



**PROGRAM
CEZHRANIČNEJ
SPOLUPRÁČE**
SLOVENSKÁ REPUBLIKA
ČESKÁ REPUBLIKA



**EURÓPSKA ÚNIA
EURÓPSKY FOND
REGIONÁLNEHO ROZVOJA**
SPOLOČNE BEZ HRANÍČ

Projekt podpořený Operačním programem Přeshraniční spolupráce Slovenská republika – Česká republika 2007-2013



**TRENČIANSKY
SAMOSPRÁVNÝ
K • R • A • J**



Hvezdáreň v Partizánskom
Hvězdárna Valašské Meziříčí



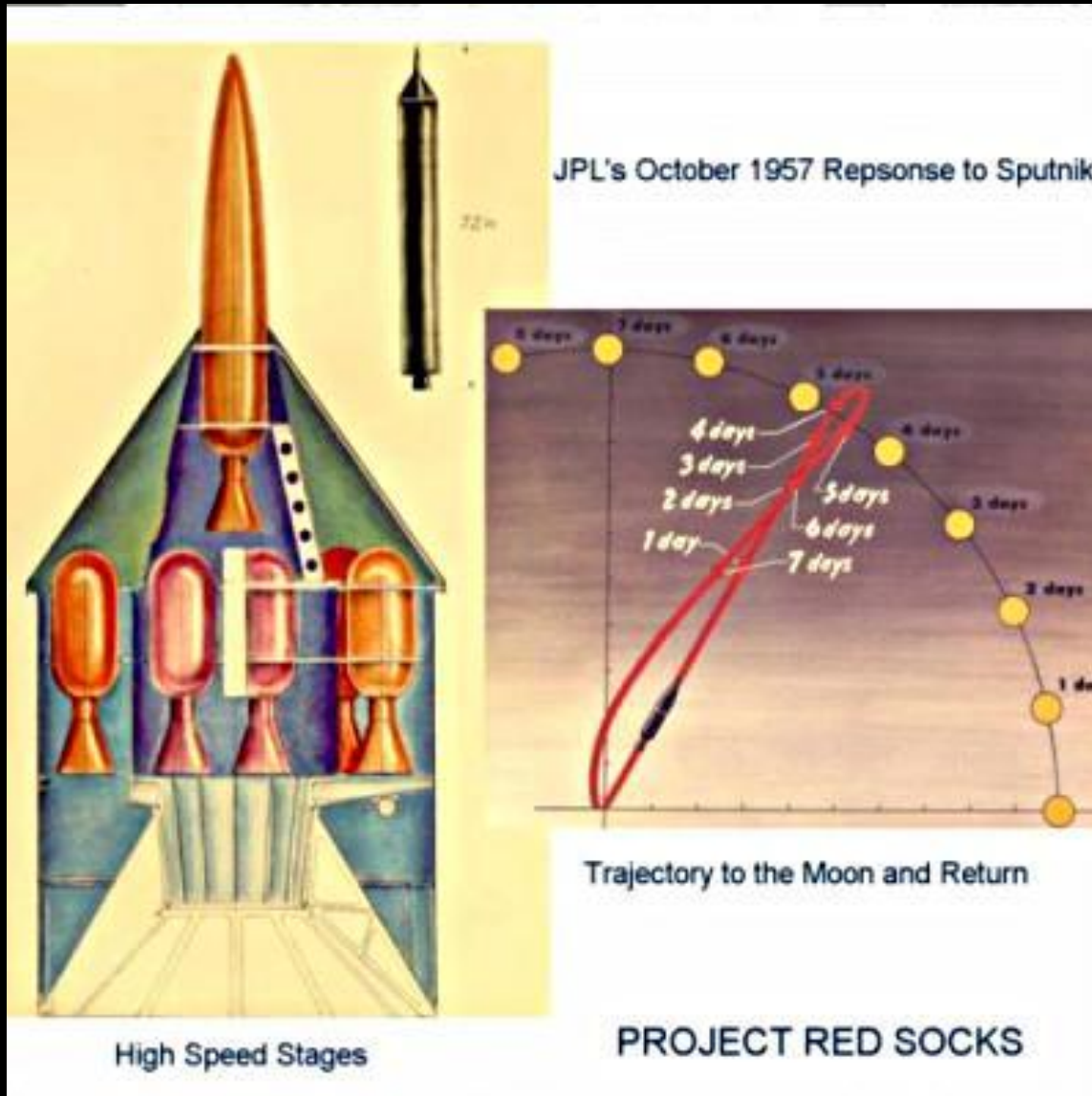
Tato akce je realizována s finanční
výpomocí Zlínského kraje

Nerealizované meziplanetární sondy

Ing. Tomáš PŘIBYL
tomas.pribyl@seznam.cz
www.kosmonaut.cz



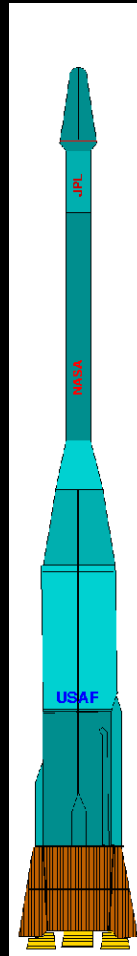
Red Socks



NA POČÁTKU BYLA VEGA

360 kg nákladu

Měsíc, Mars (1960), Venuše (1961)



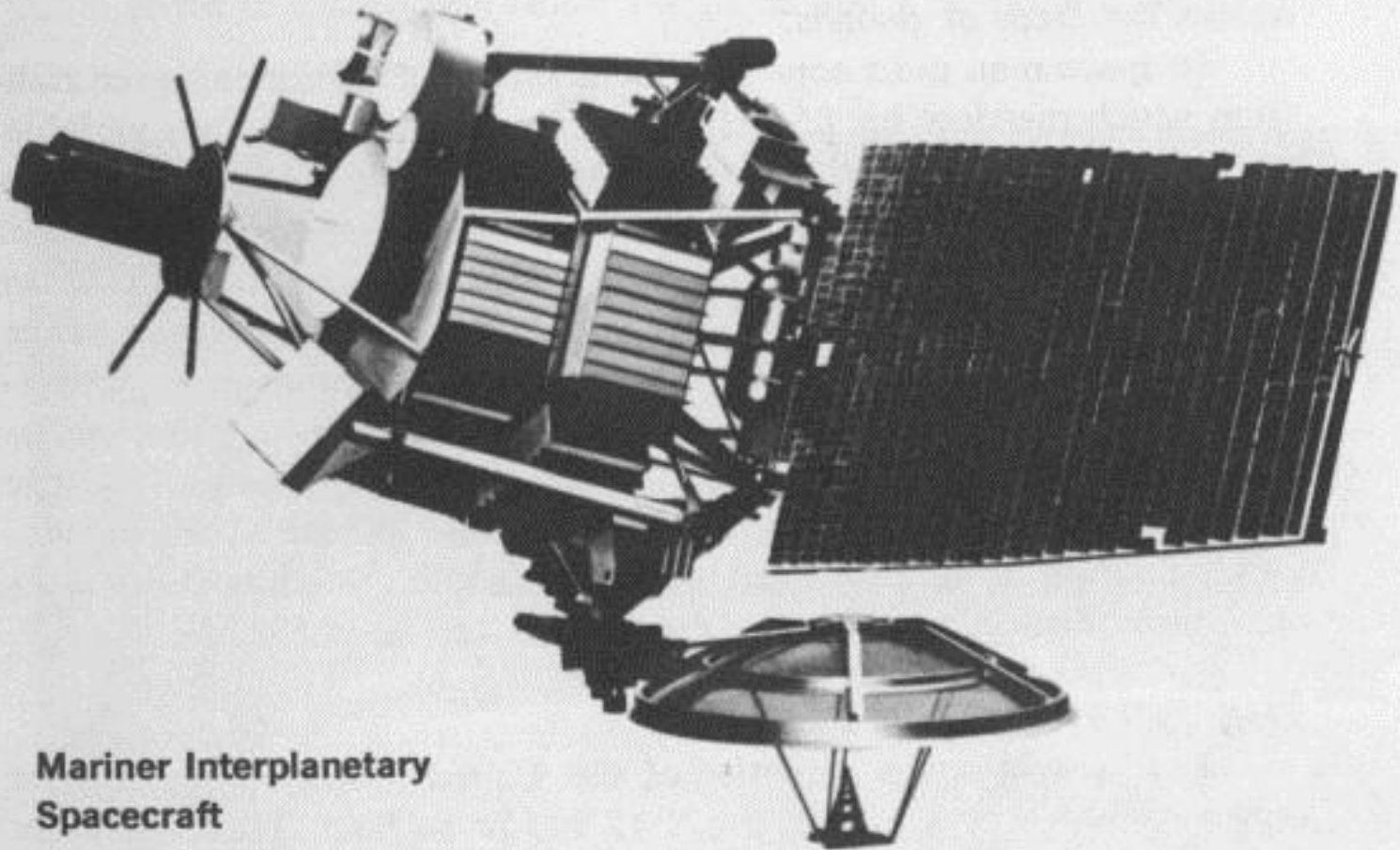
Jenže...

- 1) Peníze.
- 2) Priority.
- 3) Atlas-Agena.



Mariner-A

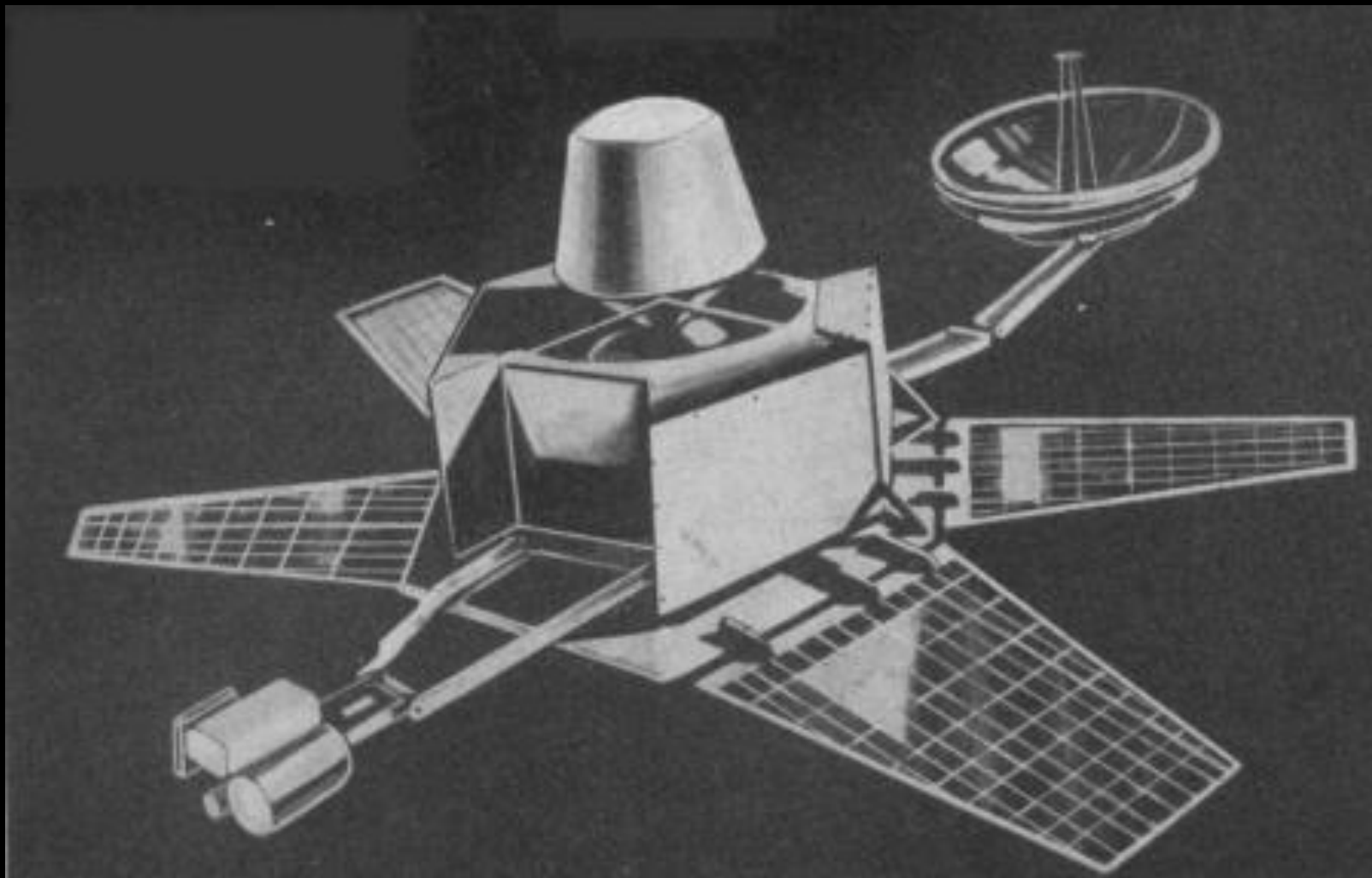
Venuše (1962) , dva korekční manévry.



Mariner Interplanetary
Spacecraft

Mariner-B

Dvakrát Mars (1964) , dvakrát Venuše (1965) .



Voyager – oběžná dráha Marsu a Venuše.

Navigator – Merkur, Jupiter, setkání s
kometami, průzkum Slunce.



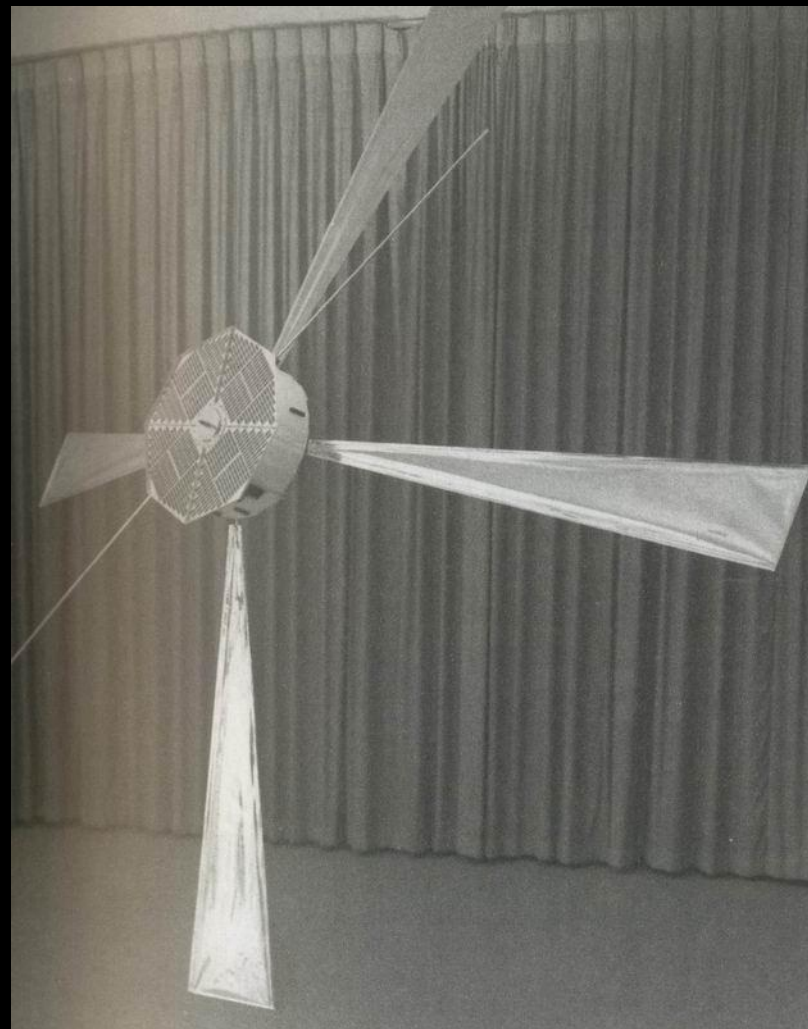
DALŠÍ PLÁNY

Sunblazer

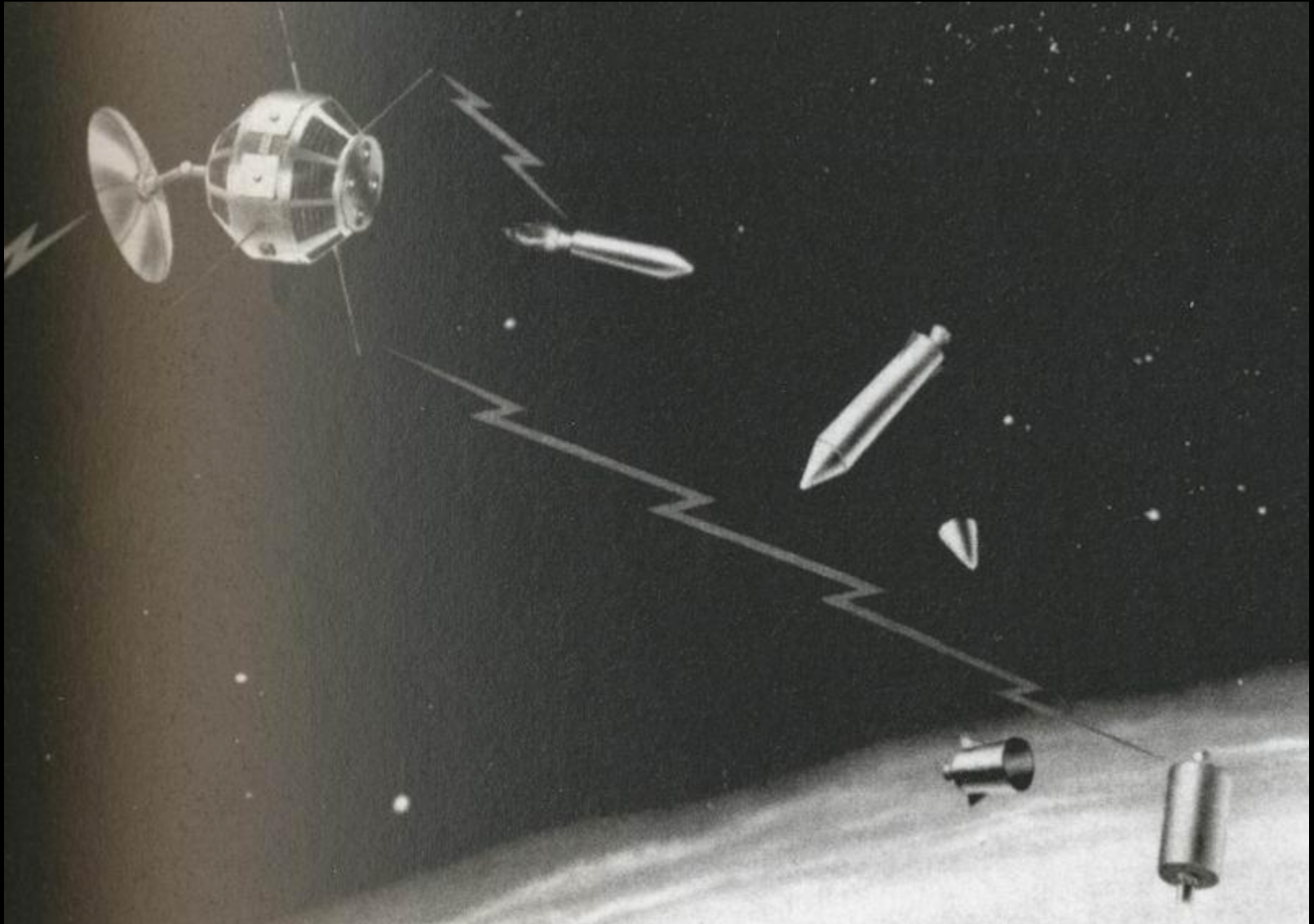
Původně 4,5 kg,
nakonec 18 kg

NASA + MIT

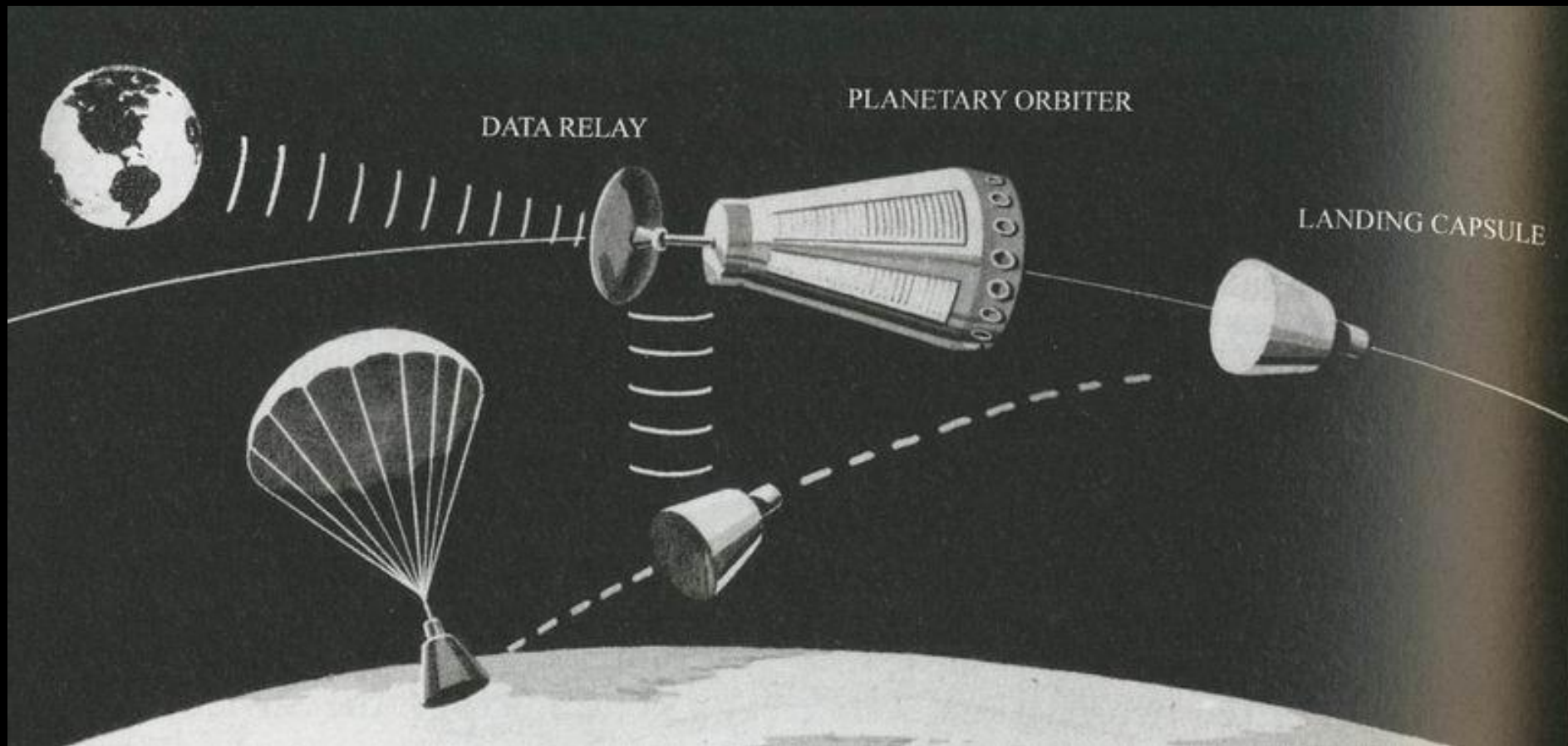
První 1968, pak
1972, pak 1973,
pak zrušeno.



