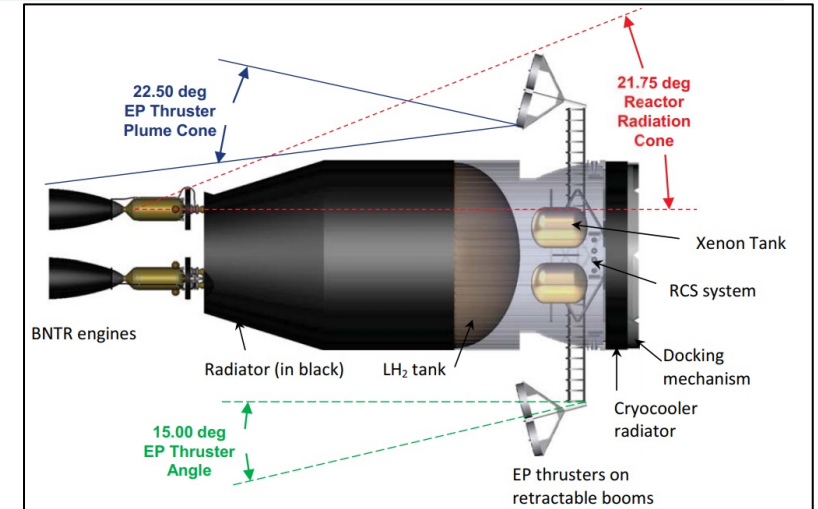
Objective of mission is to collect data on novel HALEU NTR behavior



# What Technologies Will DRACO Test Enable?

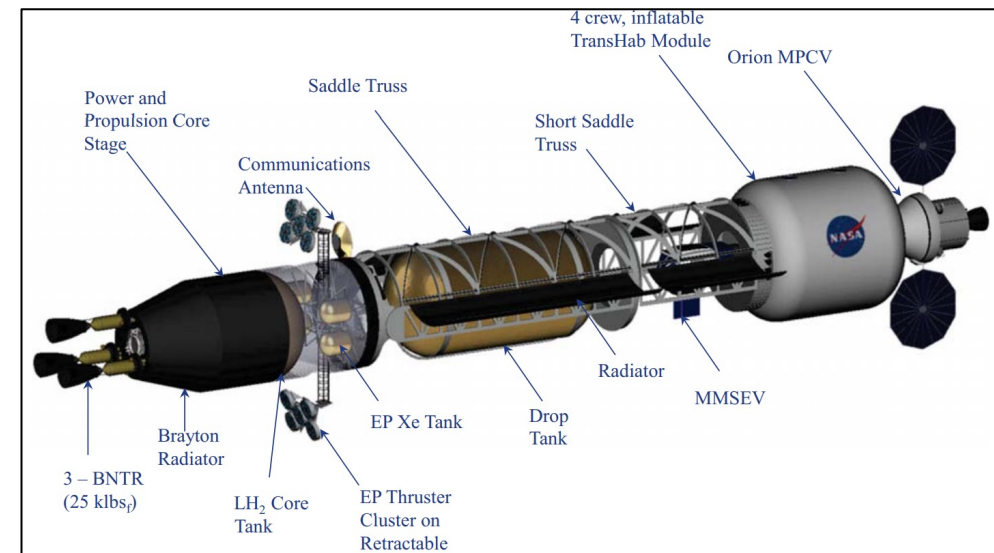
DRACO will open the floodgates for ALL nuclear fission reactors

- Pave the nuclear regulatory path for future nuclear fission reactor tests for NASA, DoD, or other entities
- Existence proof of this space reactor test will be a catalyst for executing future nuclear fission reactor programs, in addition to NTR (ie: nuclear power reactors)
- Envision potential evolution of wide-array of future high performing nuclear reactor technologies (ie: dual-mode nuclear power/propulsion reactor, CNTR, fusion propulsion, etc.)



Bimodal NTR (BNTR) for Apophis rendezvous mission (above) and BNTR for crewed Apophis mission (below)

<https://ntrs.nasa.gov/api/citations/20140017159/downloads/20140017159.pdf>





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