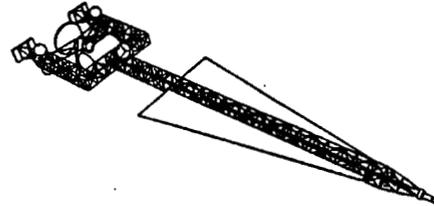
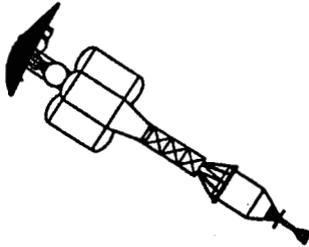


Focused Technology: Nuclear Propulsion

Nuclear Thermal Propulsion

Nuclear Electric Propulsion



Presentation to SSTAC/ARTS

**Thomas J. Miller
10/21/92**

NASA **LEWIS RESEARCH CENTER**

OBJECTIVE

OBJECTIVE

DEVELOP AND DEMONSTRATE TECHNOLOGY FOR NUCLEAR PROPULSION SYSTEMS TO SATISFY USER CODE MISSION REQUIREMENTS

- **BALANCE TECHNOLOGY AND PERFORMANCE WITH SOUND SAFETY AND ENVIRONMENTAL POLICIES**

<u>SCOPE</u>	<u>CUSTOMER</u>
<ul style="list-style-type: none">- NUCLEAR THERMAL- NUCLEAR ELECTRIC	<ul style="list-style-type: none">- LUNAR/MARS EXPLORATION (OEX)- ROBOTIC SCIENCE (OSSA)

ELEMENTS

- **CONCEPT DEVELOPMENT AND SYSTEMS ENGINEERING**
- **INNOVATIVE TECHNOLOGY**
- **ENABLING TECHNOLOGY (NEP & NTP)**
- **FACILITIES**
- **SAFETY, QA AND ENVIRONMENT**

NUCLEAR PROPULSION OFFICE

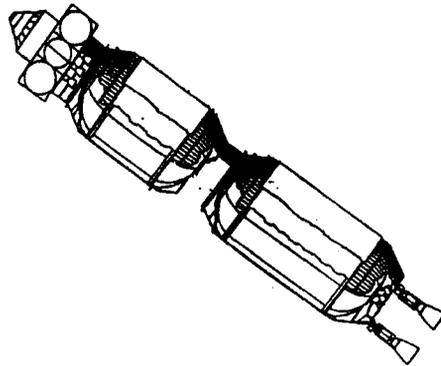
MISSIONS CONSIDERATIONS

- SAFETY
- PERFORMANCE
- COST
- SCHEDULE FOR DEVELOPMENT
- OPERATIONAL FLEXIBILITY
 - APPLICATION TO RANGE OF MISSIONS
 - EVOLUTIONARY GROWTH POTENTIAL

NUCLEAR PROPULSION OFFICE

NUCLEAR PROPULSION SUMMARY

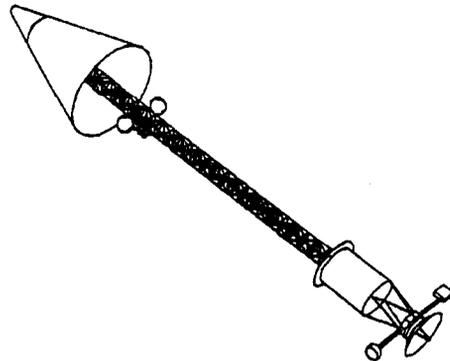
NUCLEAR THERMAL PROPULSION



Specific Impulse*: 850 - 950 sec
 Thrust to Weight: 6 - 10

* $I_{sp} = T/\dot{m}$

NUCLEAR ELECTRIC PROPULSION

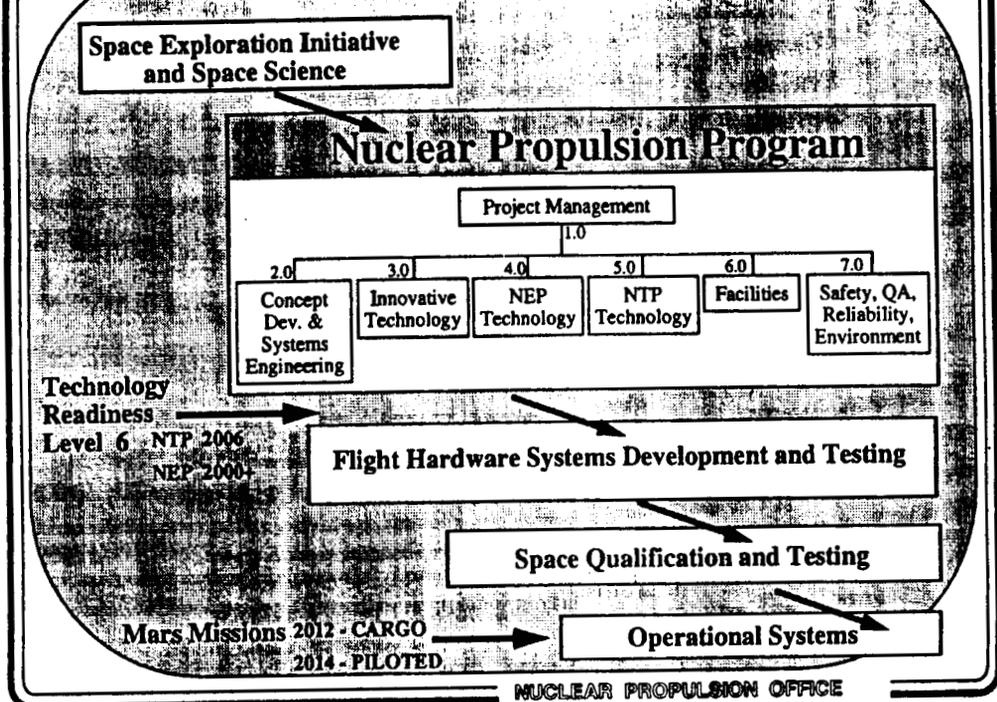


Specific Impulse*: 4000 - 8000 sec
 Specific Mass:
 Robotic Science 40 Kg/Kw_e
 Piloted Mars ≤ 10 Kg/Kw_e

CHEMICAL PROPULSION (H/O): 460 sec Specific Impulse

NUCLEAR PROPULSION OFFICE

Logic Flow Path for Nuclear Propulsion



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