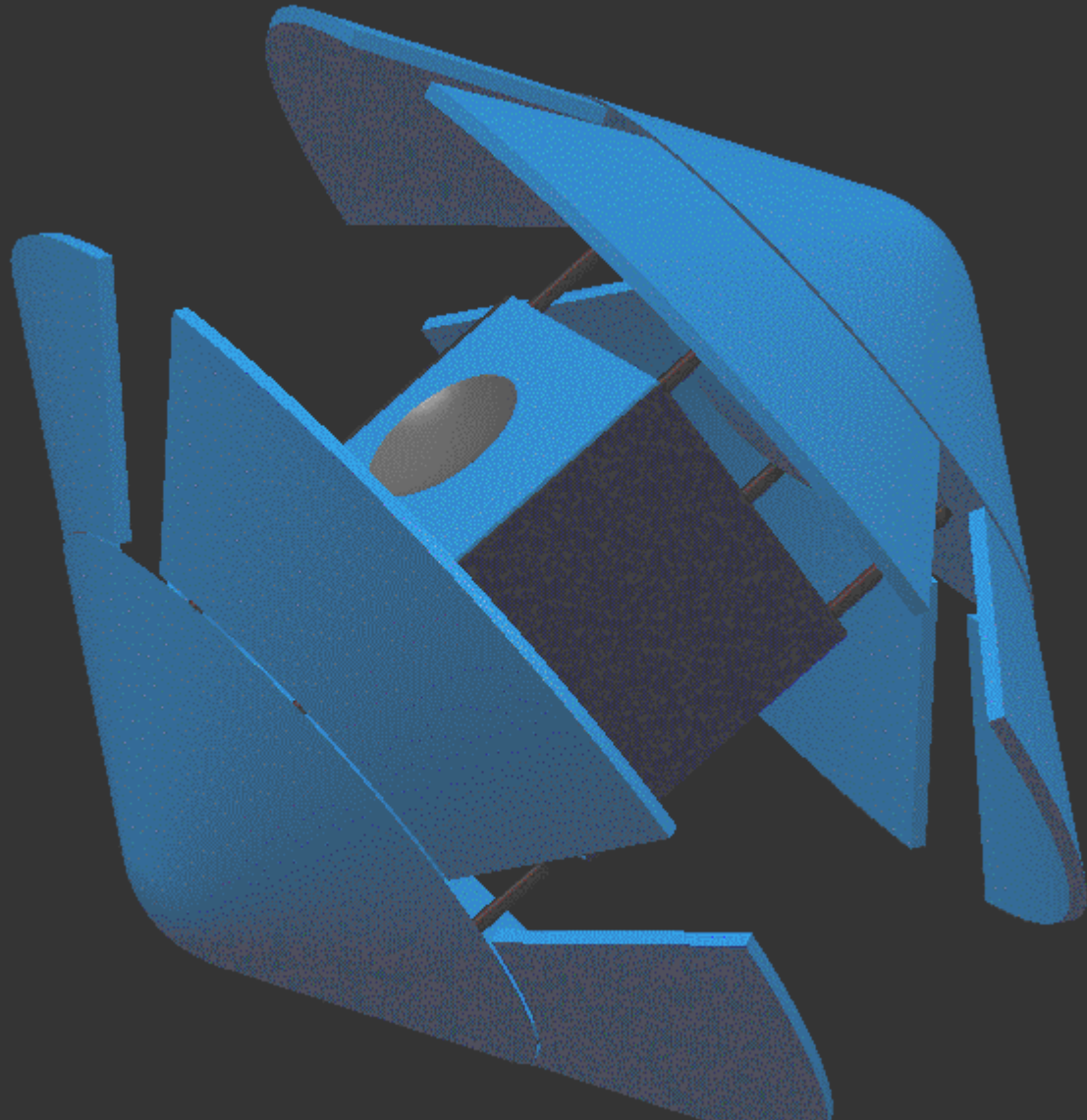
Cesta k Venuši



Voyager k Marsu a Venuši

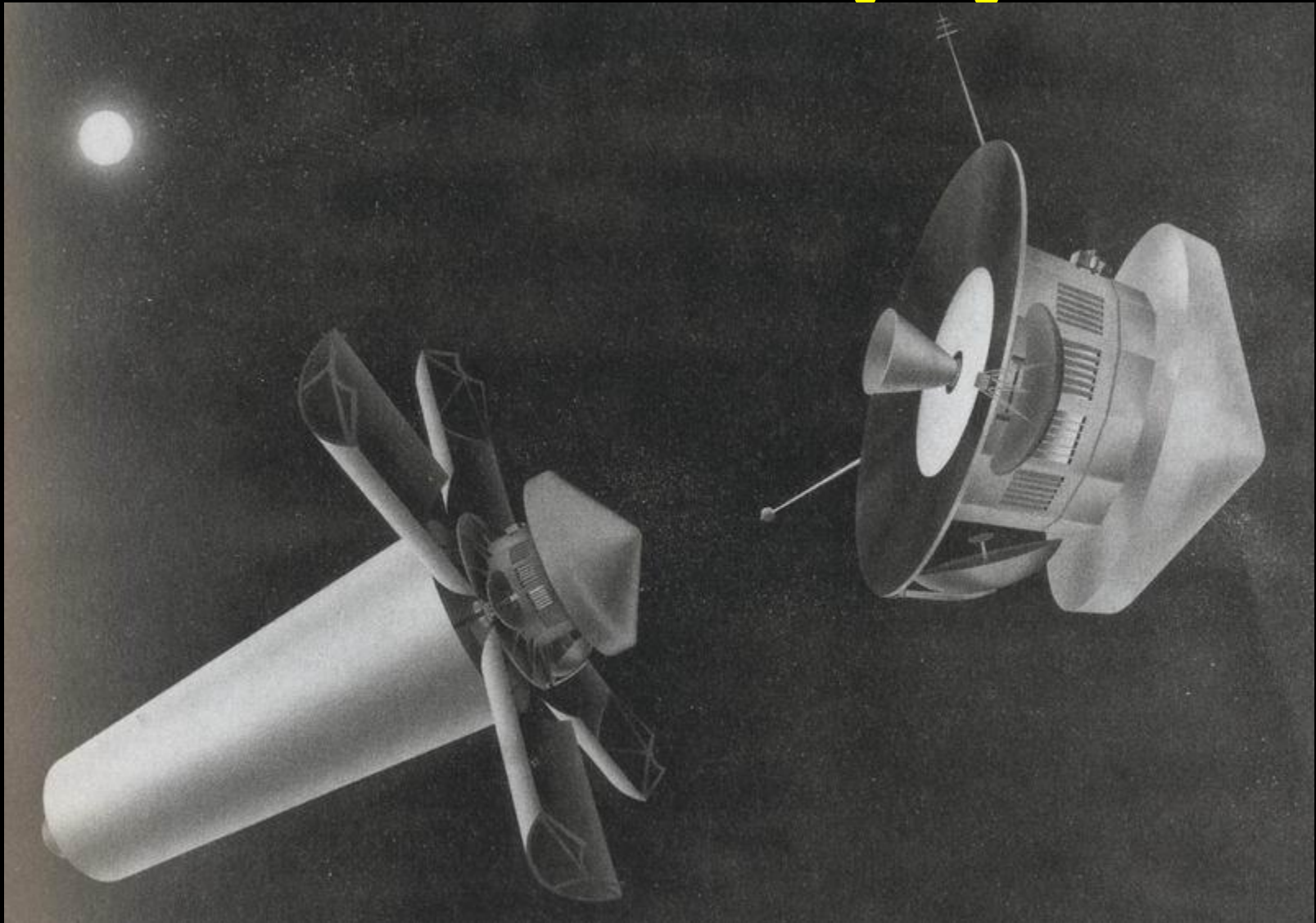


Beagle

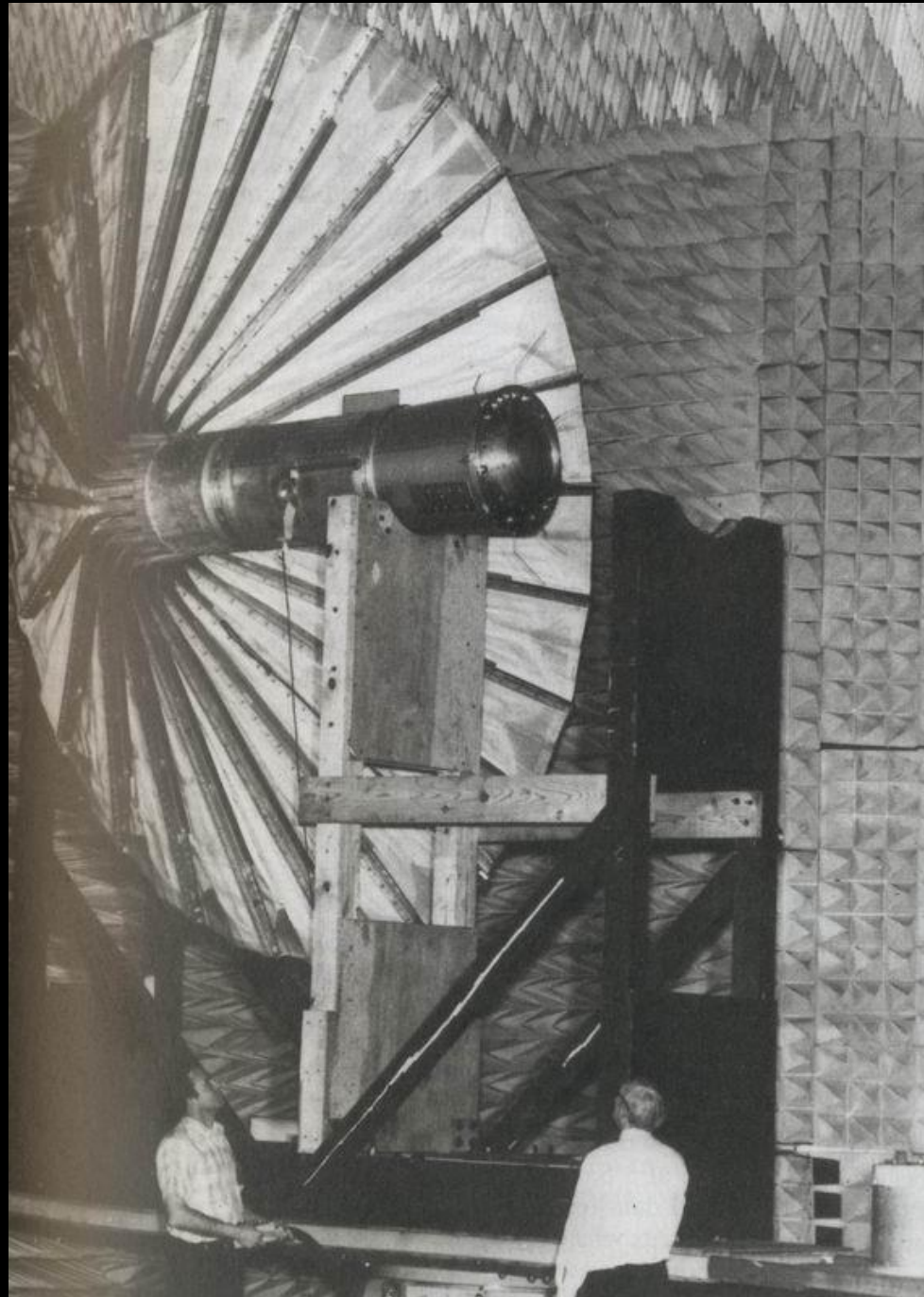


Voyager: družicová a přistávací část

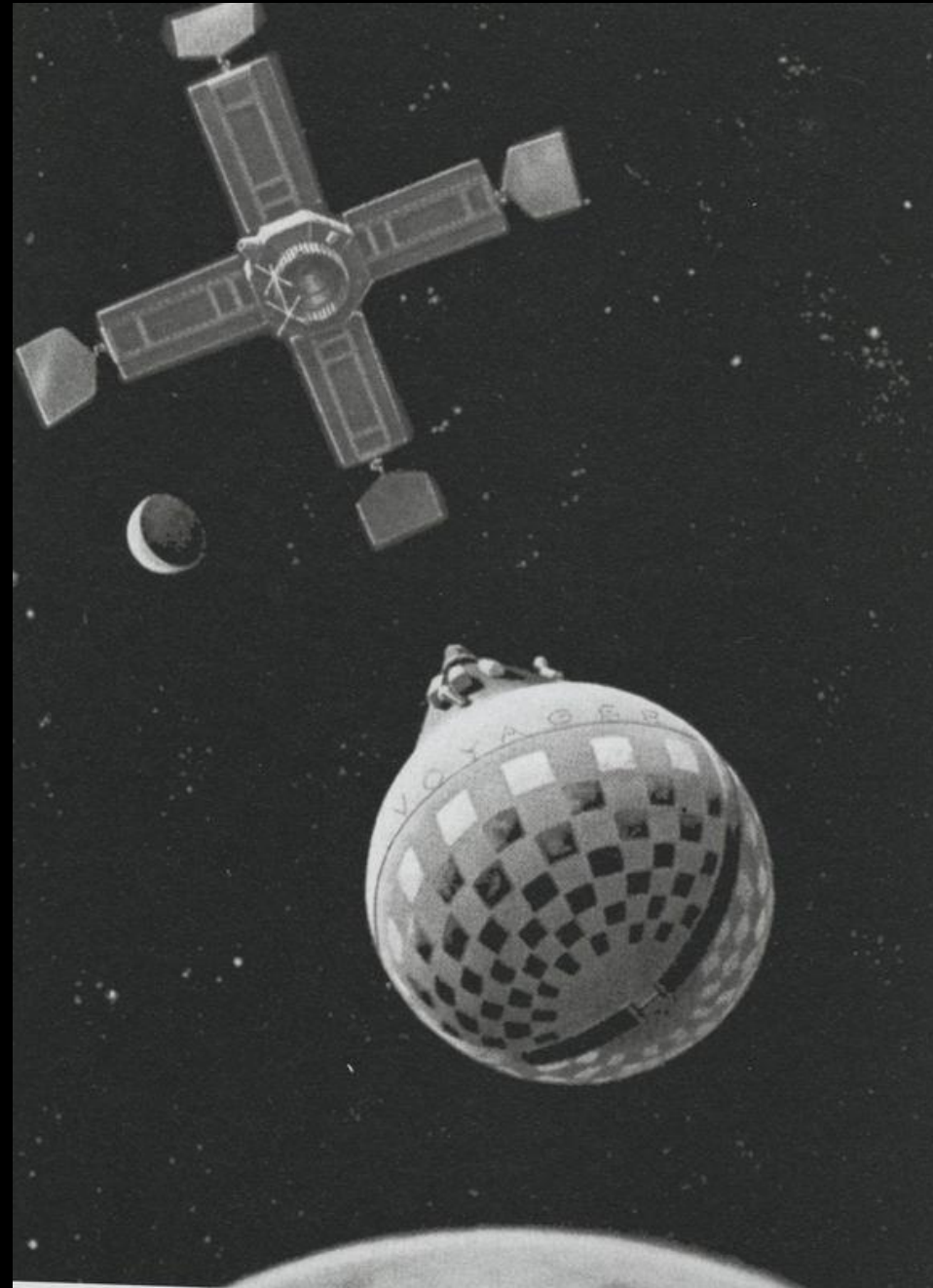
Jeden Saturn V, dva páry sond.



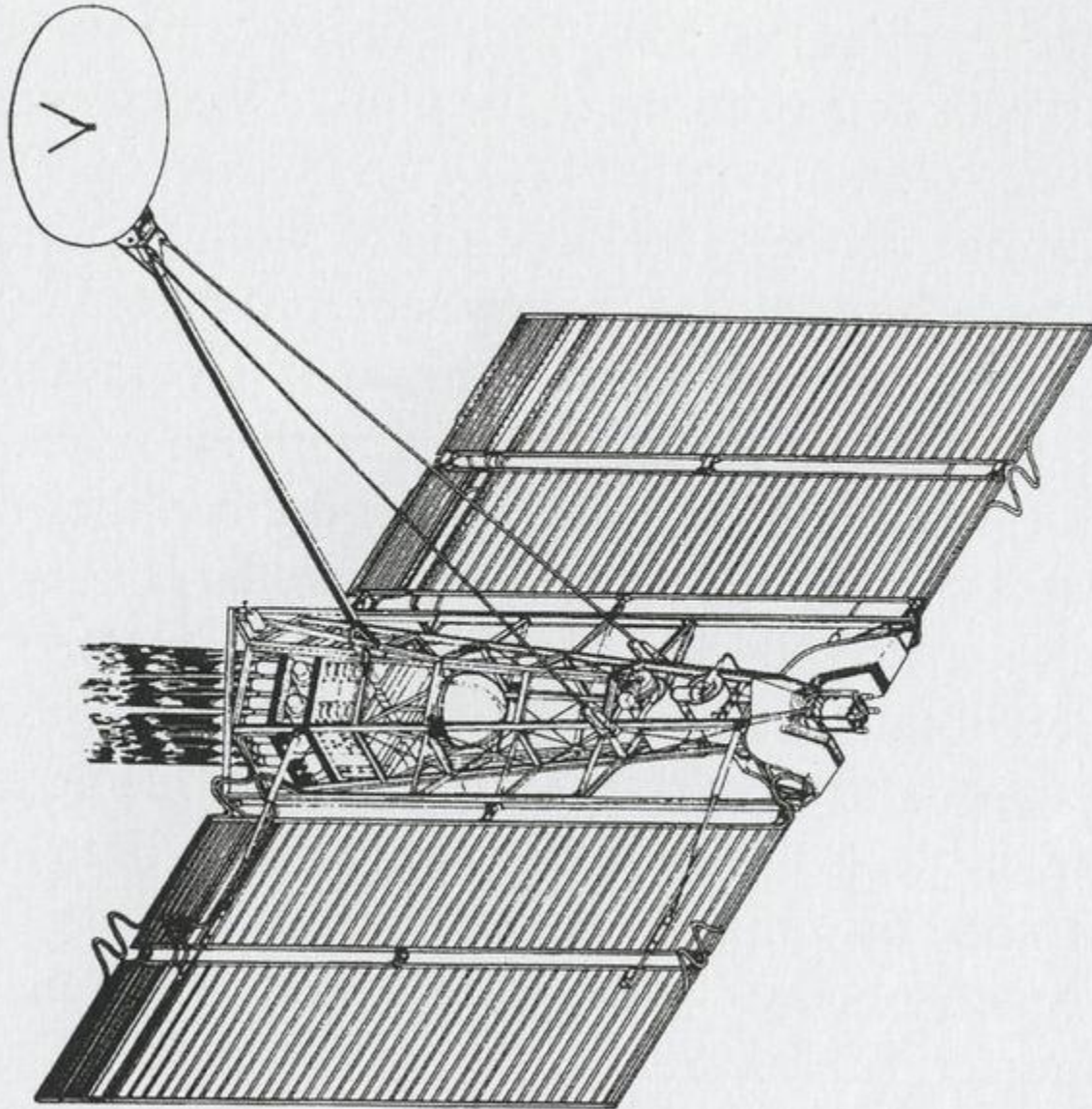
SPED
Supersonic
Planetary
Entry
Decelerator



Mariner

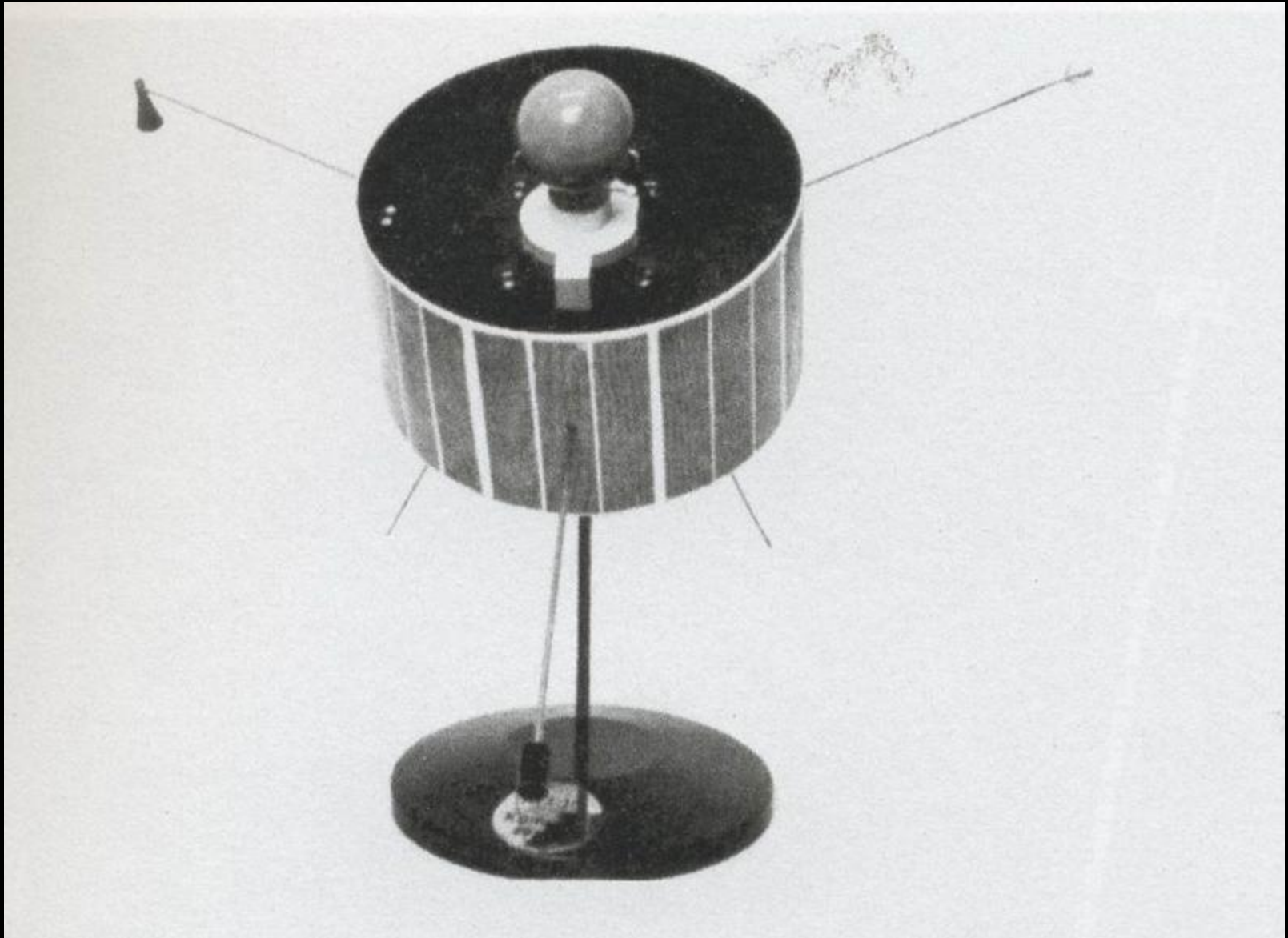


Elektrický pohon k Marsu

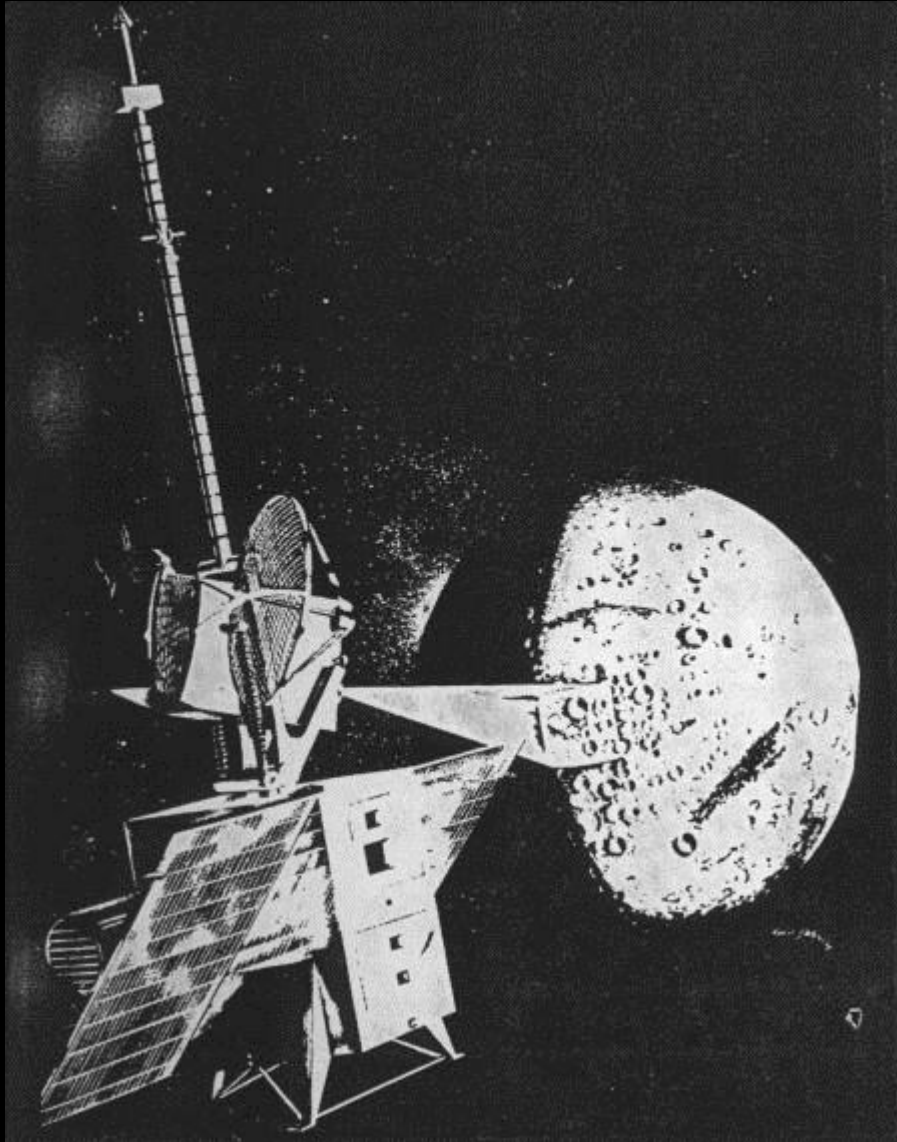


EVROPSKÁ KARTA

41P/Tuttle-Giacobini-Kresak (1973)

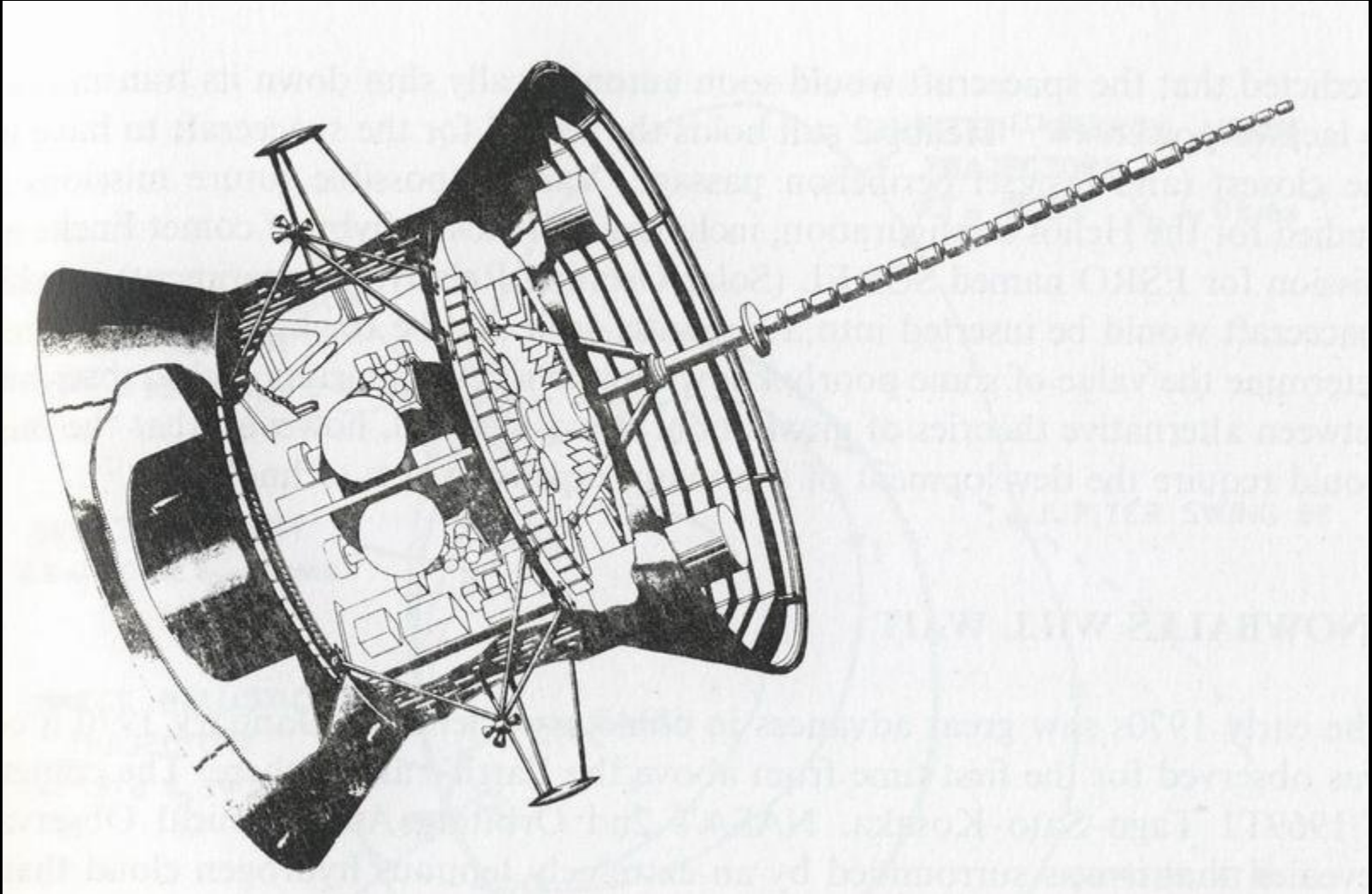


MESO (MErcury SOnde)



