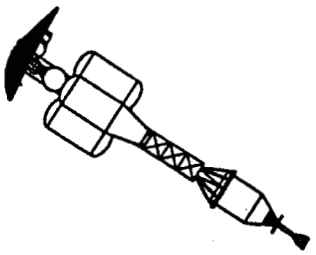
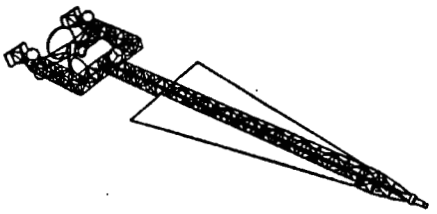
N93-26912

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

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

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

SCOPE

- **NUCLEAR THERMAL**
- **NUCLEAR ELECTRIC**

CUSTOMER

- **LUNAR/MARS EXPLORATION (OEX)**
- **ROBOTIC SCIENCE (OSSA)**

ELEMENTS

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

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MISSIONS CONSIDERATIONS

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

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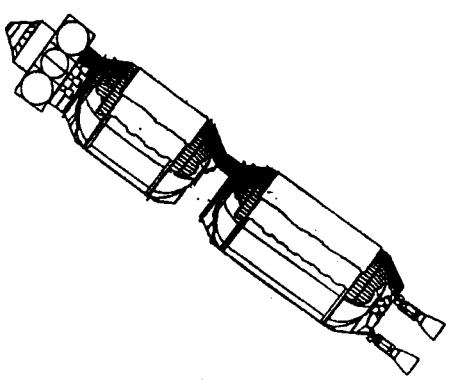
NUCLEAR PROPULSION SUMMARY

NUCLEAR THERMAL PROPULSION

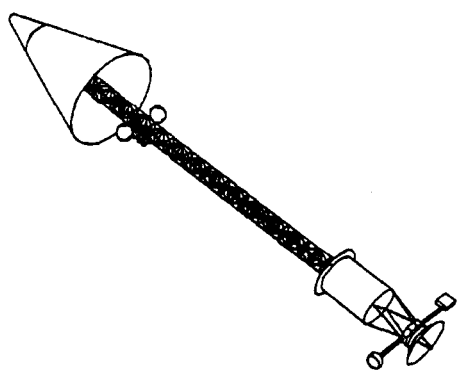


Specific Impulse*: 850 - 950 sec

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

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