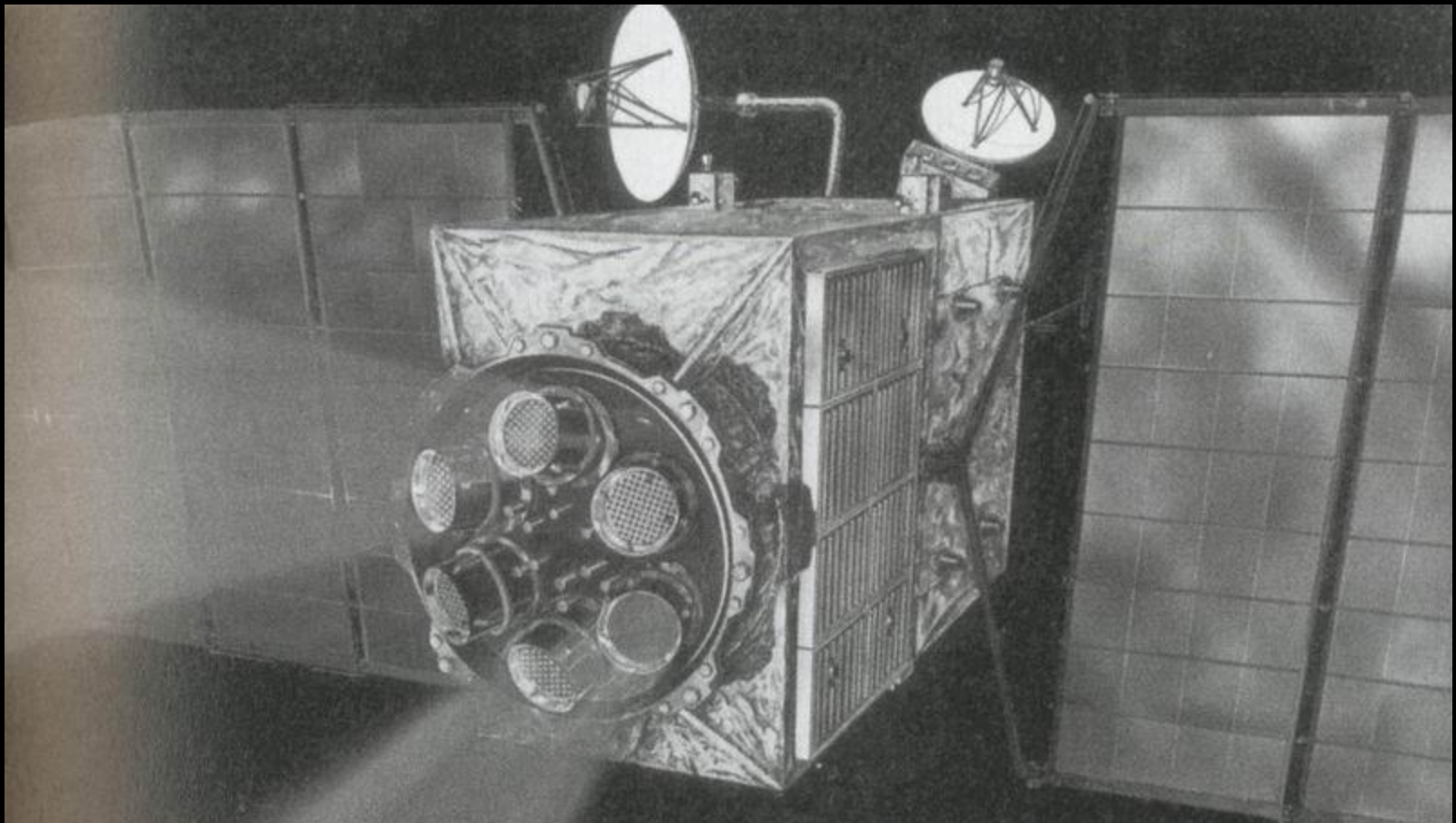
SOREL

Solar Orbiting Relativity Experiment

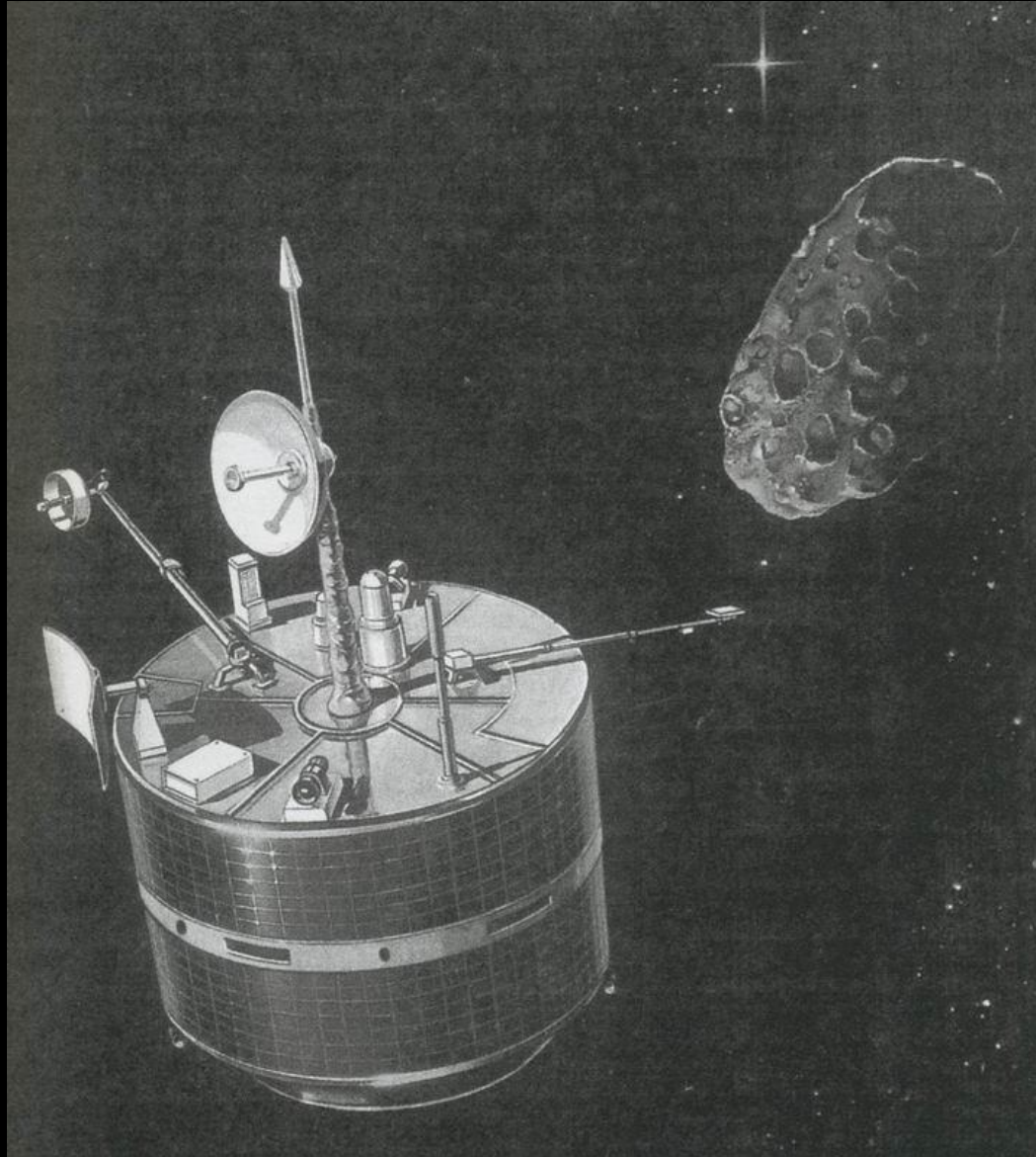


Asterex/AGORA

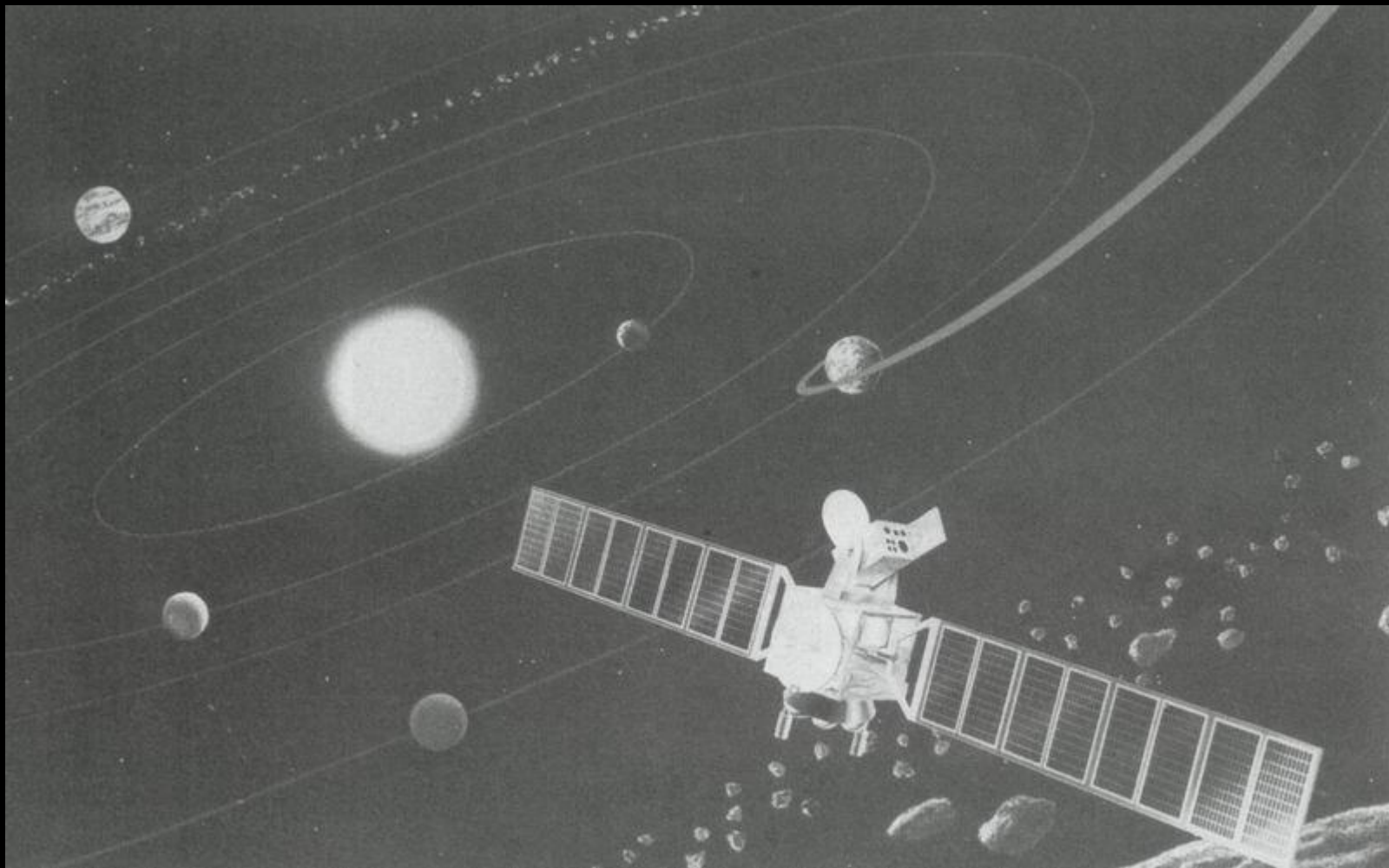
Asteroidal Gravity Optical and Radar Analysis

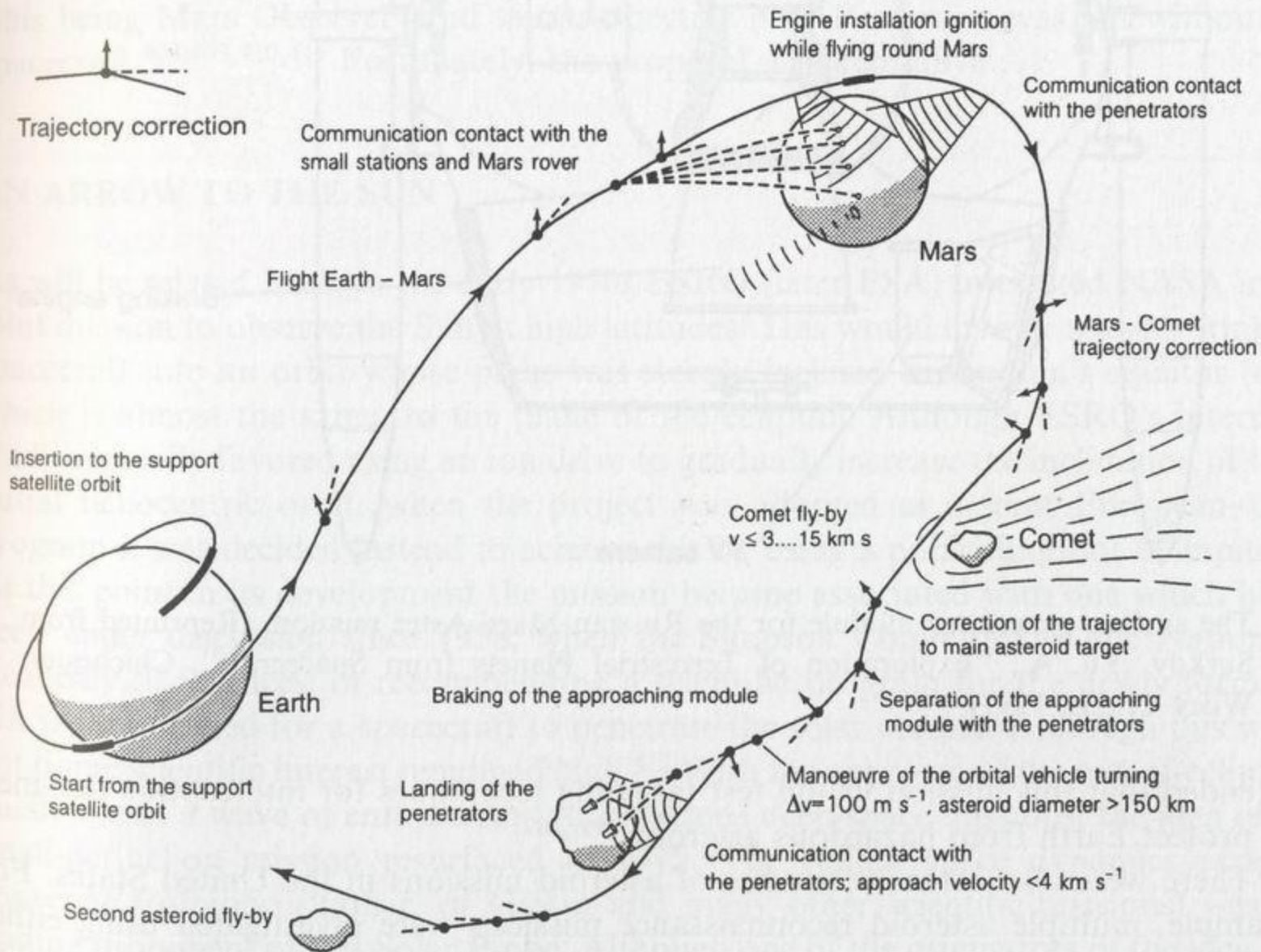


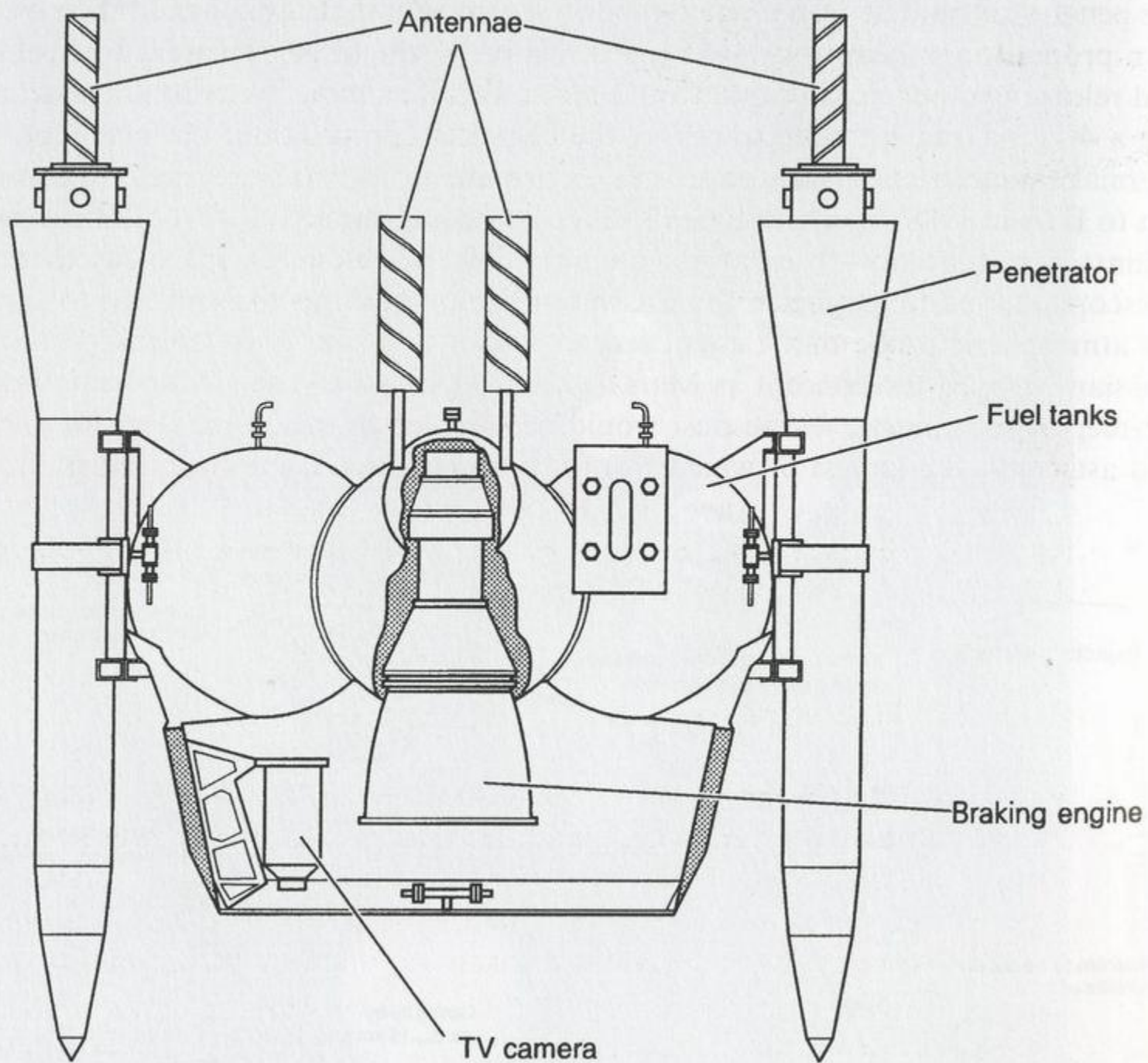
Piazzesi (Italie)



Sovětsko-evropská Vesta







VÁBENÍ KOMET



Studie 1971 JPL

6P/d'Arrest

0,18 AU od Země duben 1976



Interplanetary Monitoring Platform

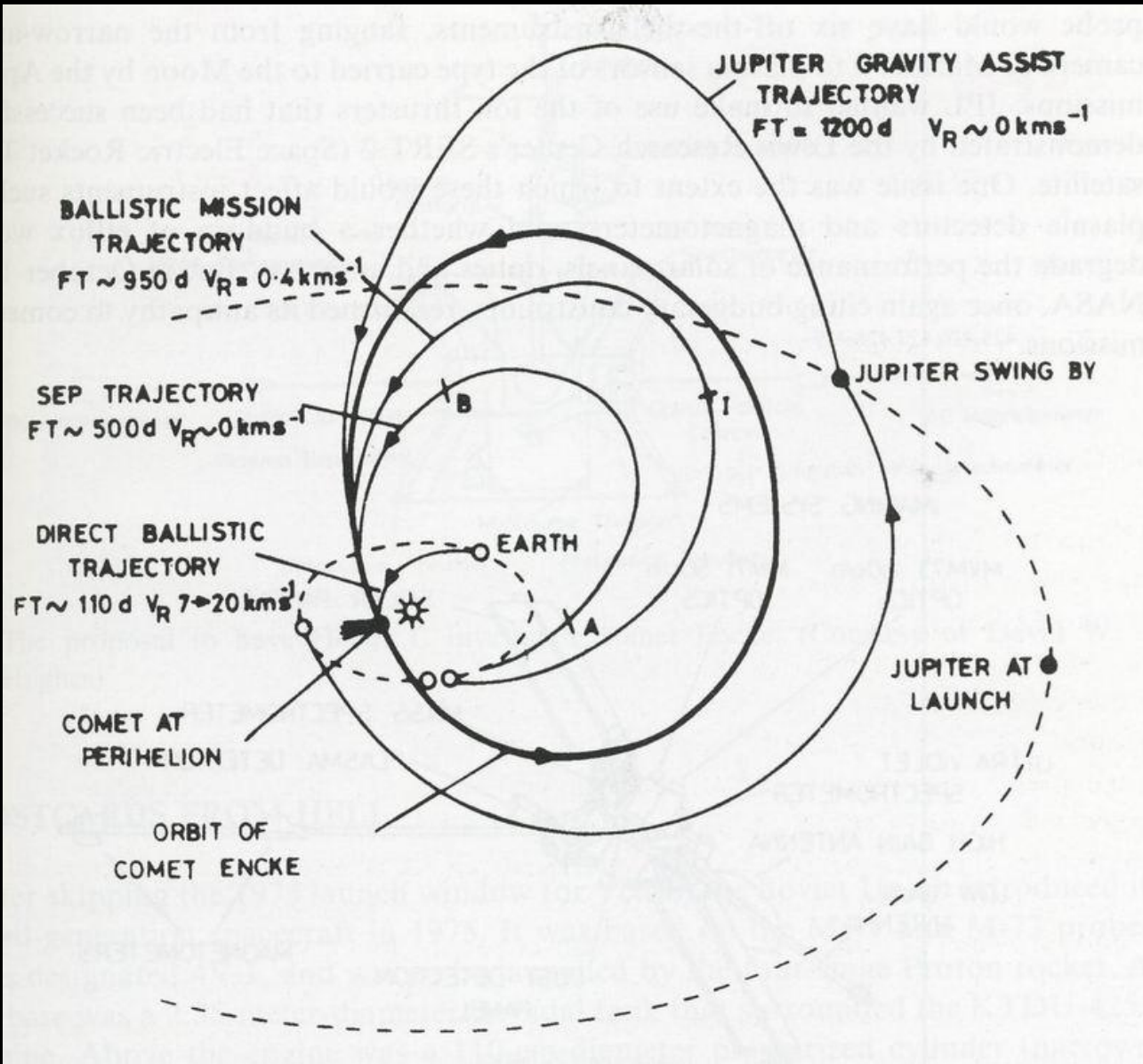
Projekt Goddardova kosmického střediska.

Start 11/1976, 4/1977 setkání s 26P/Grigg-Skjellerup.

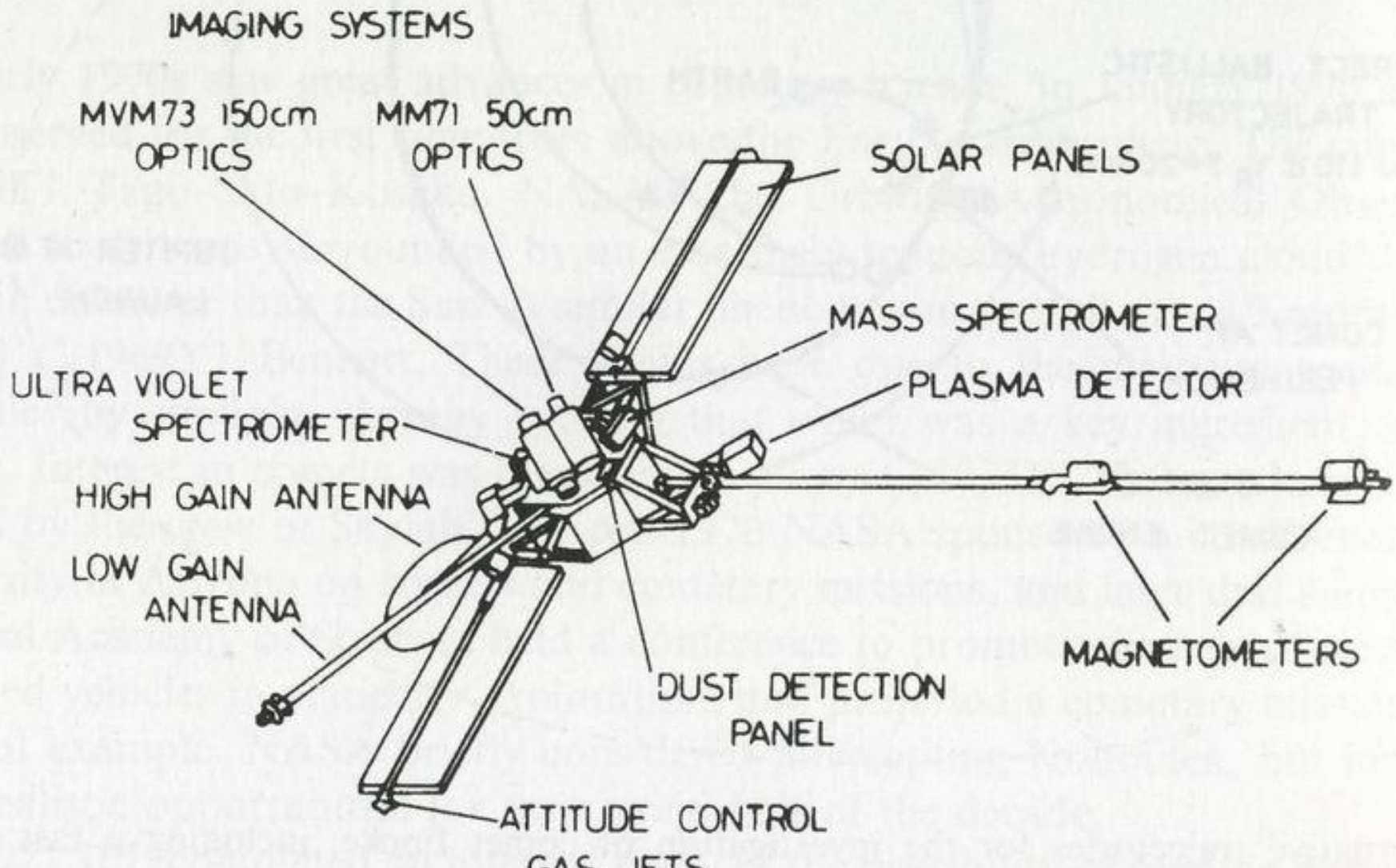
Návrat k Zemi - cesta ke kometě 21P/Giacobini-Zinner.



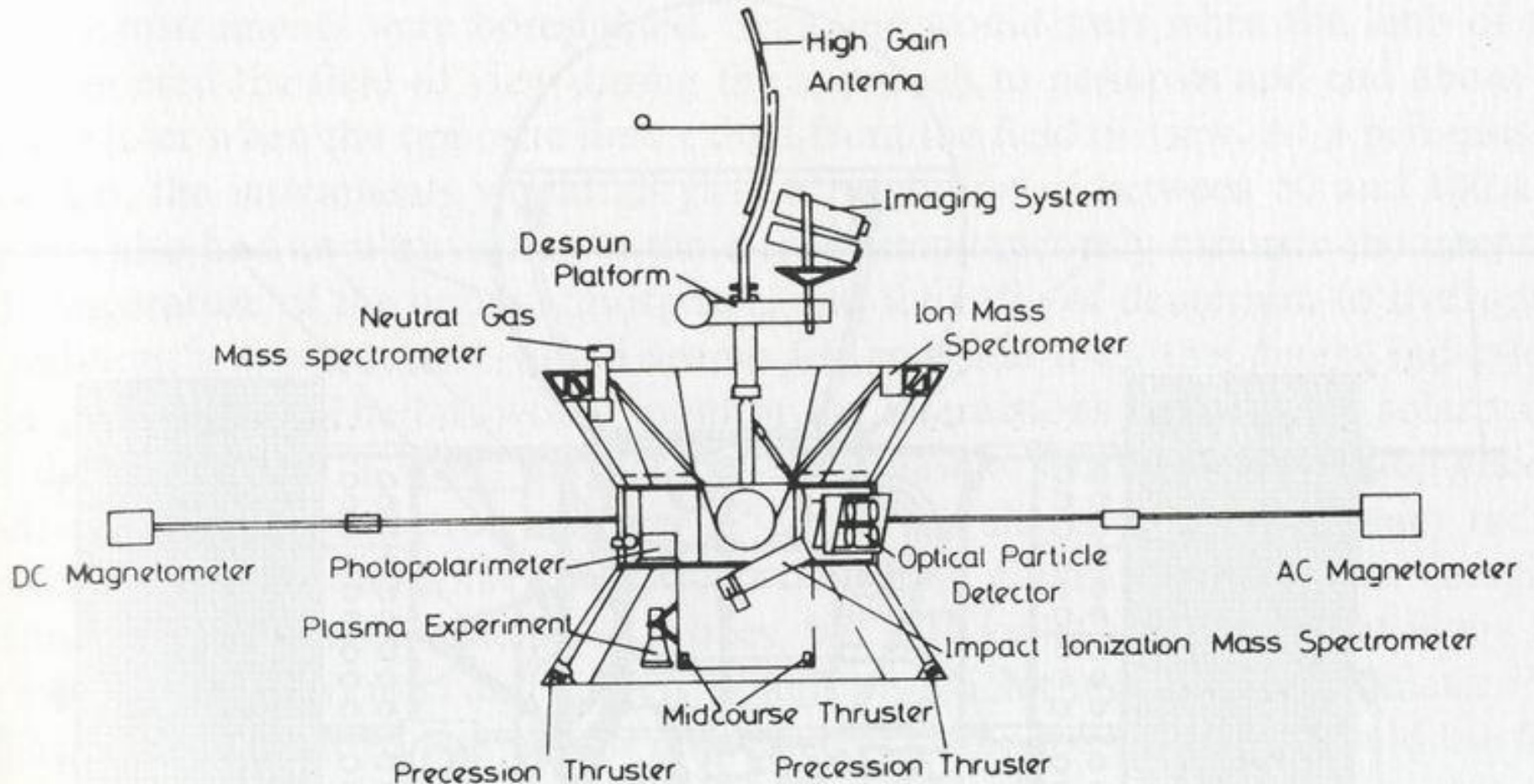
Cesta ke kometě Encke



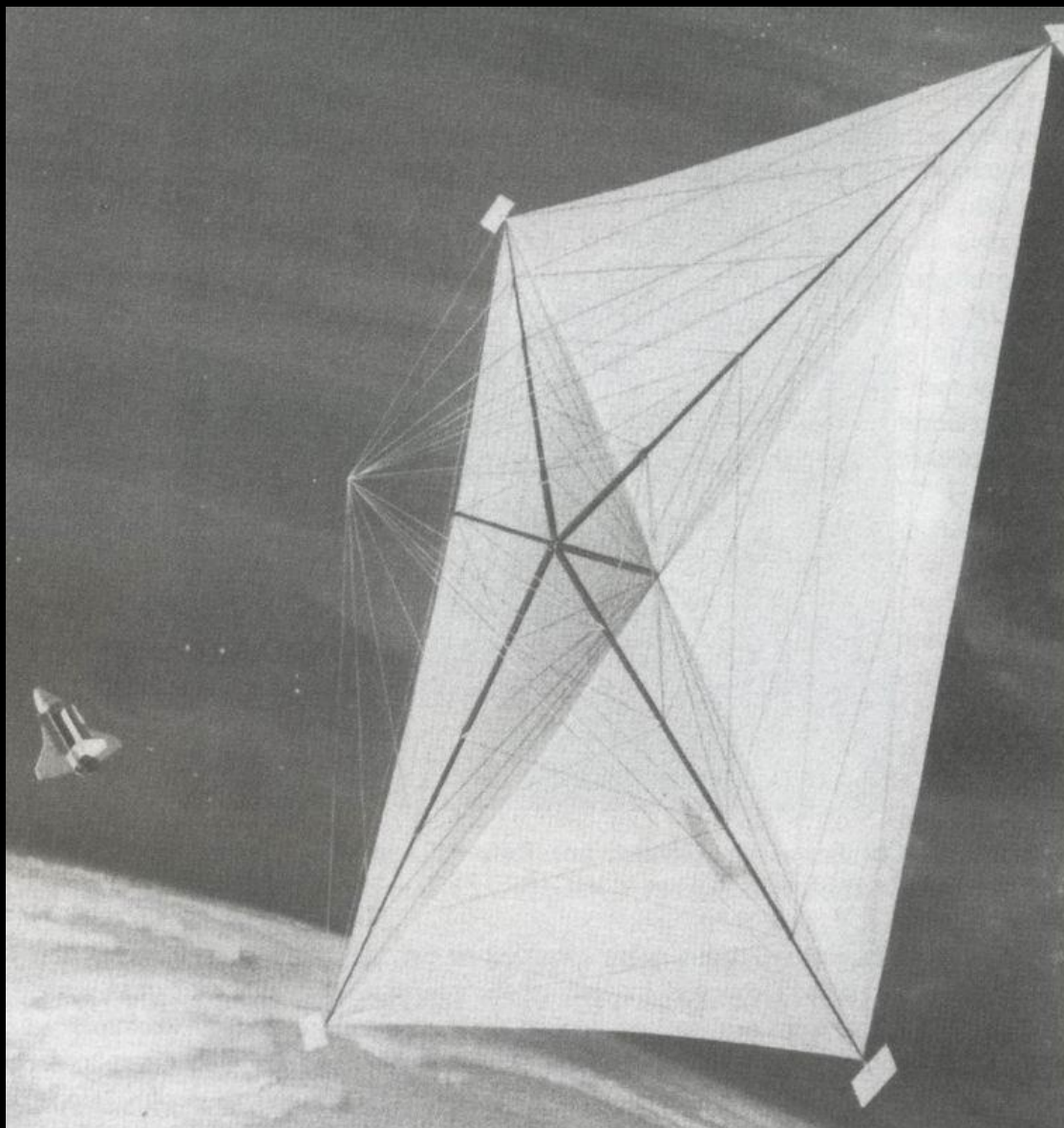
Mariner-10 ke kometě Encke



Helios-C k 2P/Encke

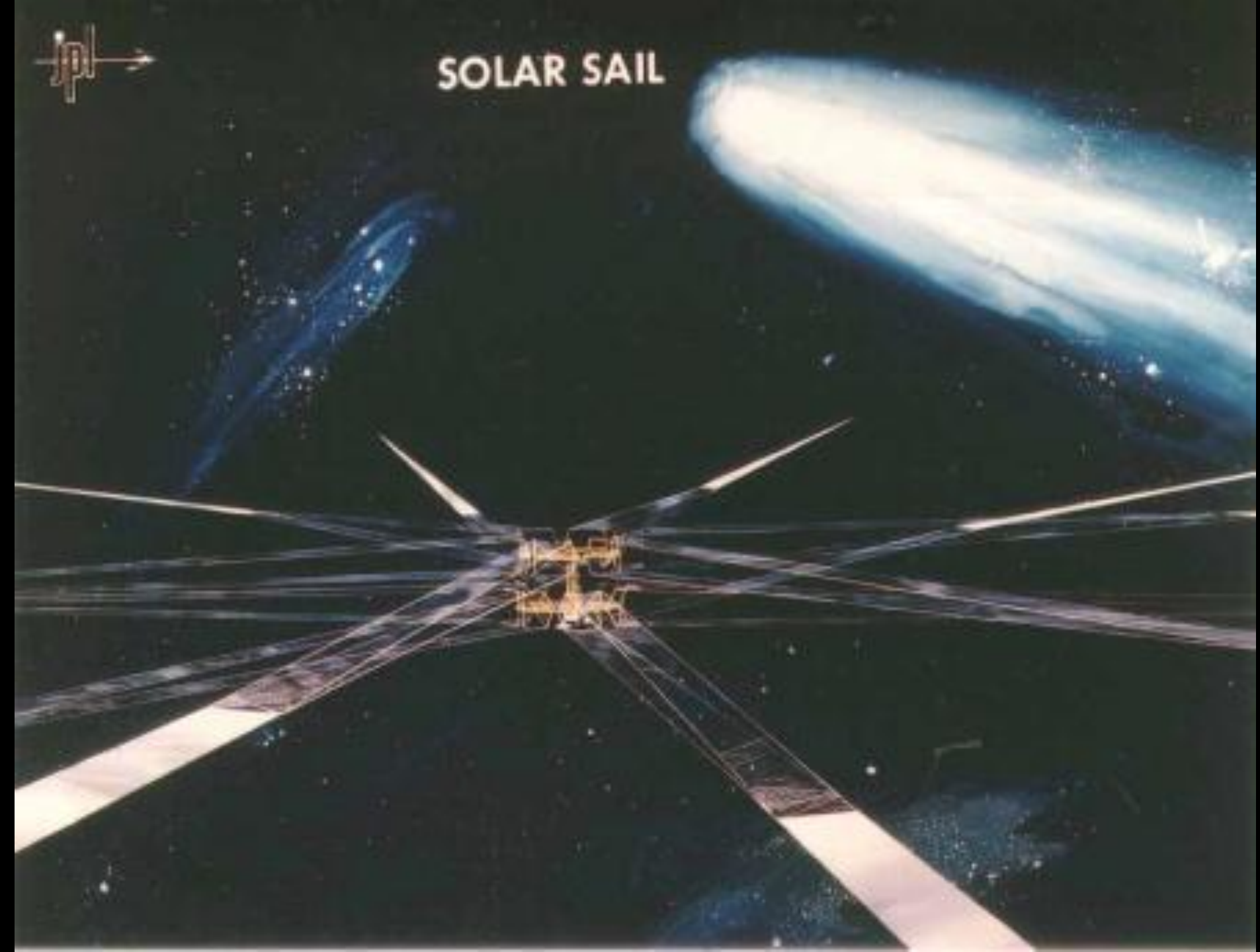


800 x 800 metru





SOLAR SAIL



Kometa Tempel-2

2700 kg sonda

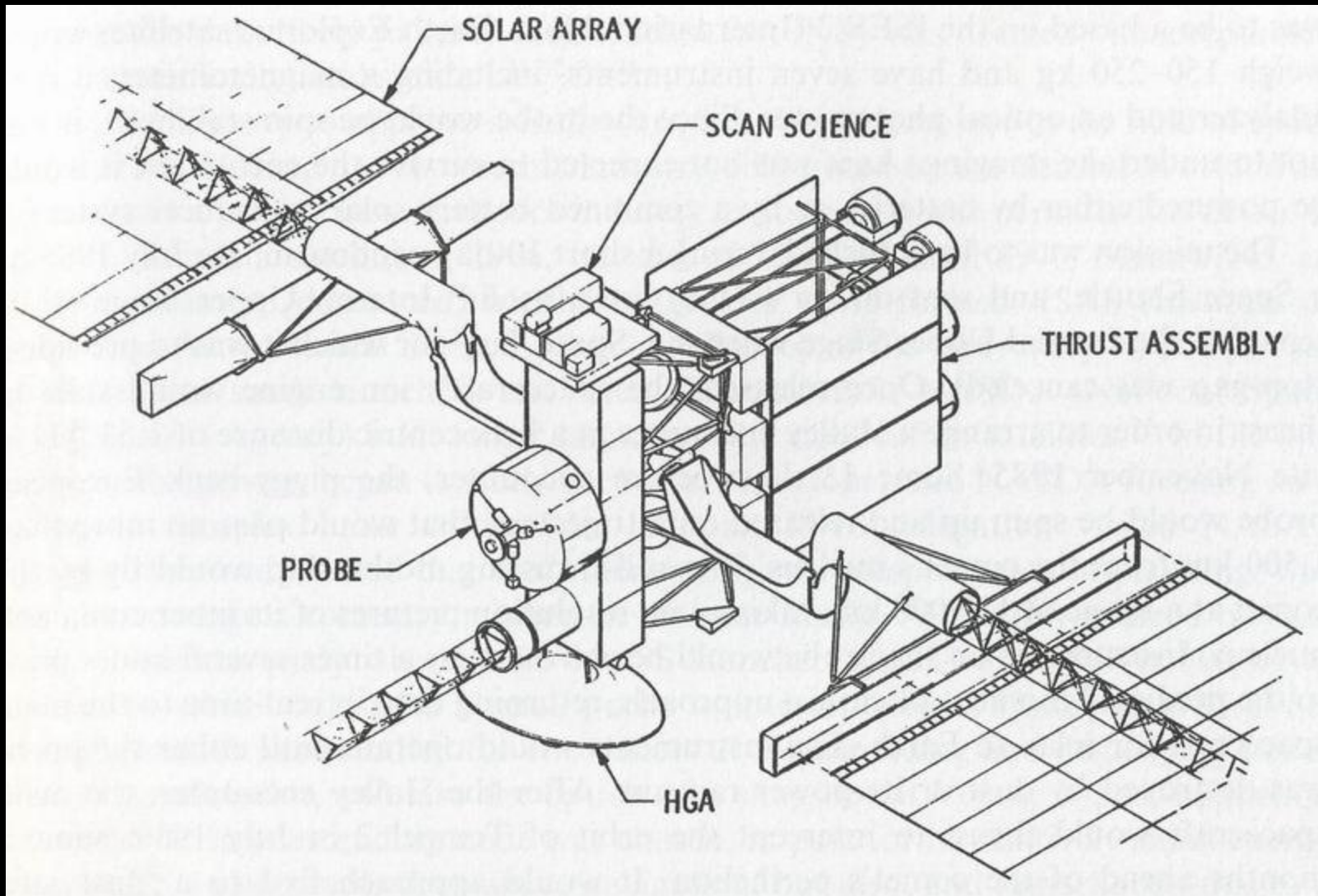
870 kg rtuti (!) pro
iontové motory

64 m sluneční baterie,
25 kW.

Start červenec 1985.

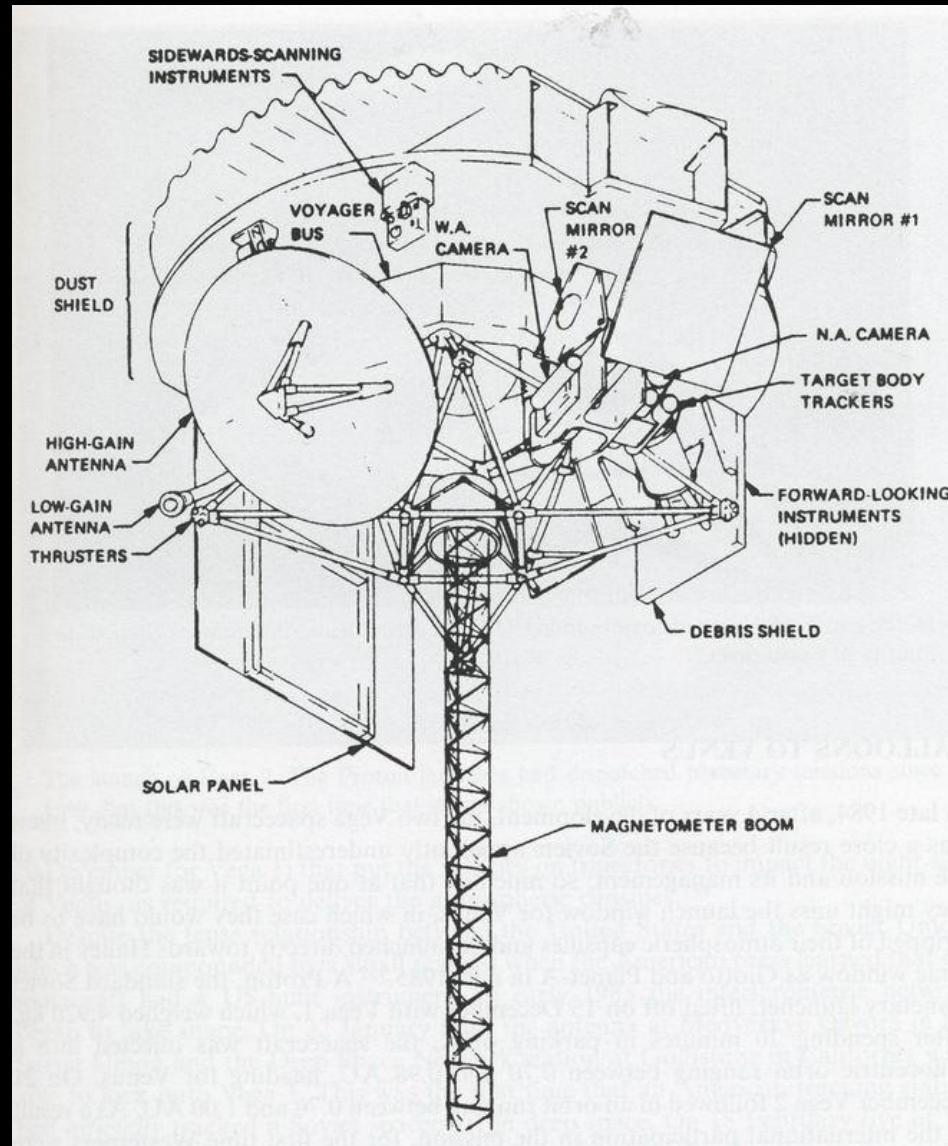
Tempel-2 červenec 1988
(tři prlety) .

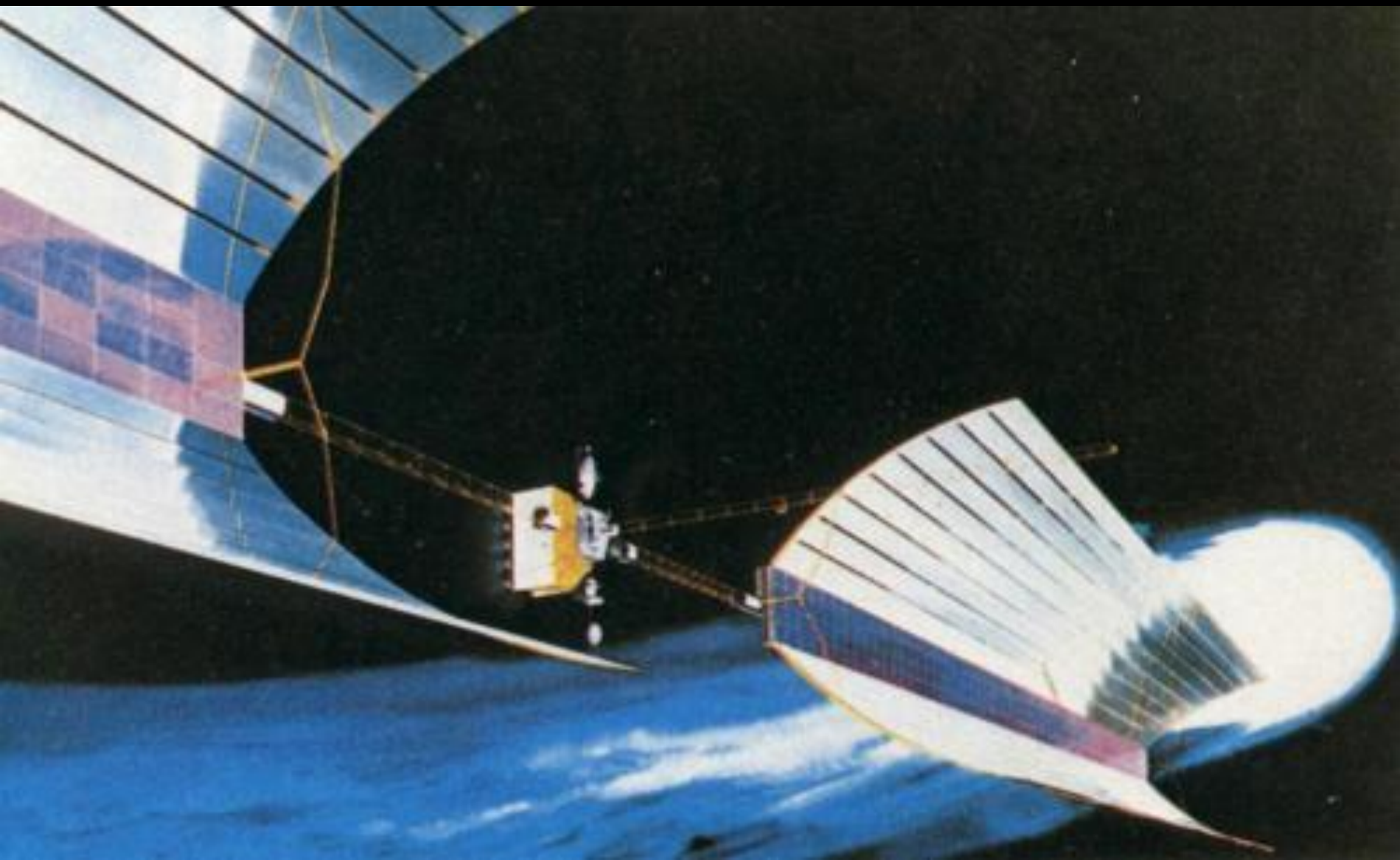
Kometa Tempel-2





Halley Intercept Mission



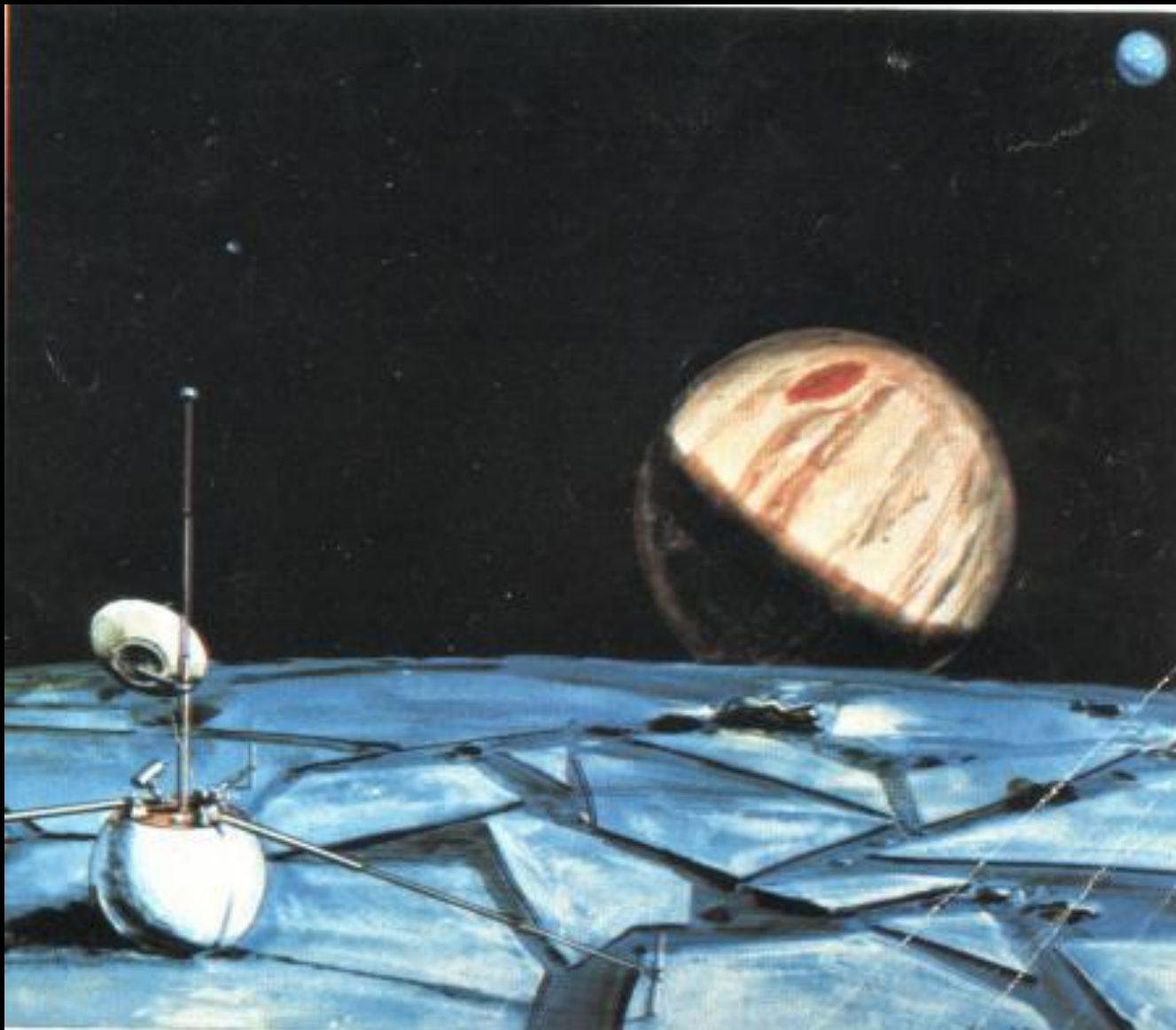


PURPLE PIGEON

Fialový holub

- Sluneční plachetnice k Halleyově kometě.
- Sonda mapující Venuši radarem.
- Sonda na orbitu Saturnu s modulem na Titan.
- Sonda na orbitu Jupitera s modulem na Ganymed.
- Cesta k několika asteroidům.
- Robotická základna na Měsíci.

„Holub“ na měsíci Ganymedes



„Holub“ na Marsu

1981 a 84 dvojice mobilních robotů.

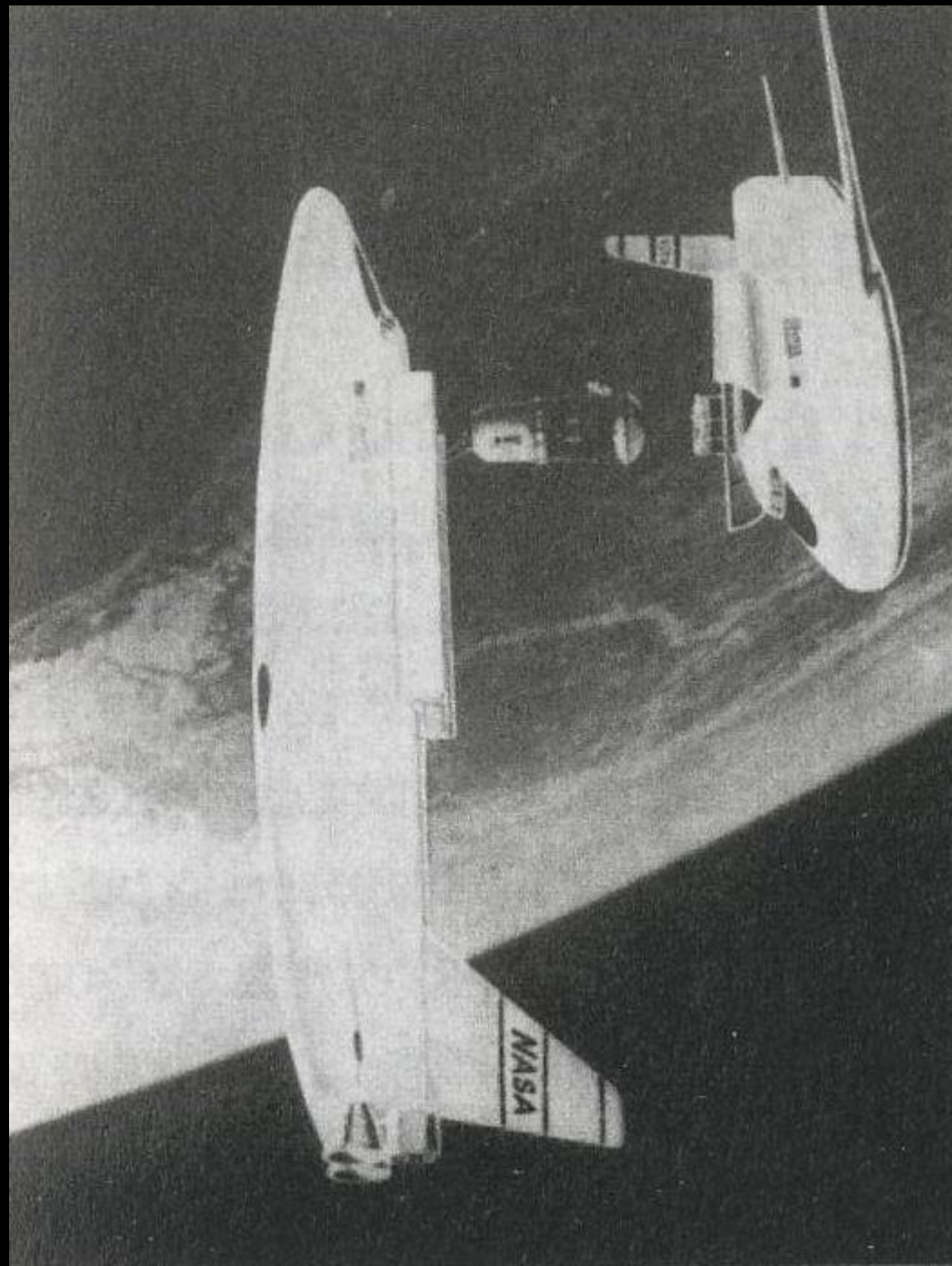
1500 km během dvou let.

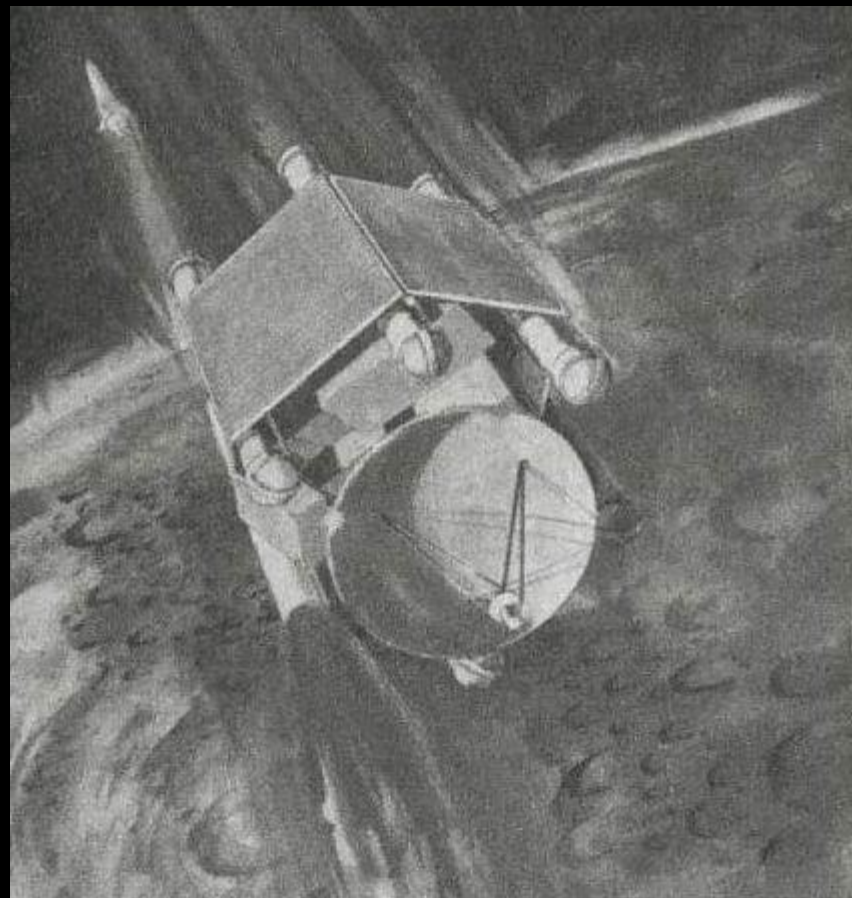
200 až 250 kg.

Každý má robotickou paži, kameru a přístroje pro geochemickou a biologickou analýzu.

Jedou společně.

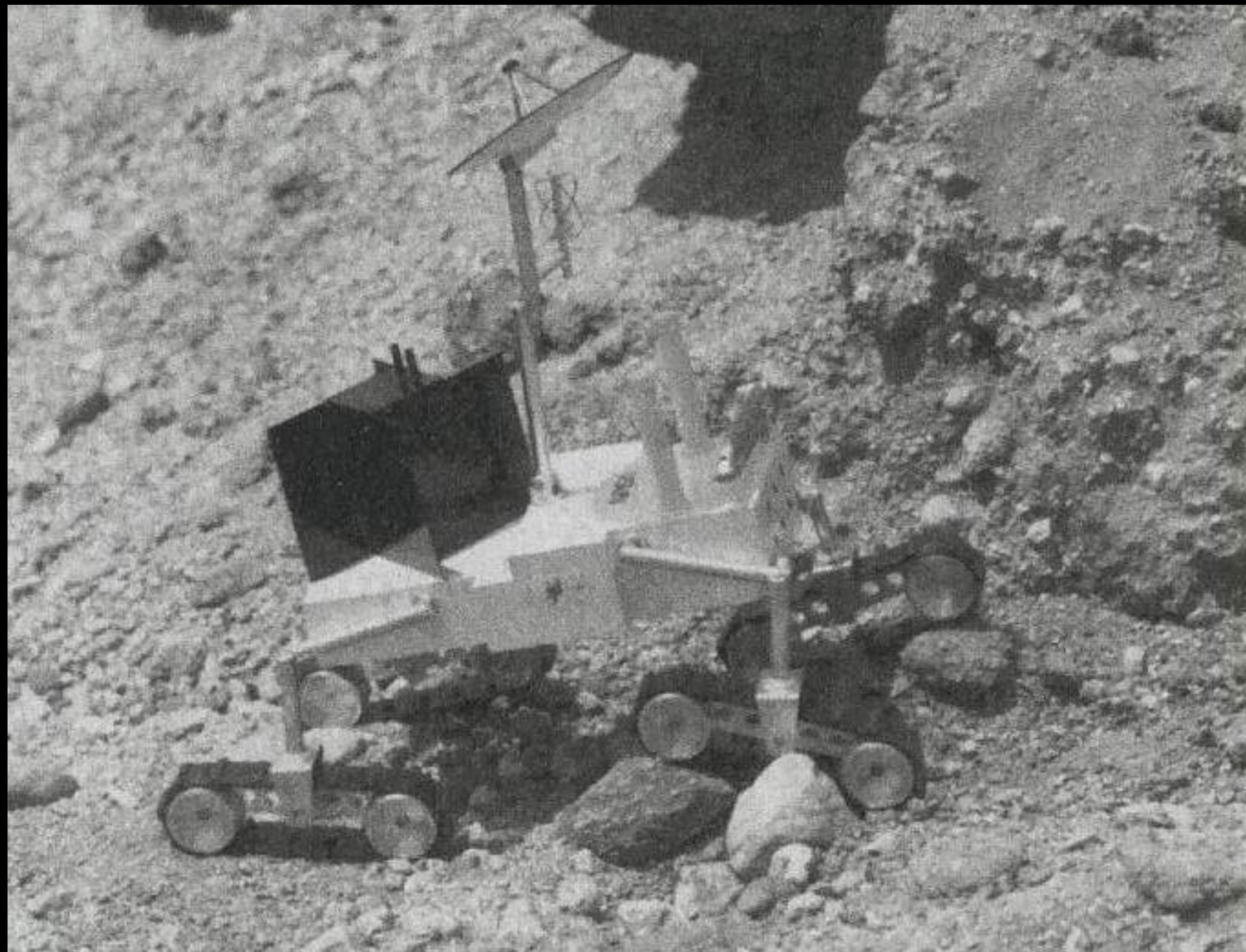
ŽIVOT PO VIKINGU



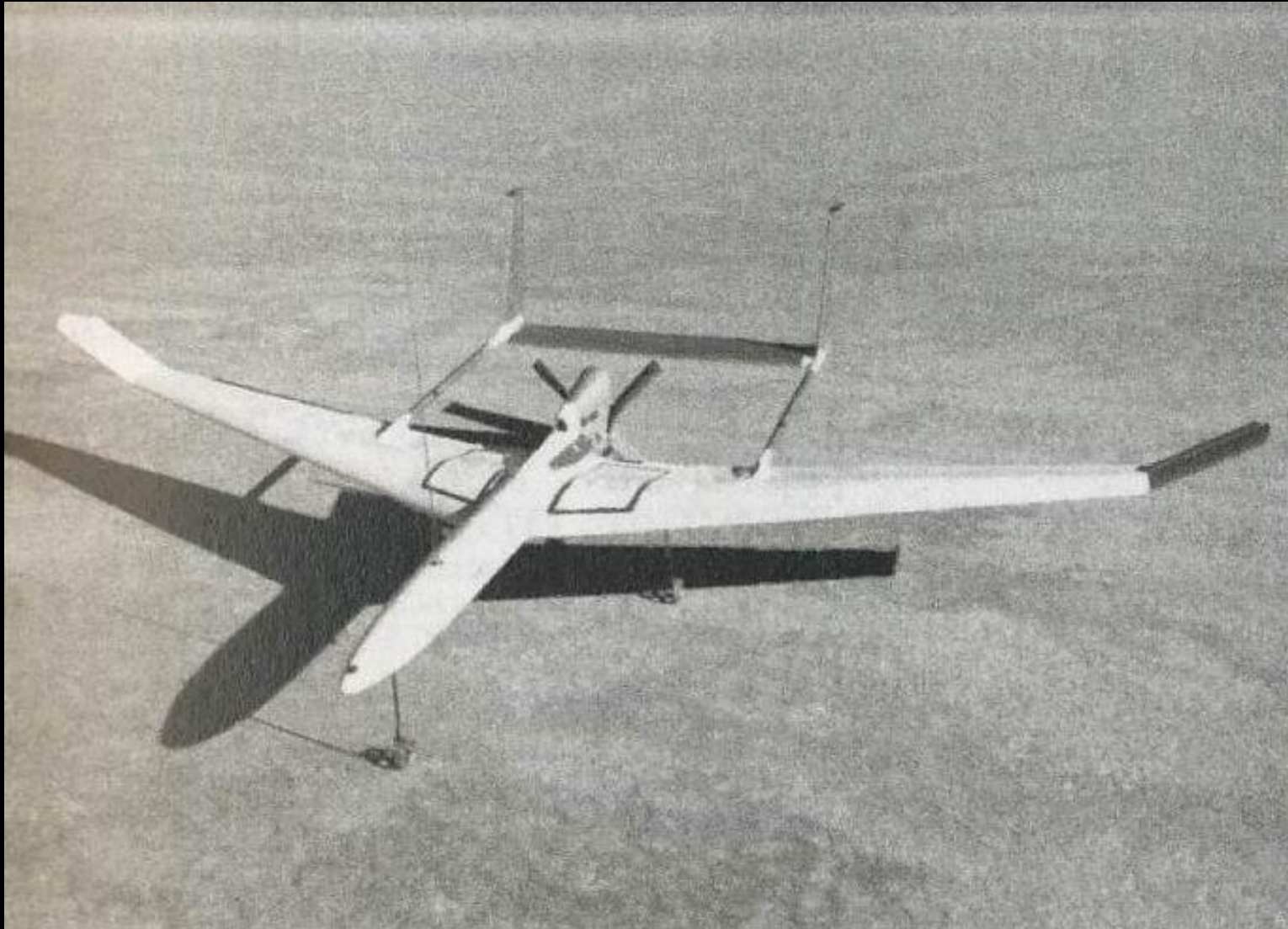


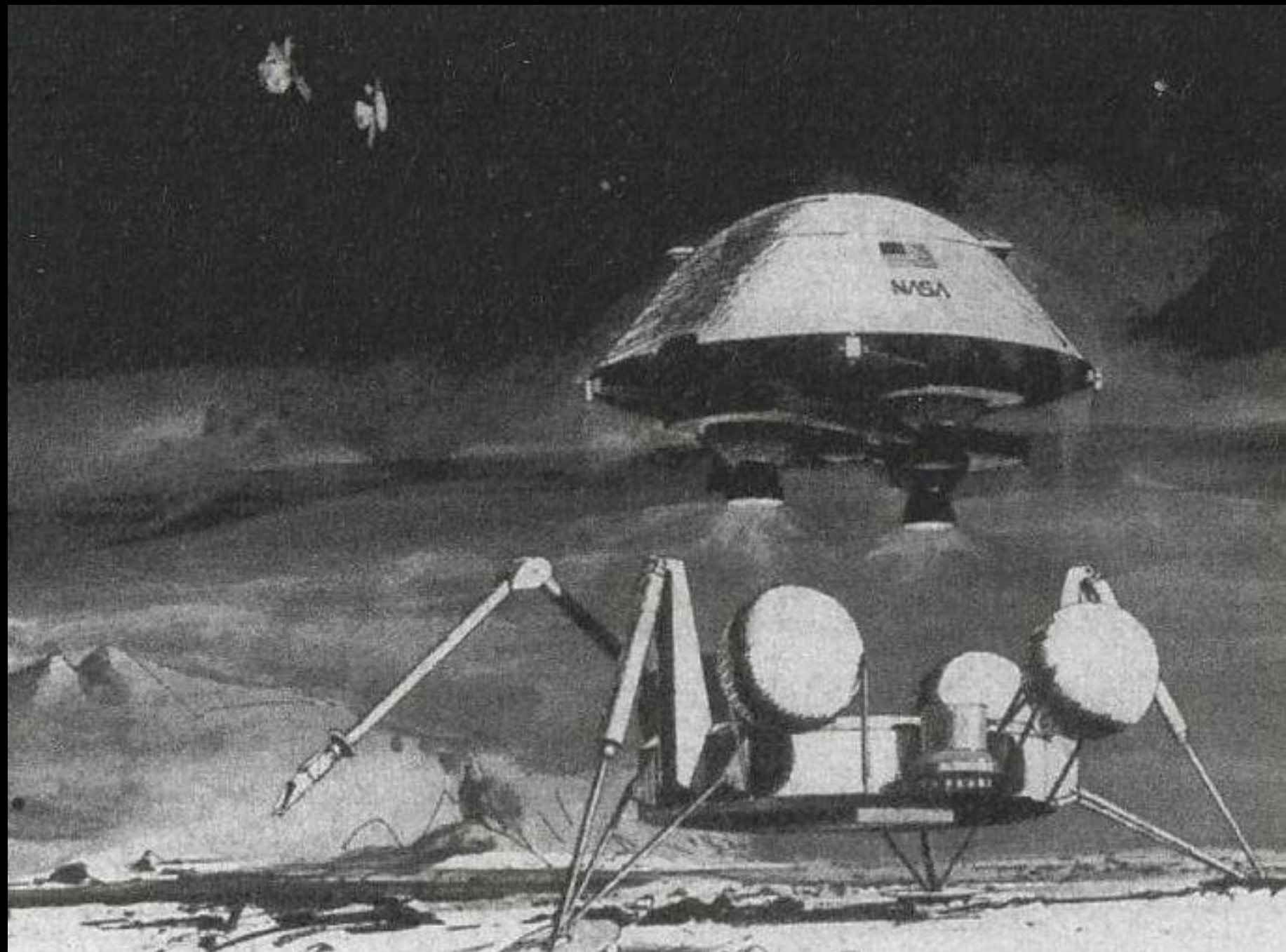


- 1) Malý mobilní robot na 100 m kabelu.
- 2) Nezávislý 100 kg robot, který pojede kilometry.



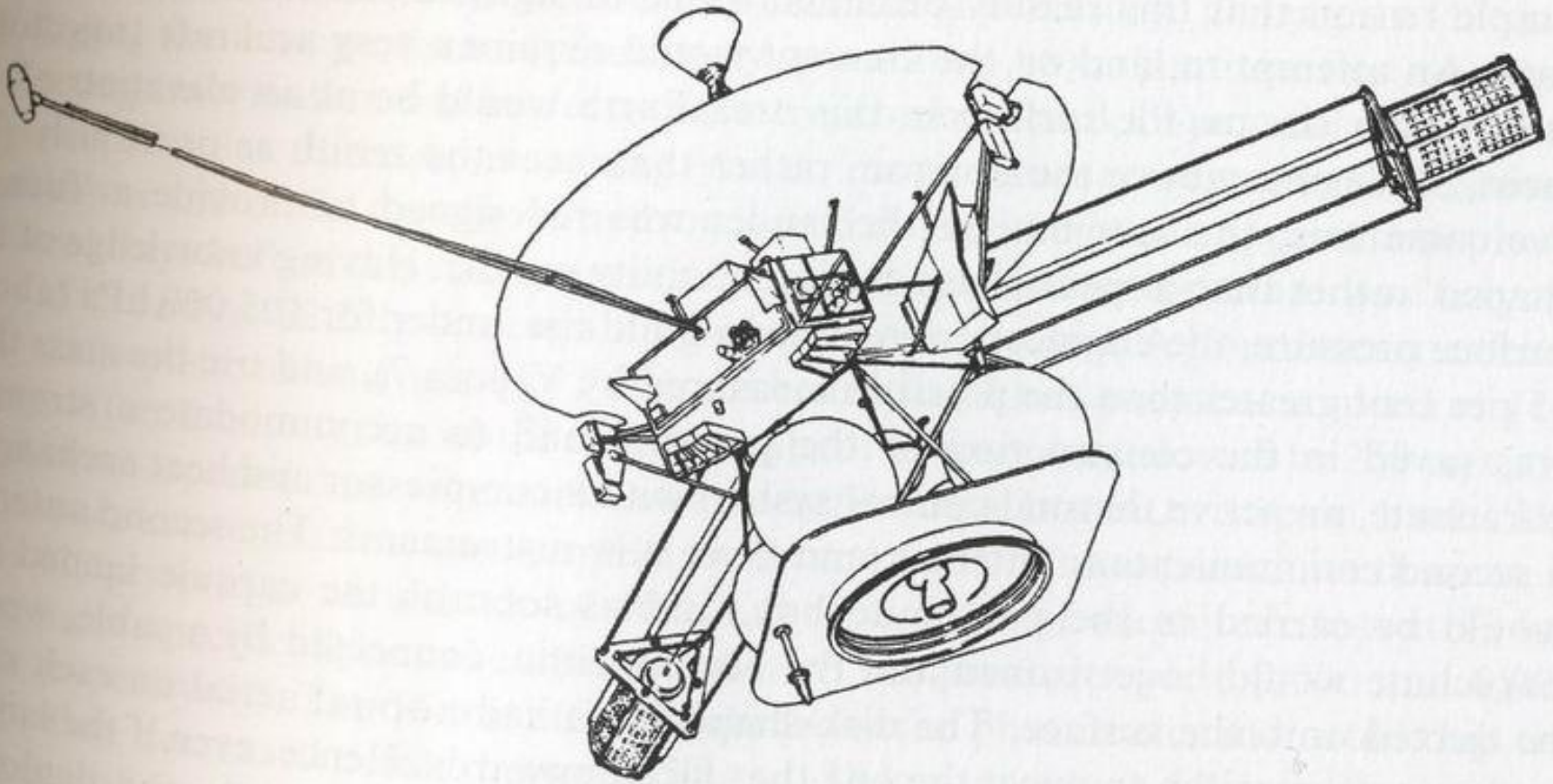
40 hodin letu, 8000 km.





VELKÁ CESTA

Pioneer Outer Planets Orbiter



1977:

J-S-P

J-S-U-N

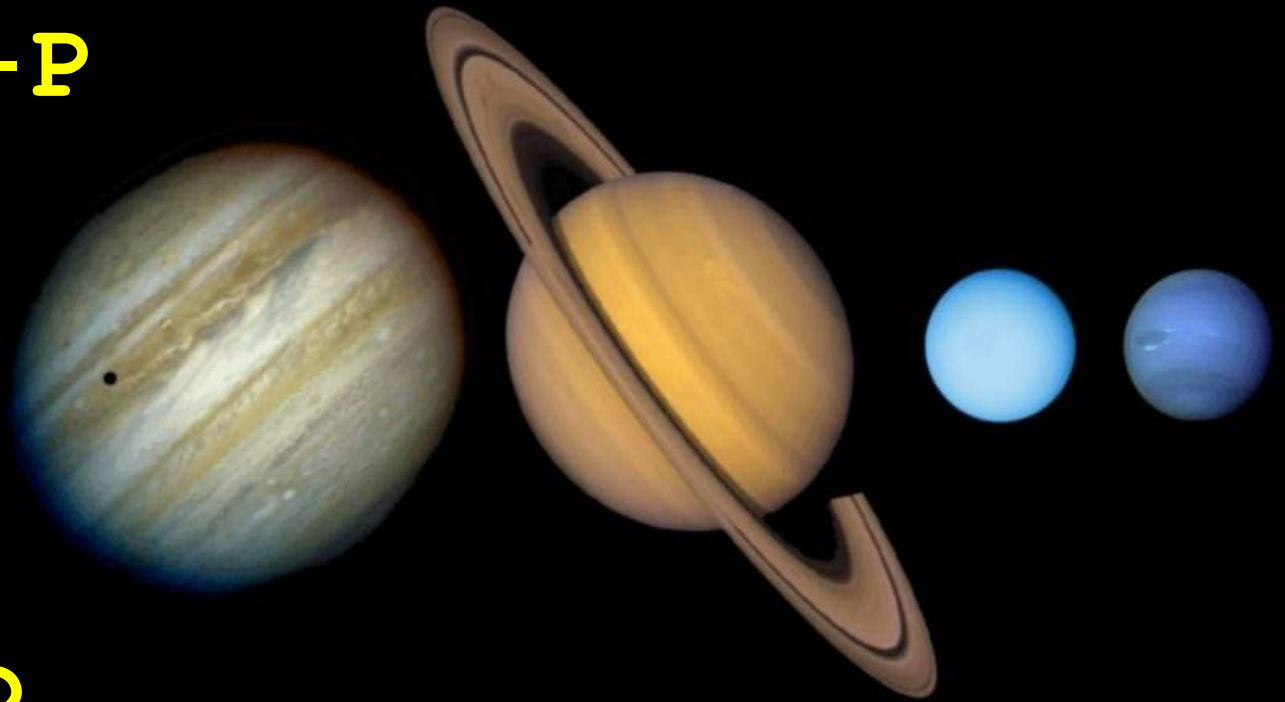
J-S-U-N-P

1979

J-U-N

1995:

J + něco



Dva nosiče

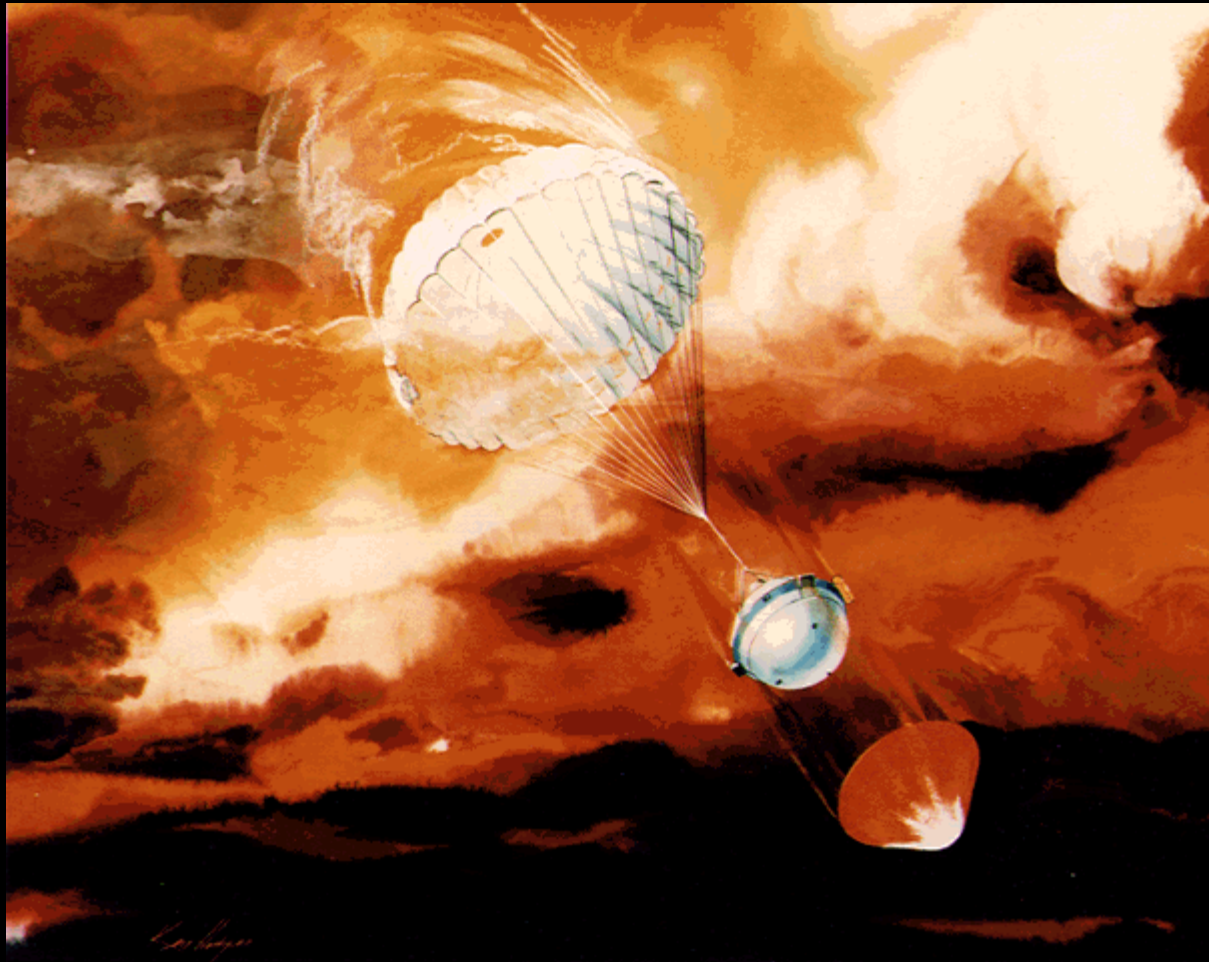


Titan III (700 kg)

Saturn V + Centaur (4300 kg)

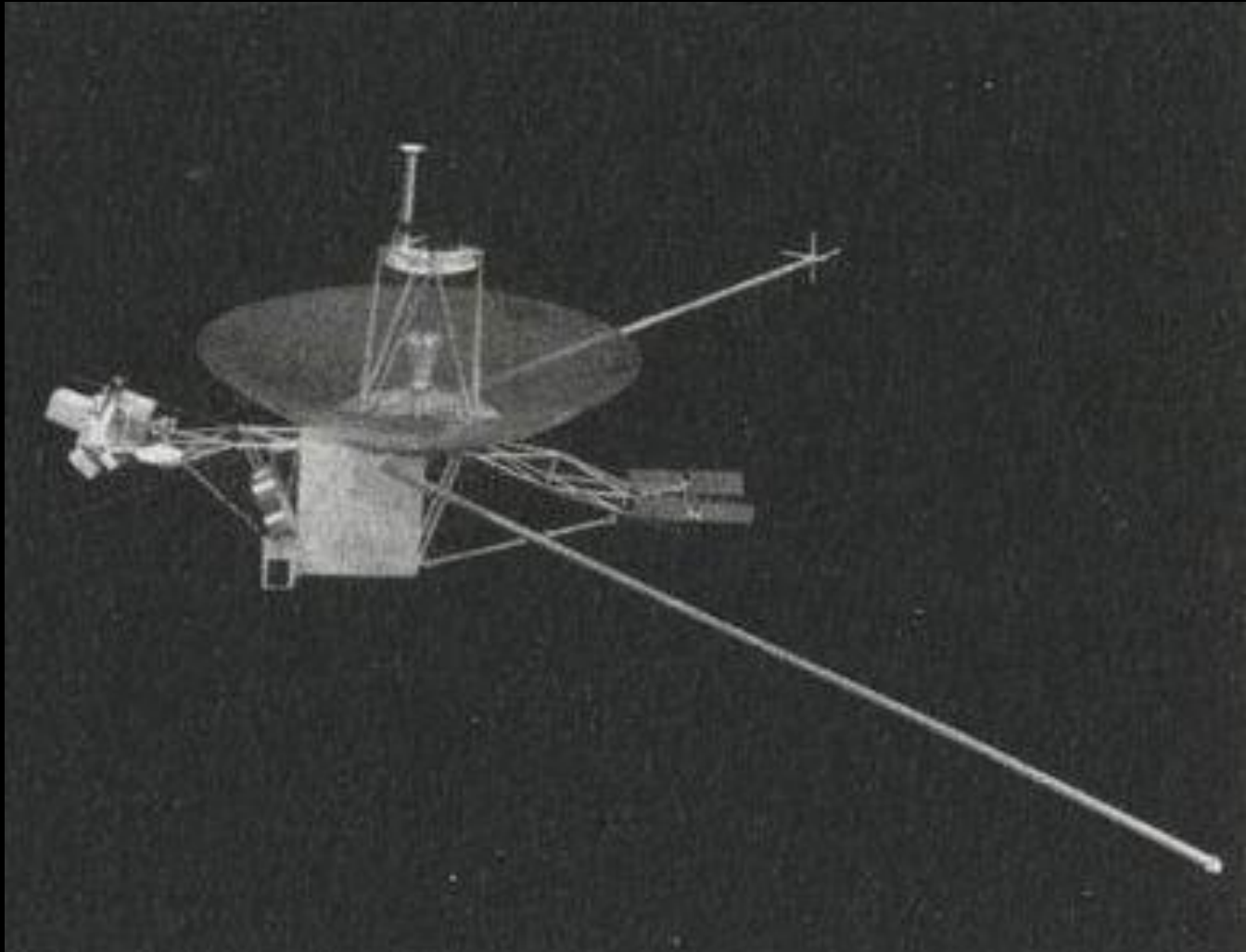
Návrh Amesova střediska

Výsadekový modul do atmosféry Jupitera.



TOPS

Thermoelectric Outer Planet Spacecraft



1970 – Nixon hovoří o misi
„k tajemným vnějším planetám
sluneční soustavy“.

1974 n. 75 – testovací mise,
z roviny ekliptiky – průzkum
Slunce.

1977 – dvojice J-S-P.

1979 – dvojice J-U-N.

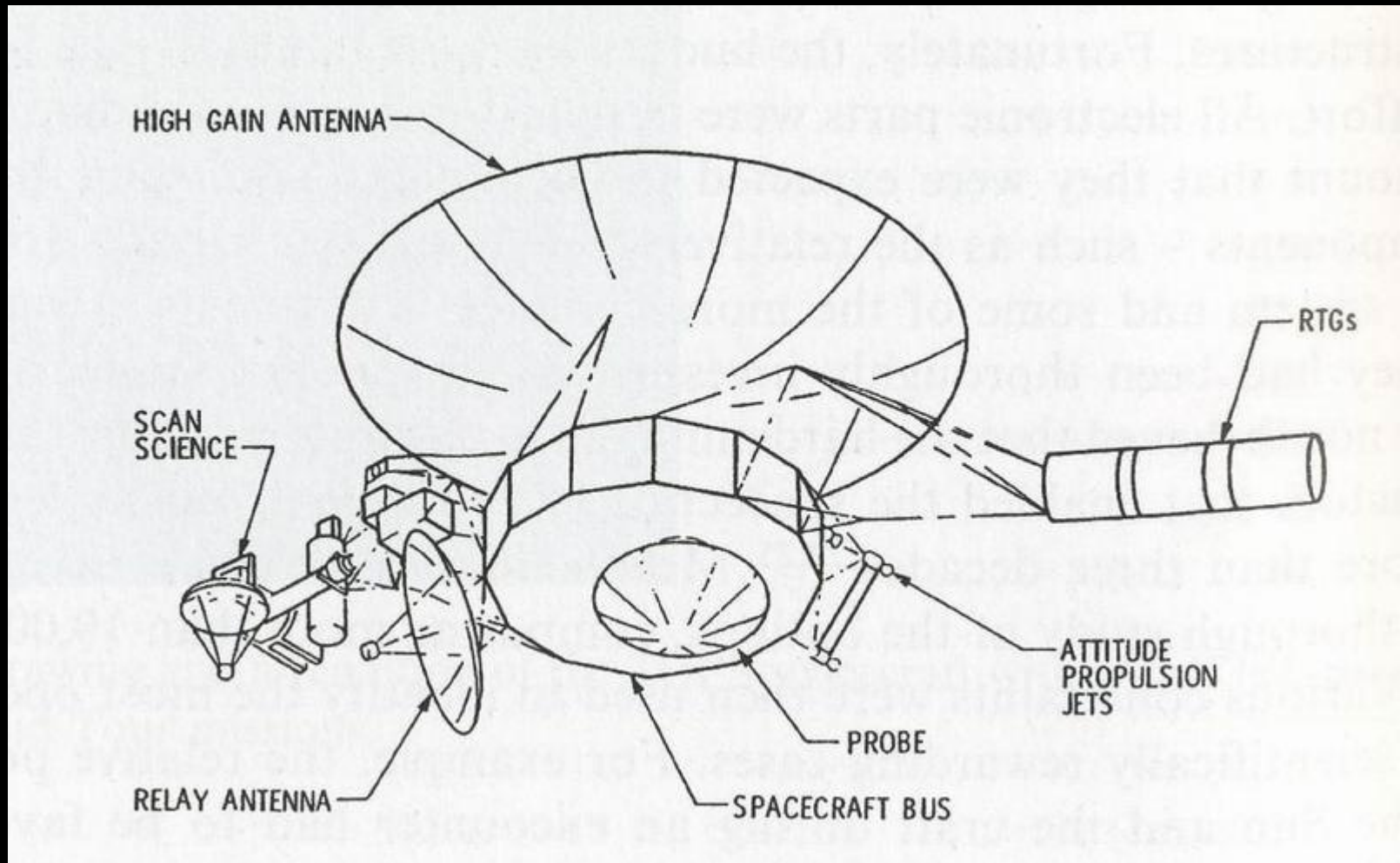
Mariner Jupiter-Saturn

Stavba na vlastní půdě – JPL NASA.



Deset tisíc trajektorií letu!

Mariner Jupiter-Uranus



J-S-P

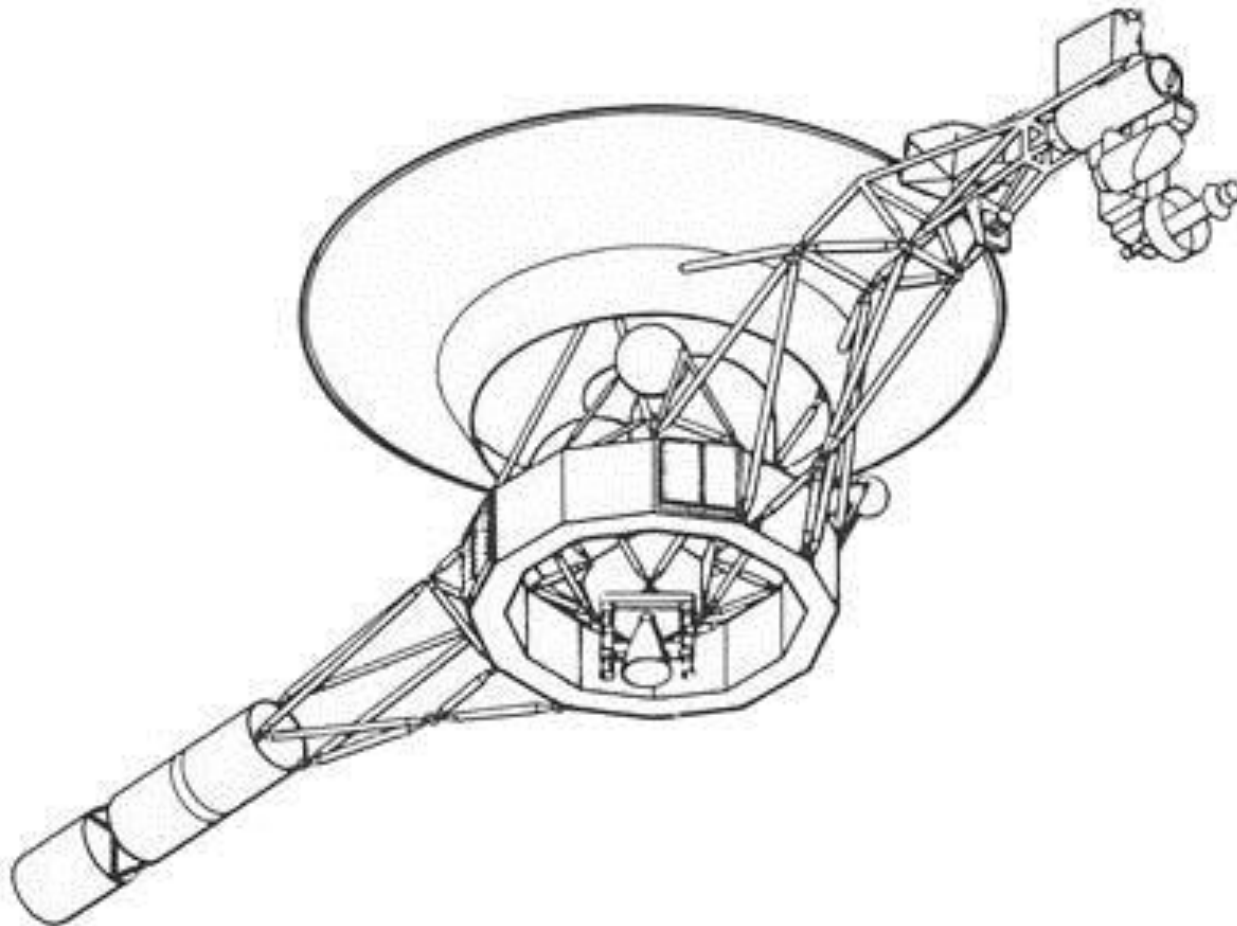
J-S-U-N

J-S



Mariner-11 a -12: Nomad,
Pilgrim, Planet Trek.

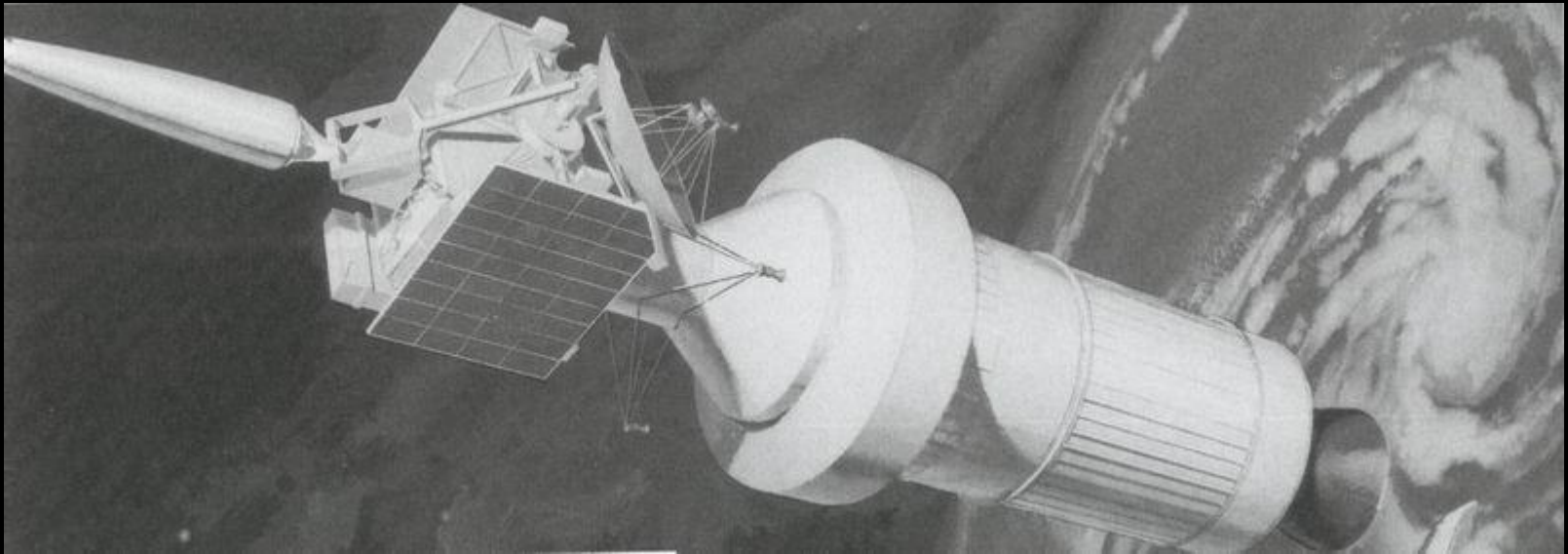
Voyager-3



RADAR NAD VENUŠÍ

VOIR

Venus Orbiting Imaging Radar



1986 pět měsíců, 600 m detaily.

(Dnes Portoriko – 100 m.)

Stavebnice

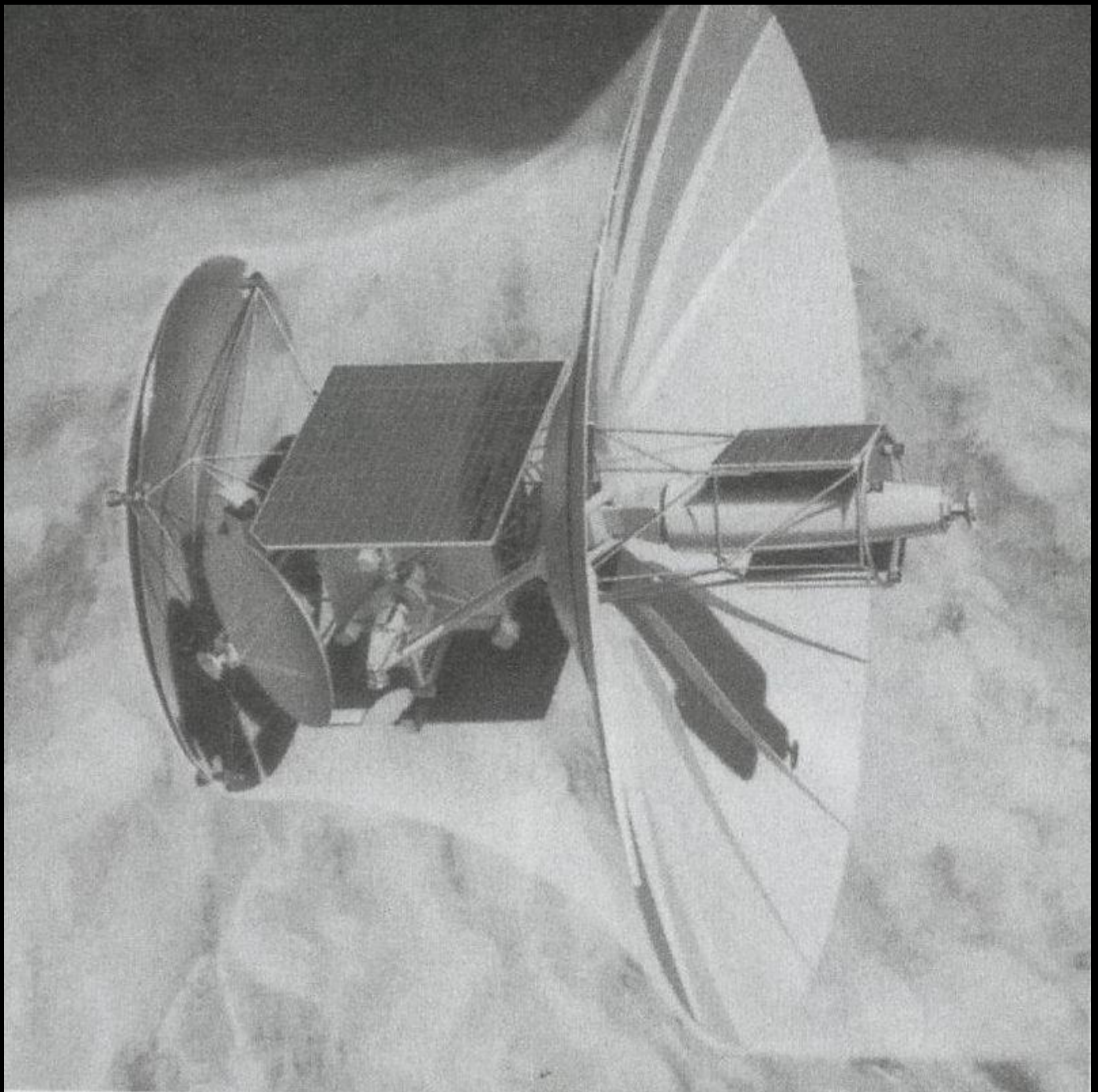
Sluneční panely:
záložní z Marineru-
10.

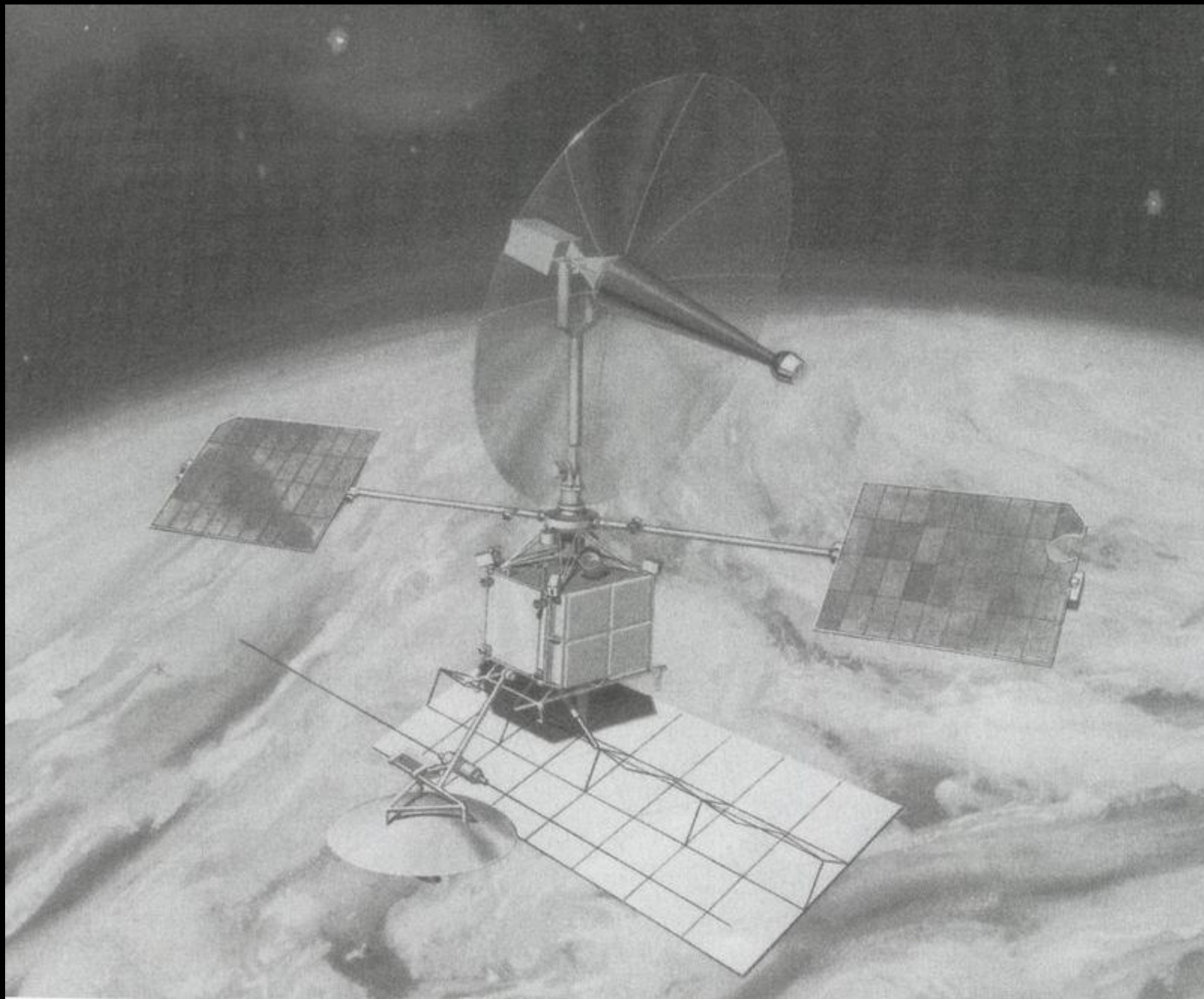
Elektronika: záložní
z Voyageru.

Výškoměr: z mise
Pioneer Venus
Orbiter.

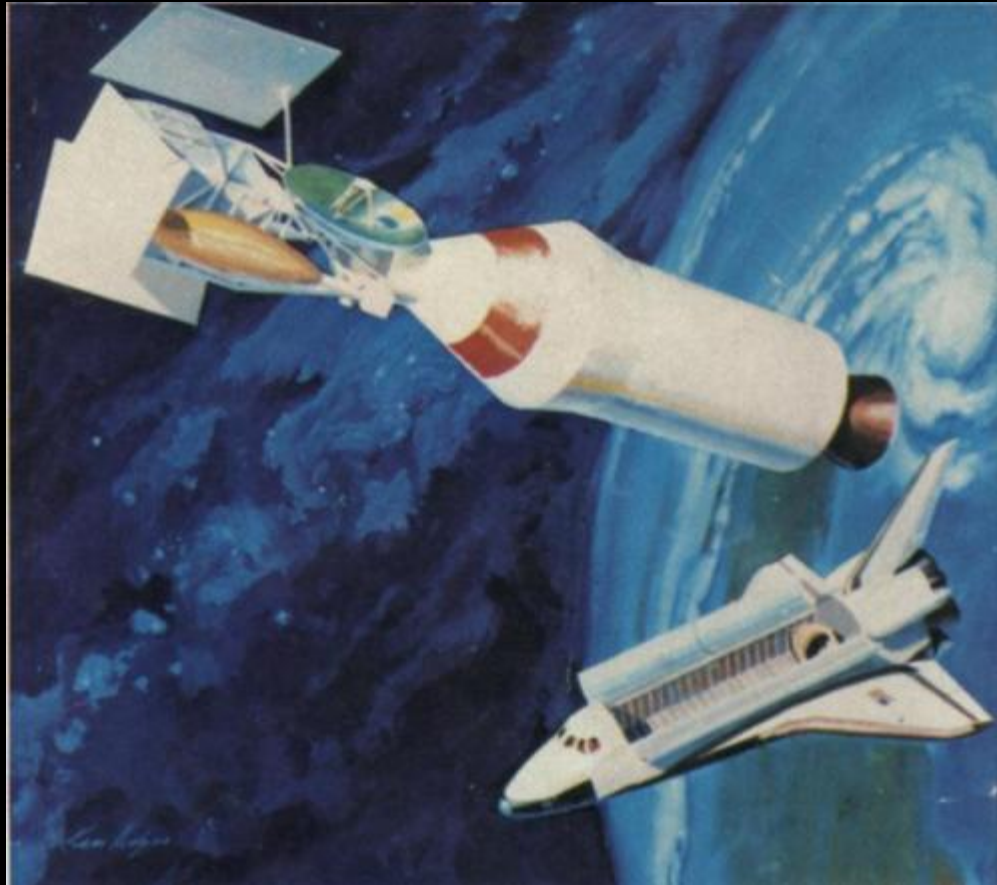
Zobrazovací radar:
mise SeaSat.







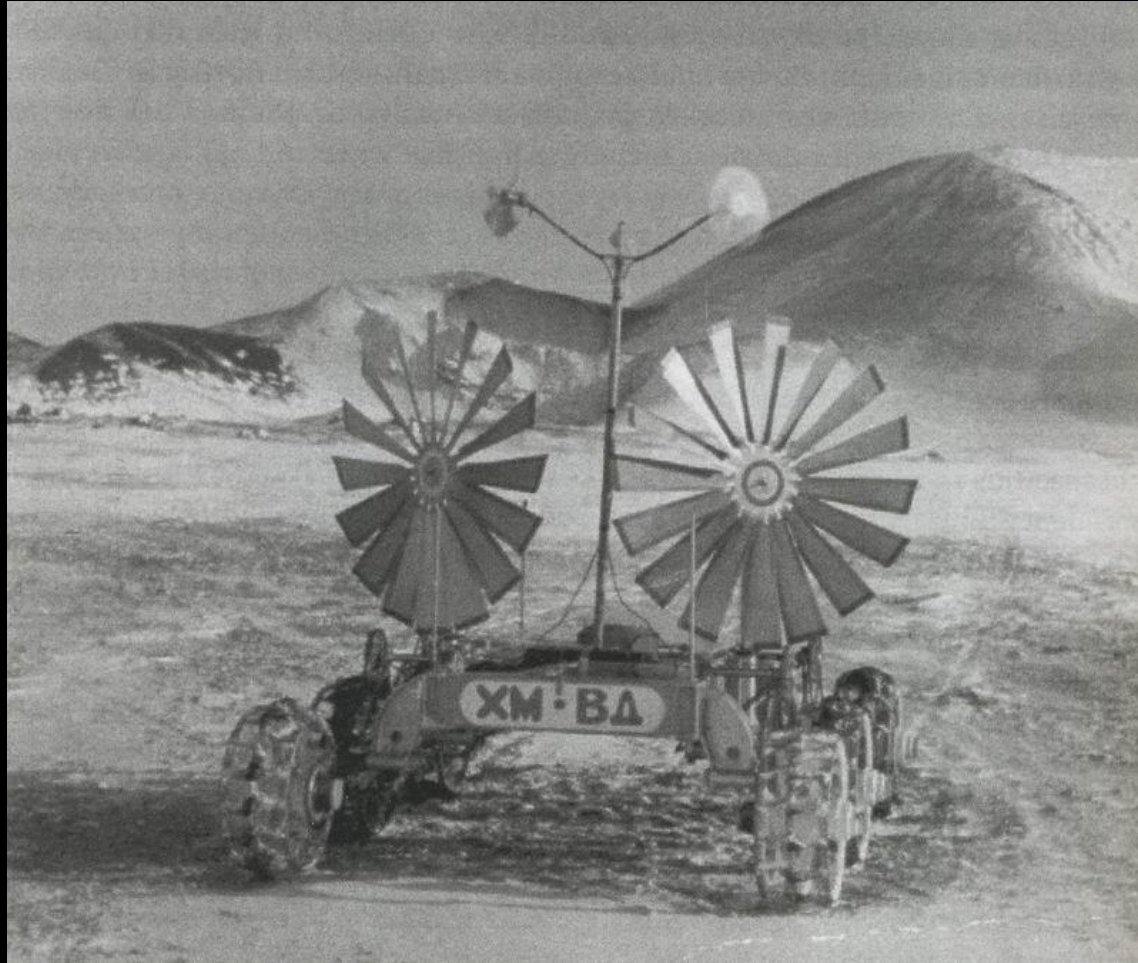
1981: Reagan nařizuje NASA
ukončit jeden velký program





POZDRAV Z PEKLA VENUŠE

Veněrochod



Dlouhodobě pracující stanice.

PLANETARY OBSERVER

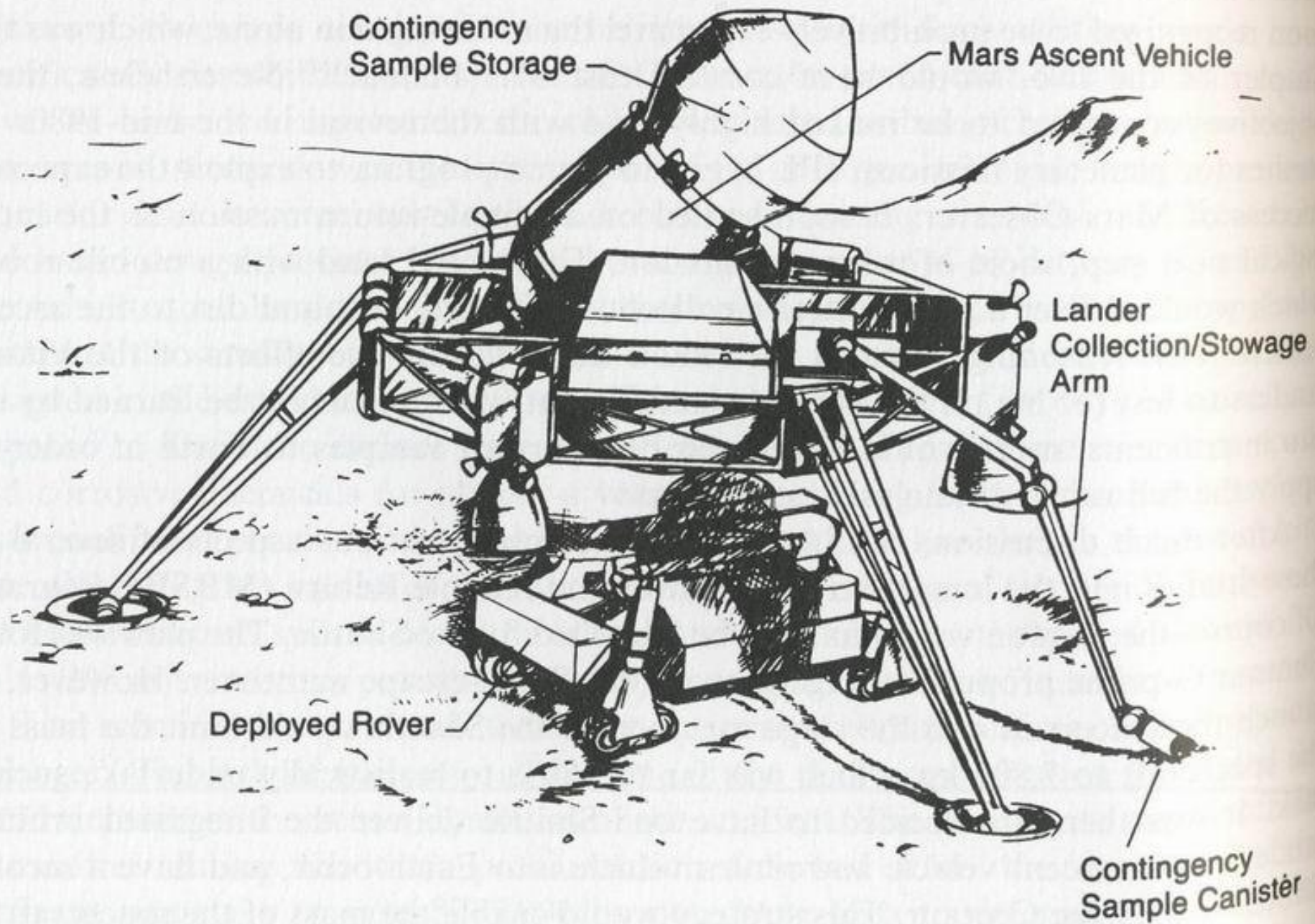
Low-Cost Exploration of Solar System

Solar Science Exploration Committee

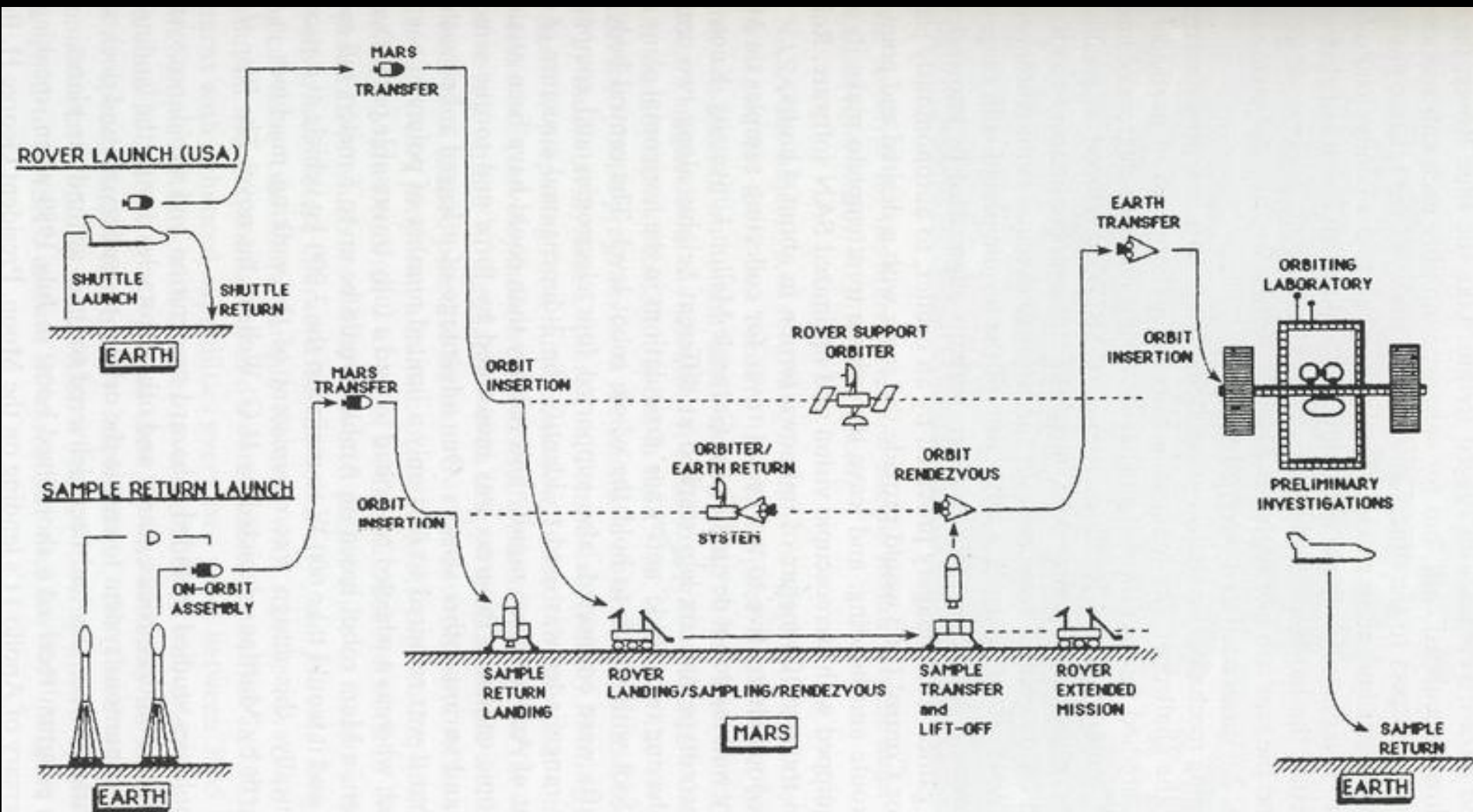
Venus Radar Mapper (Magellan)

Mars Geoscience Climatology Orbiter





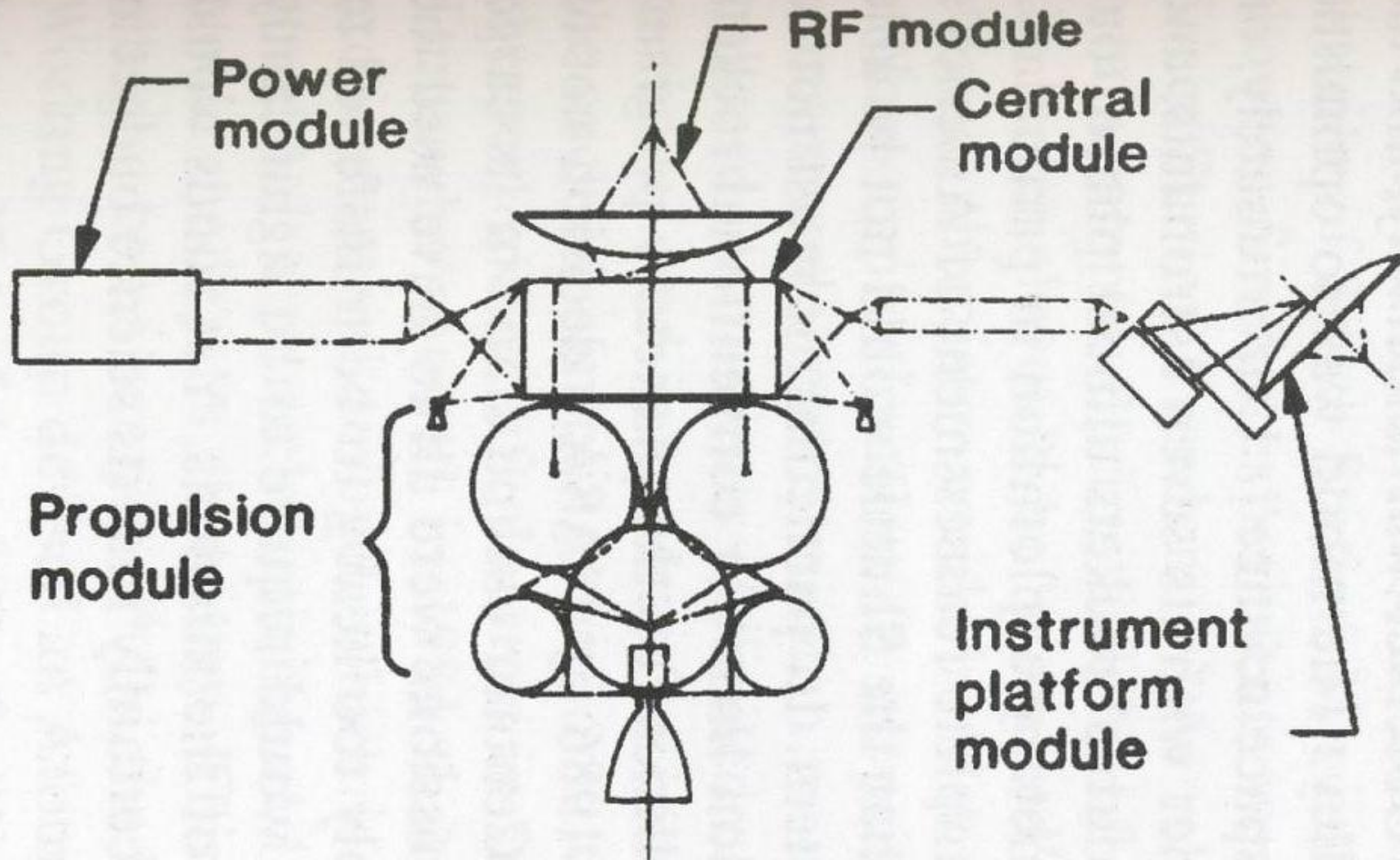
Mars Rover and Sample Return



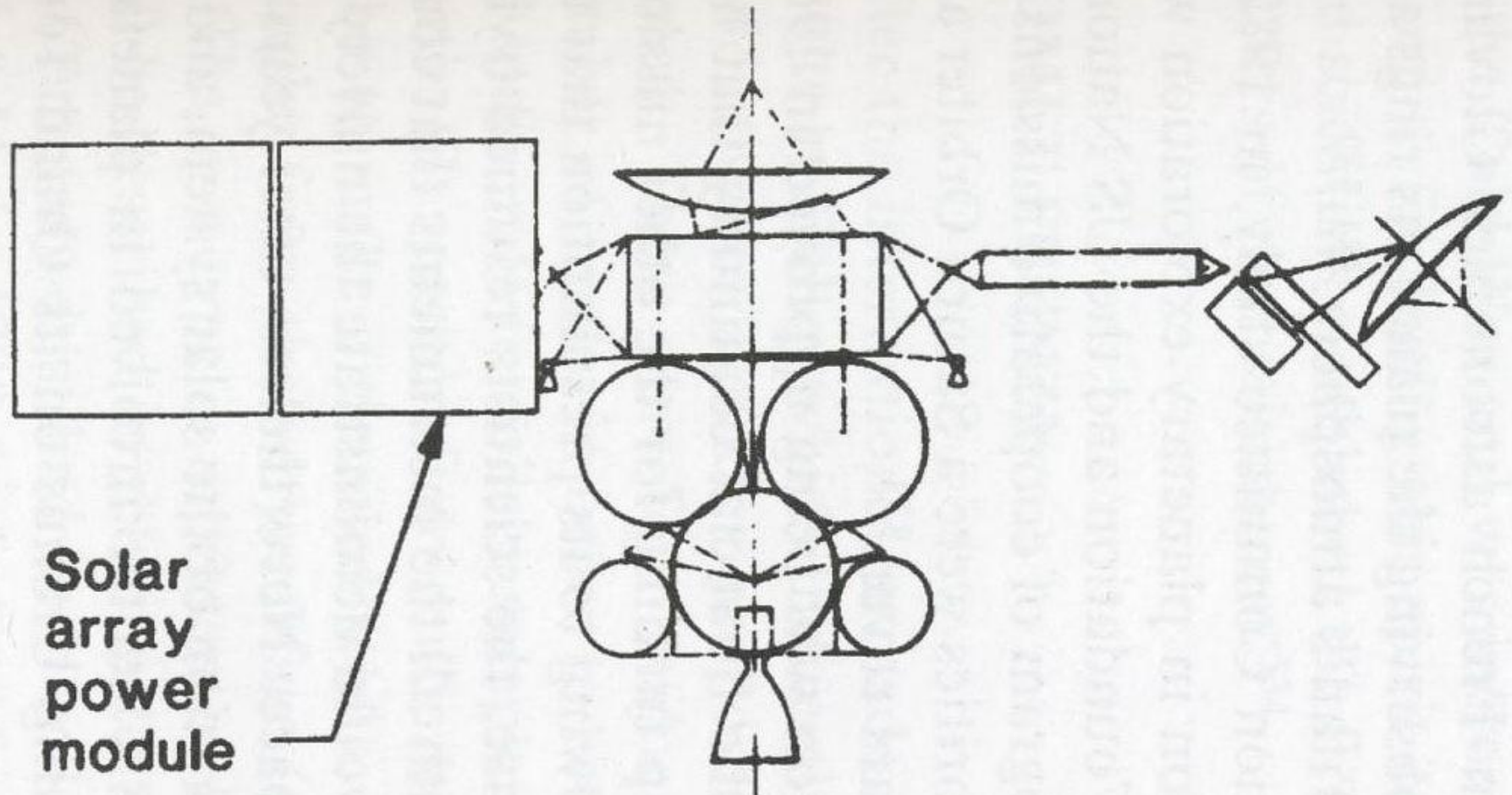


MARINER MARK II

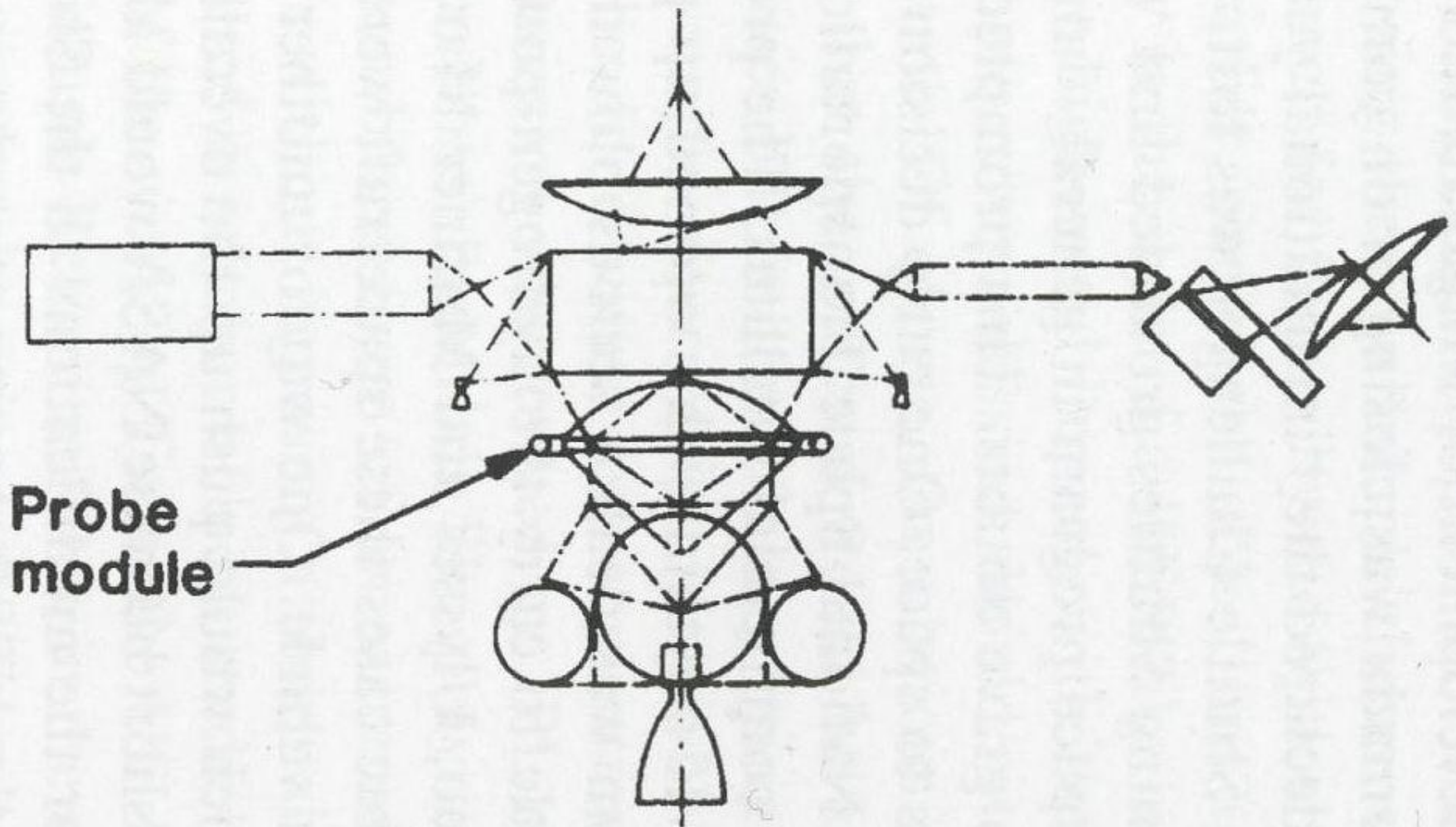
Orbitální průzkumník



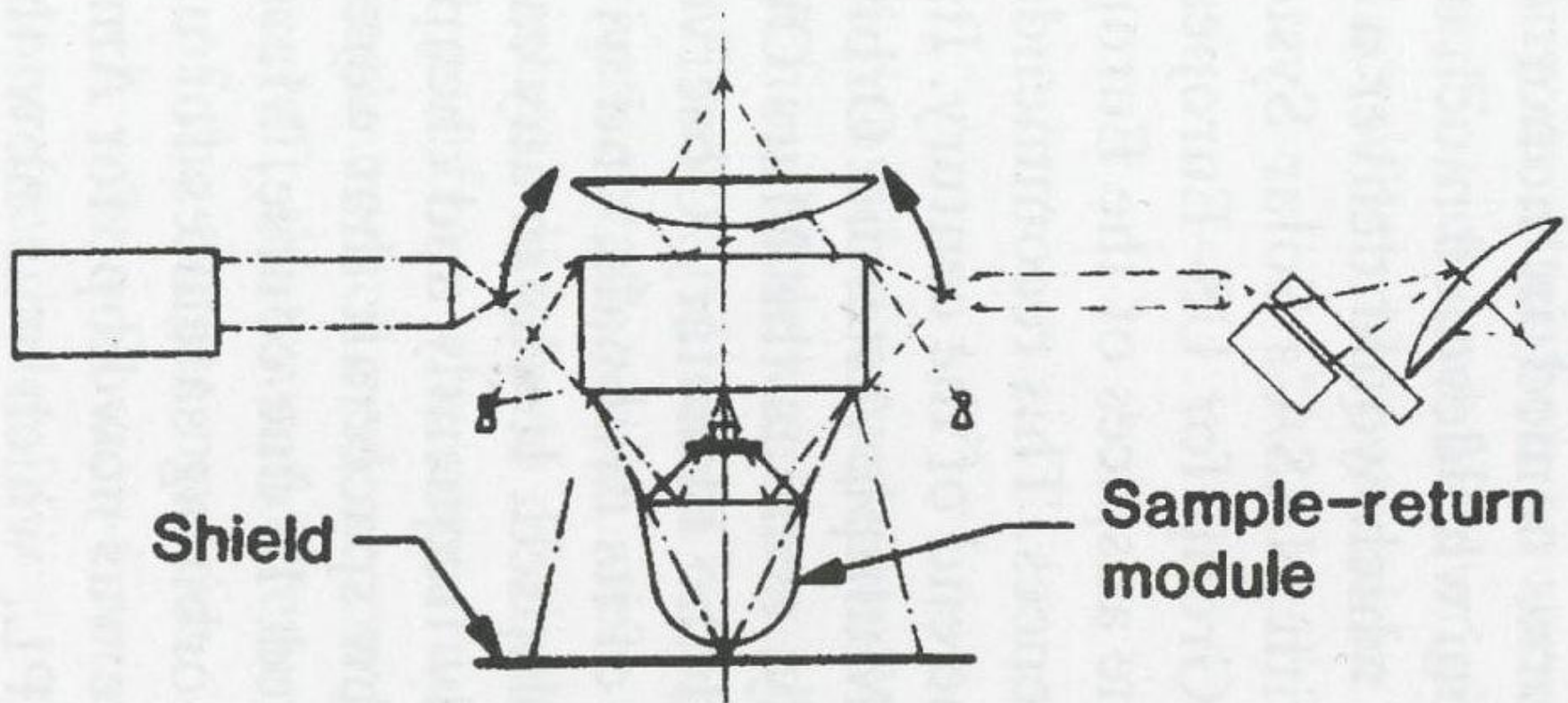
Sonda se slunečními bateriemi



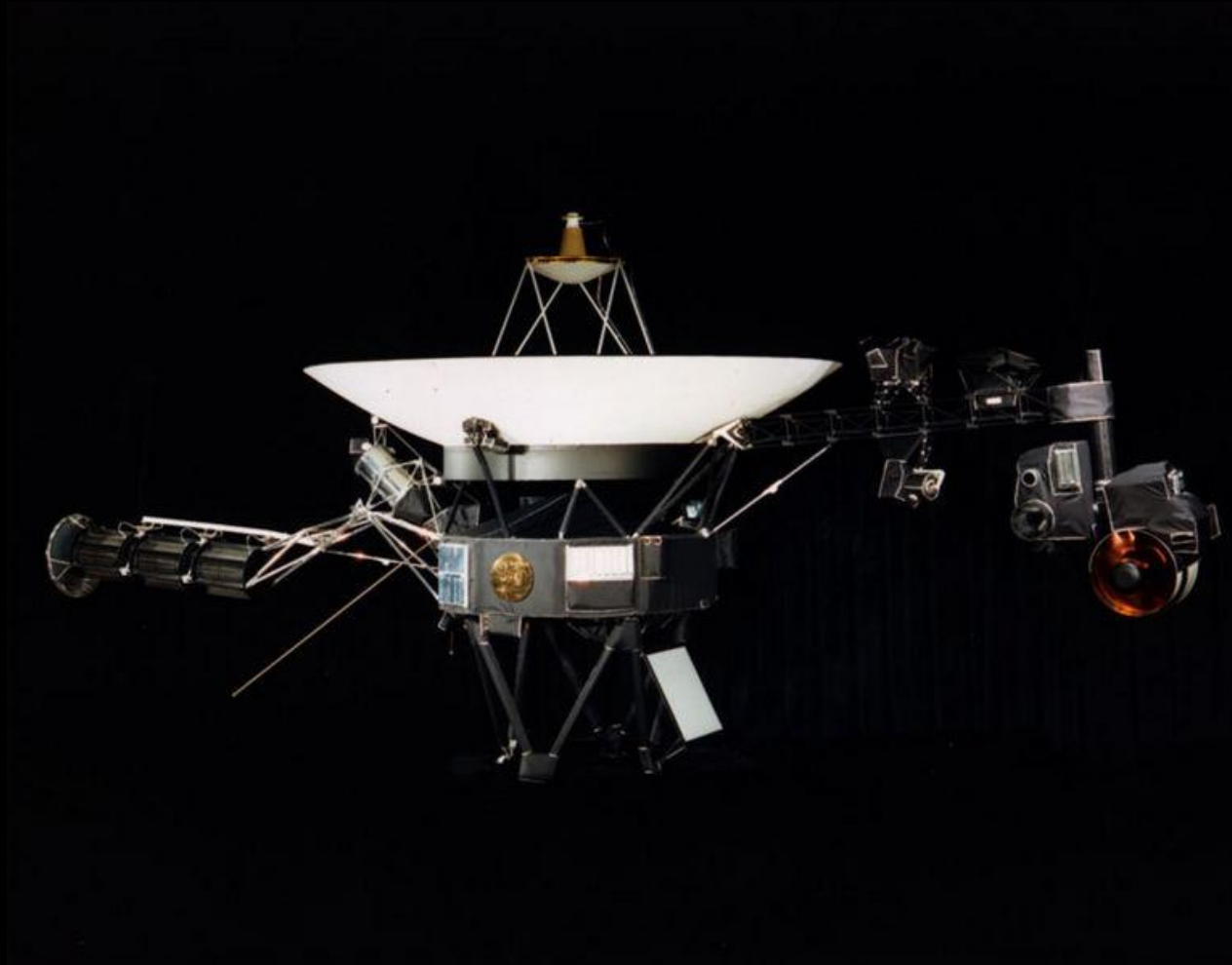
Průletová sonda s výsadkovým modulem

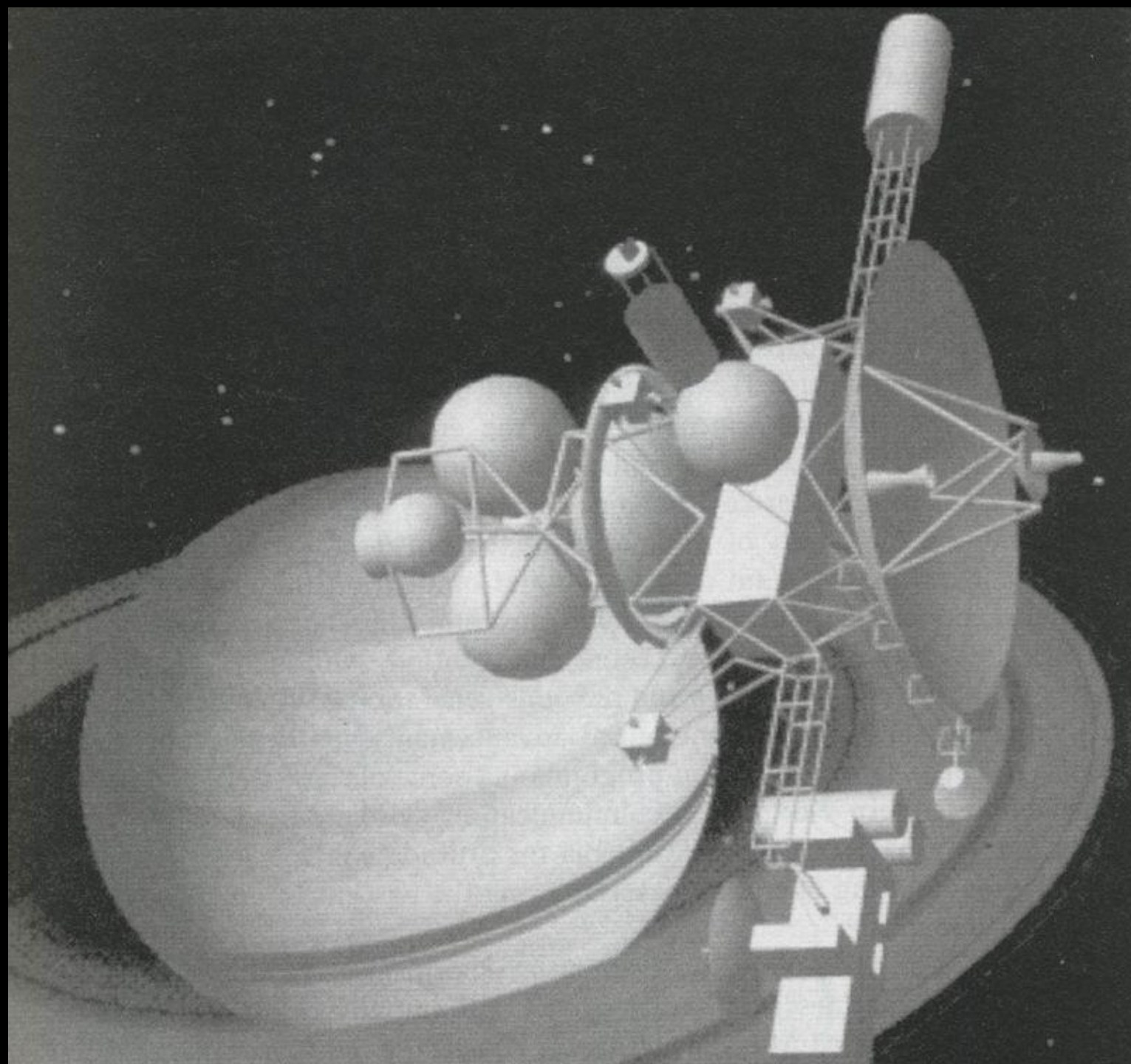


Odběr vzorků



Comet Rendezvous/Asteroid Flyby Saturn Orbiter and Titan Probe



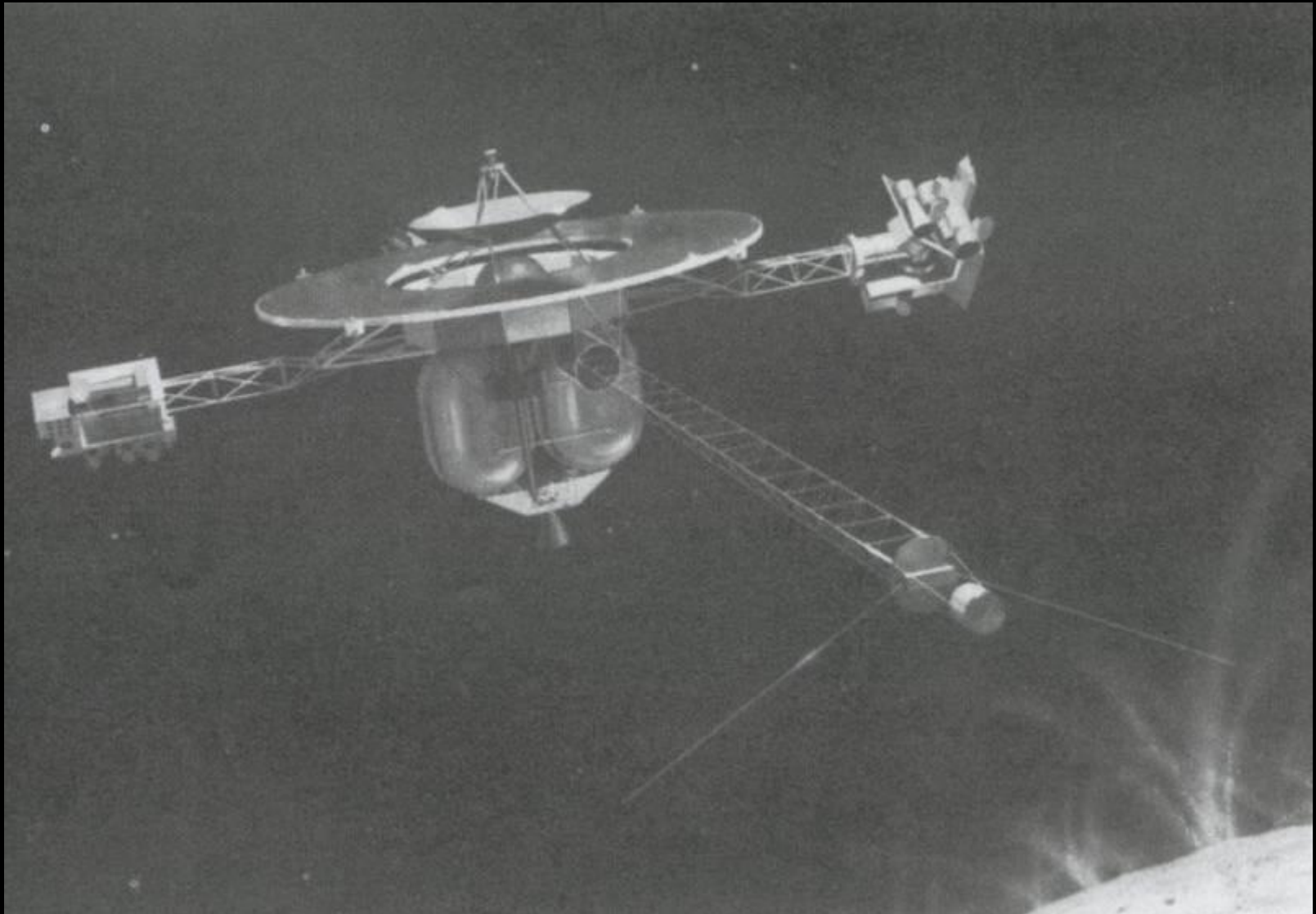


1990 start

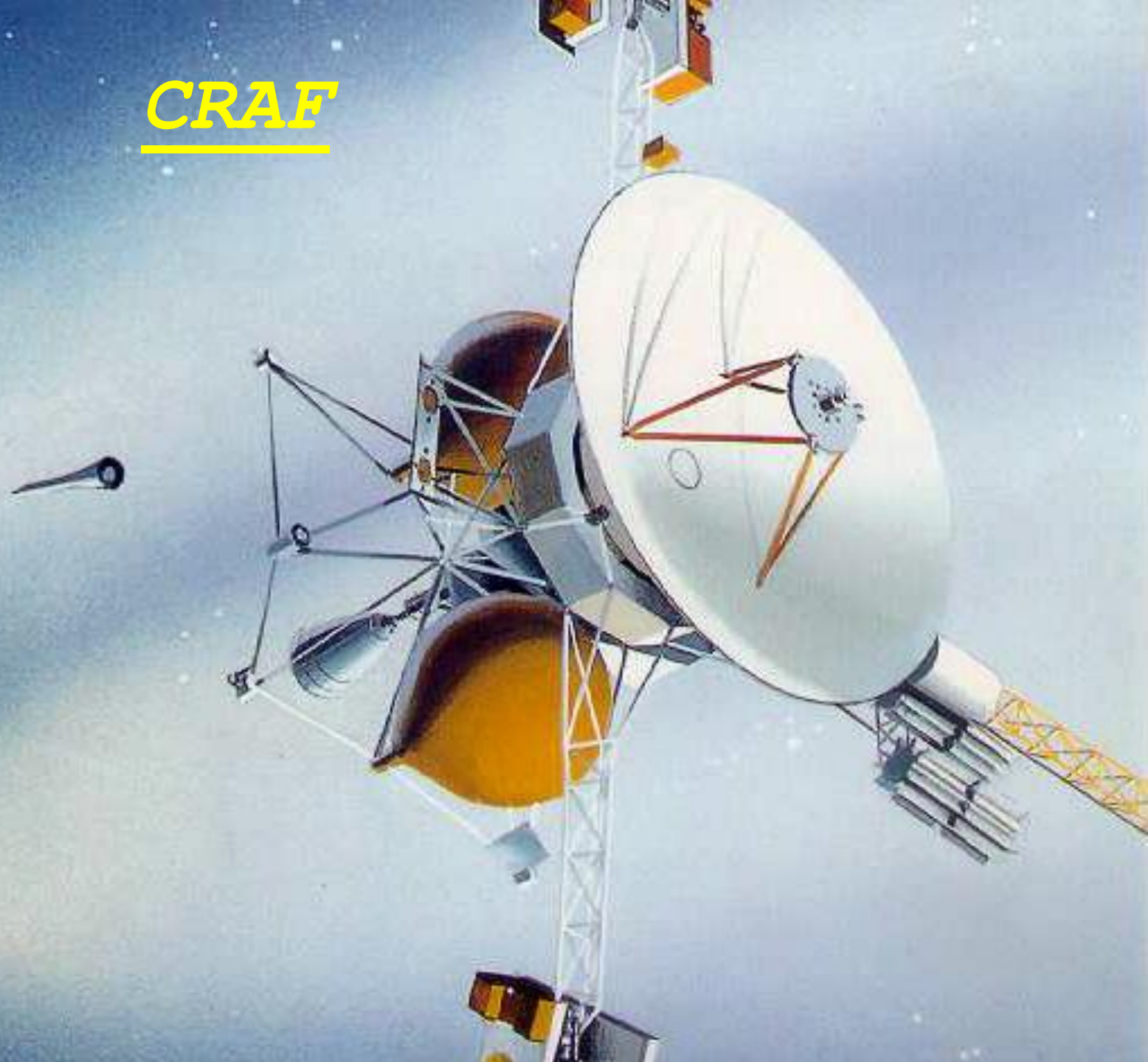
Asteroid 772 Tanete, kometa Kopff



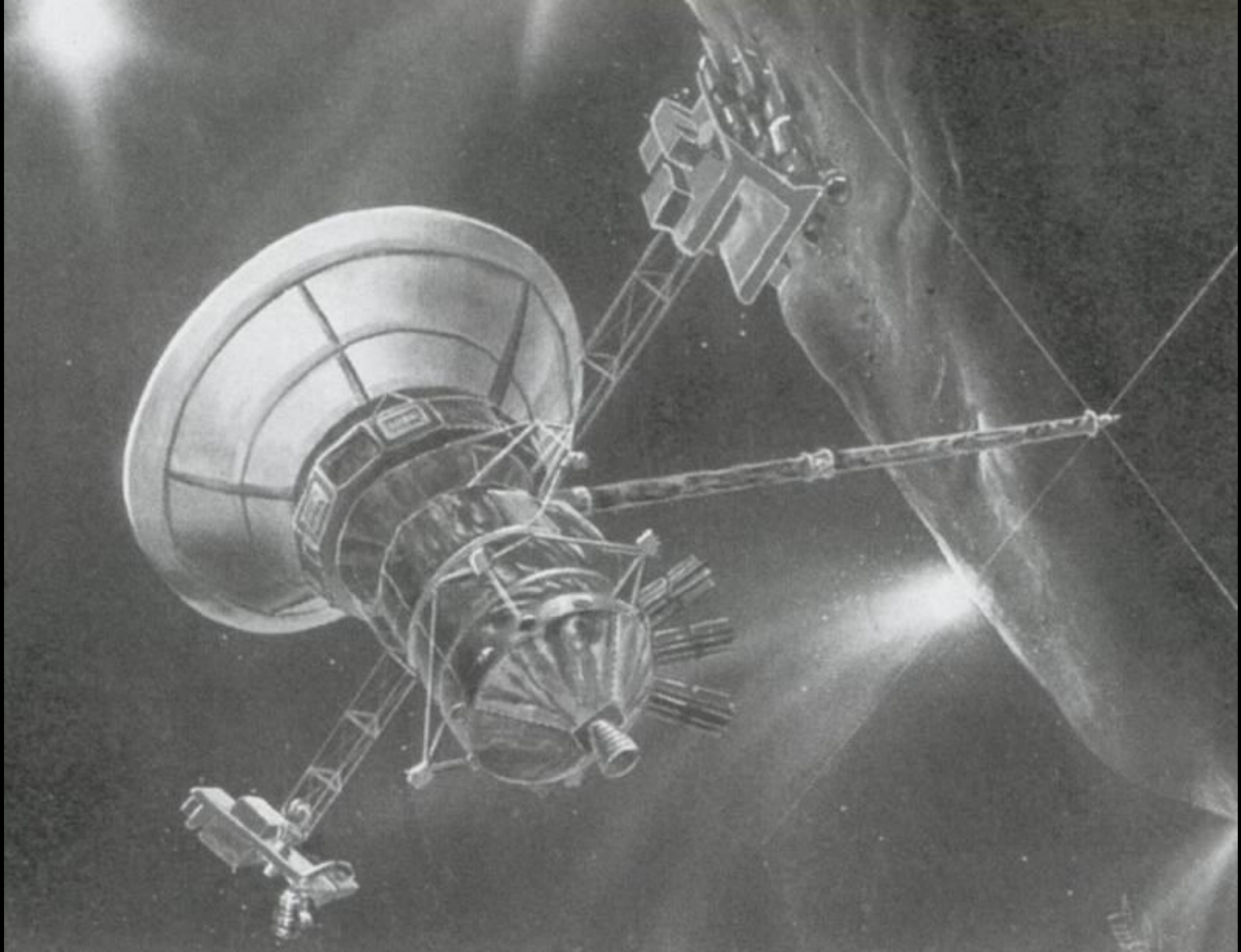
CRAF v podobě do roku 1986

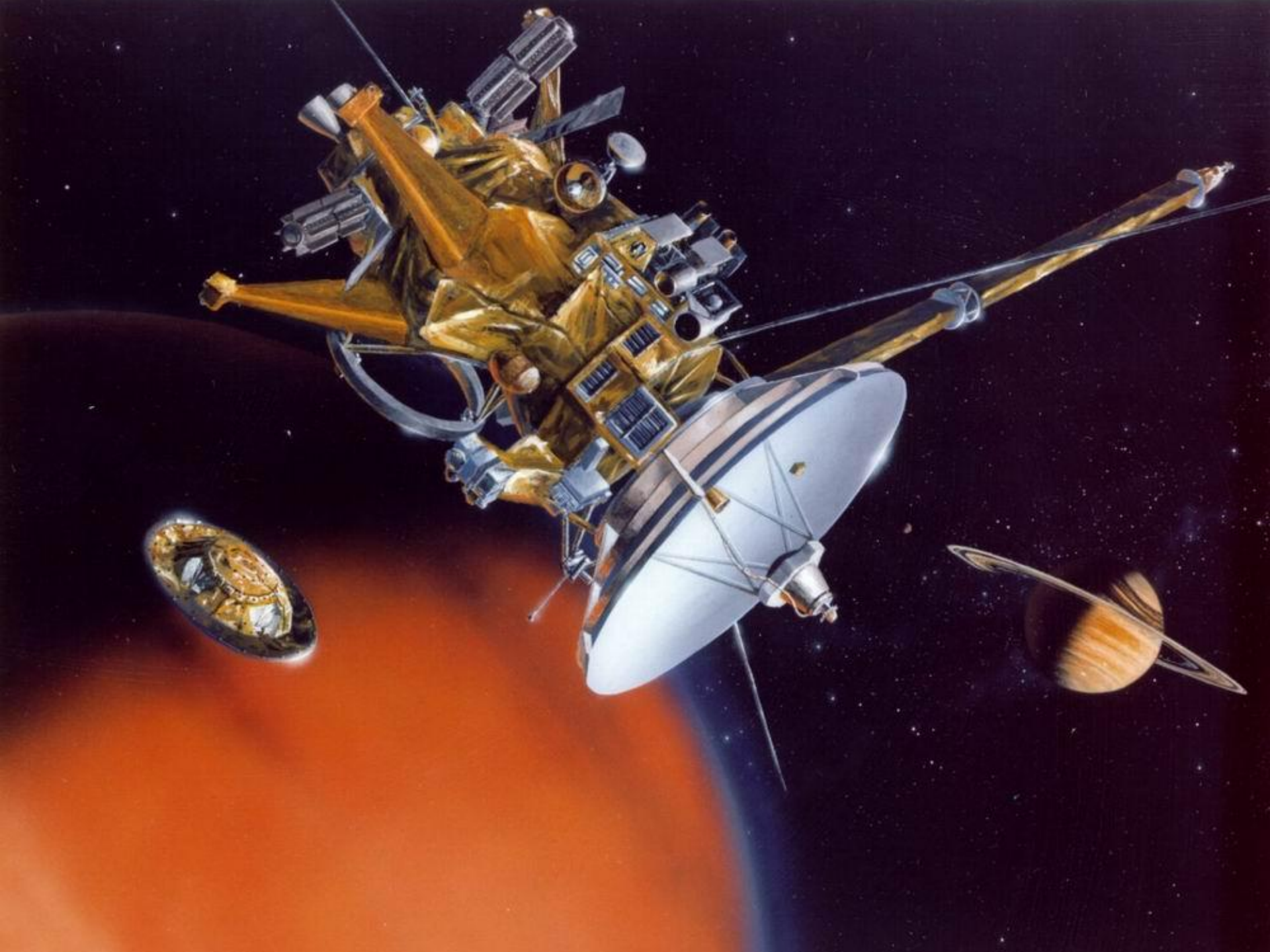


CRAF

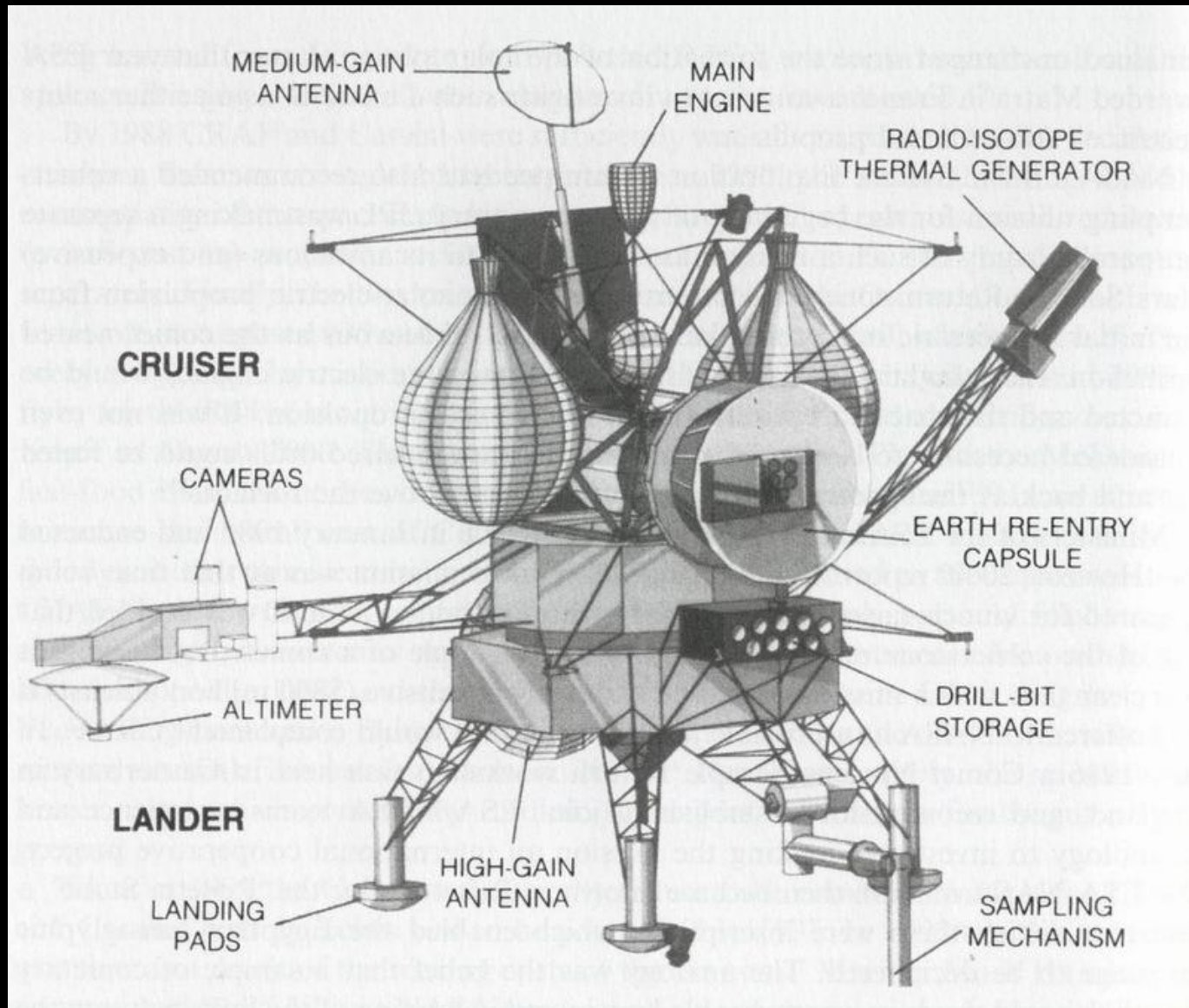


CRAF finale





Comet Nucleus Sample Return





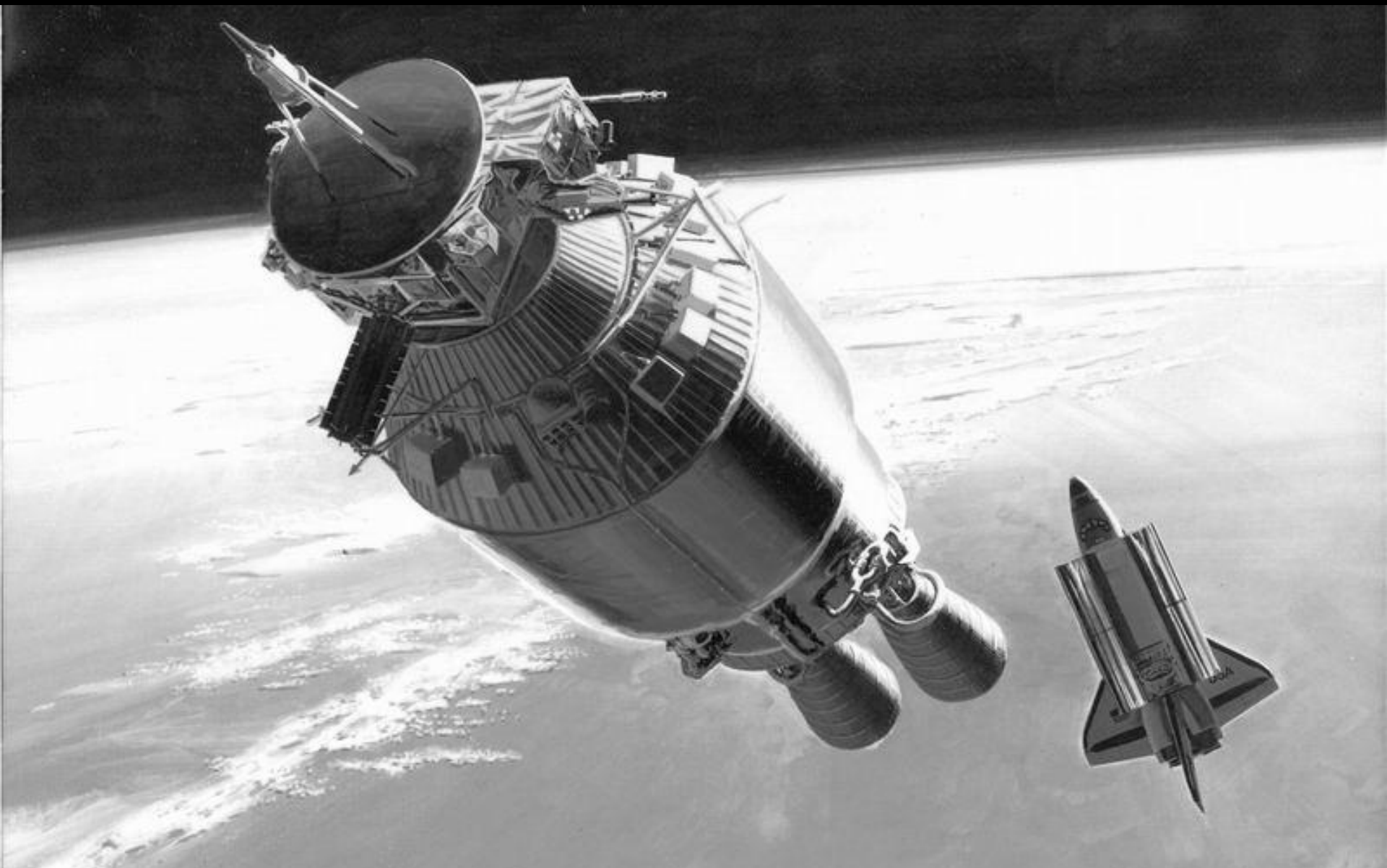
HVĚZDA SMRTI



Shuttle Payload Integration Facility

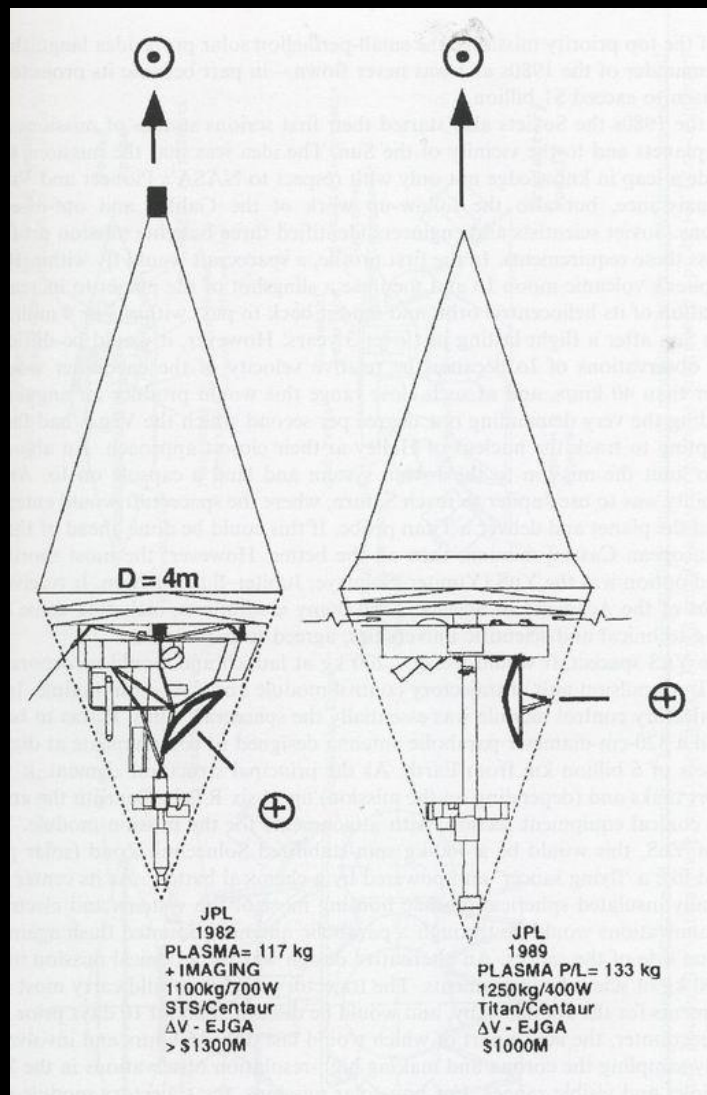


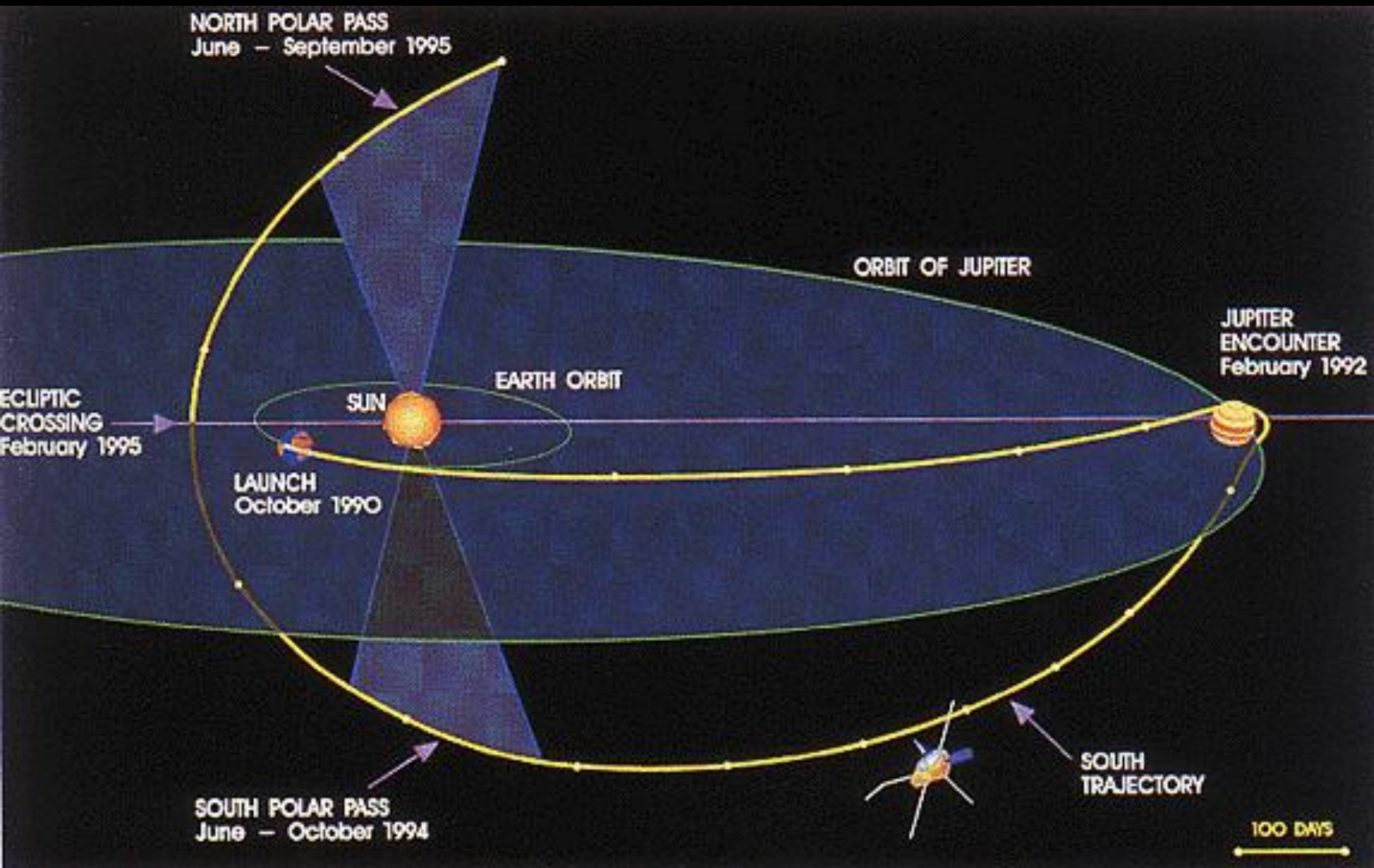
Květen 1986



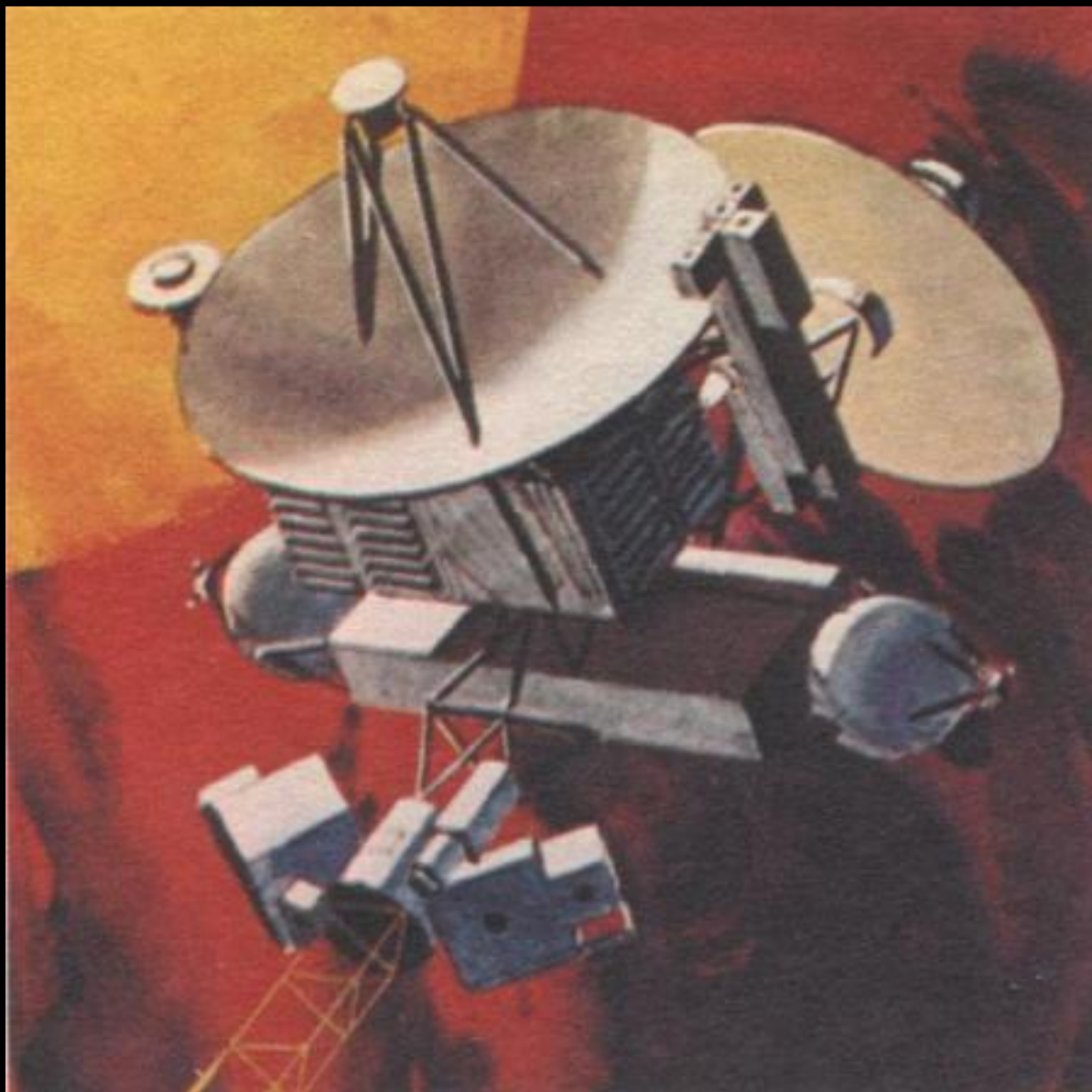


„Šipka do Slunce“





ISPM původní

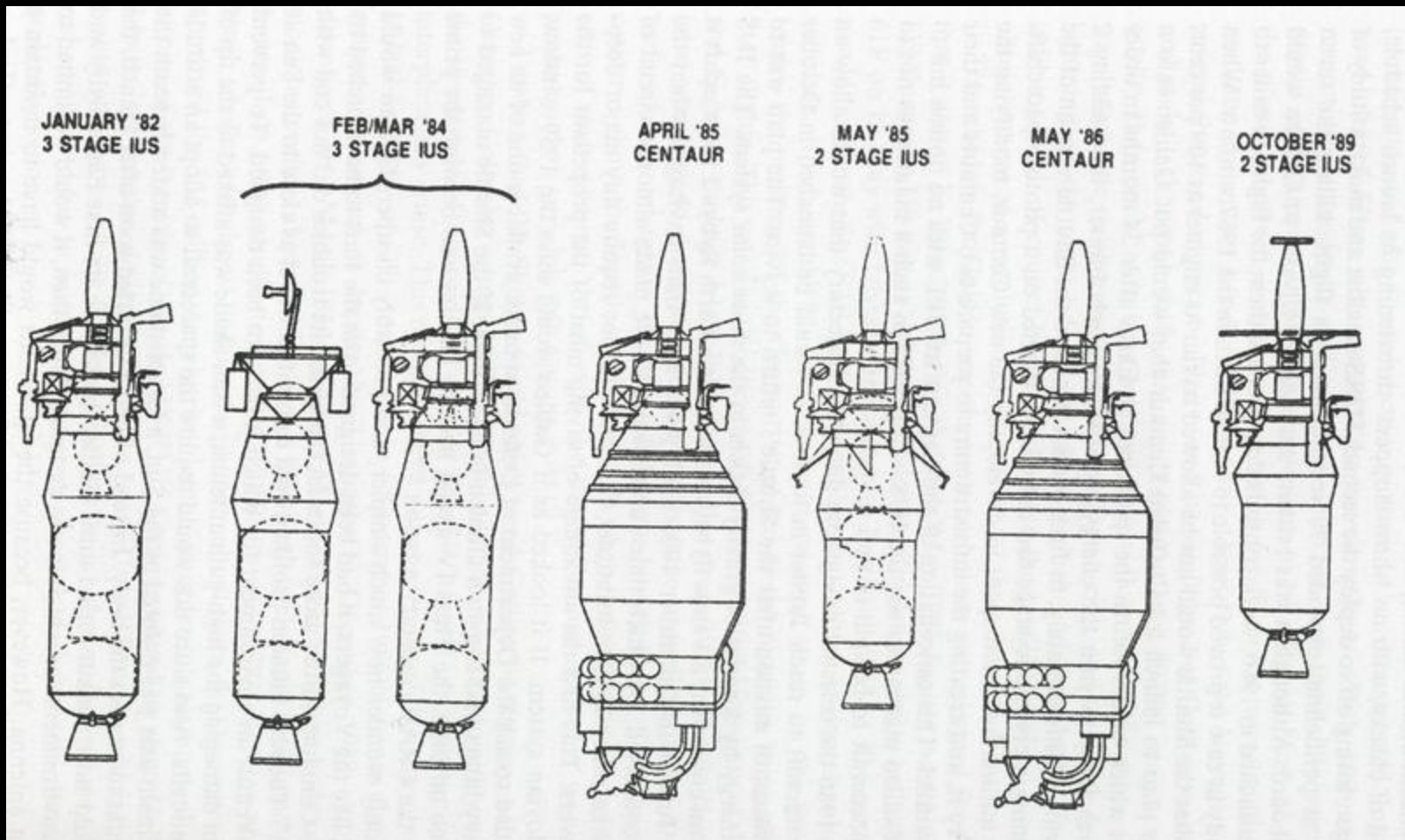


Květen 1986





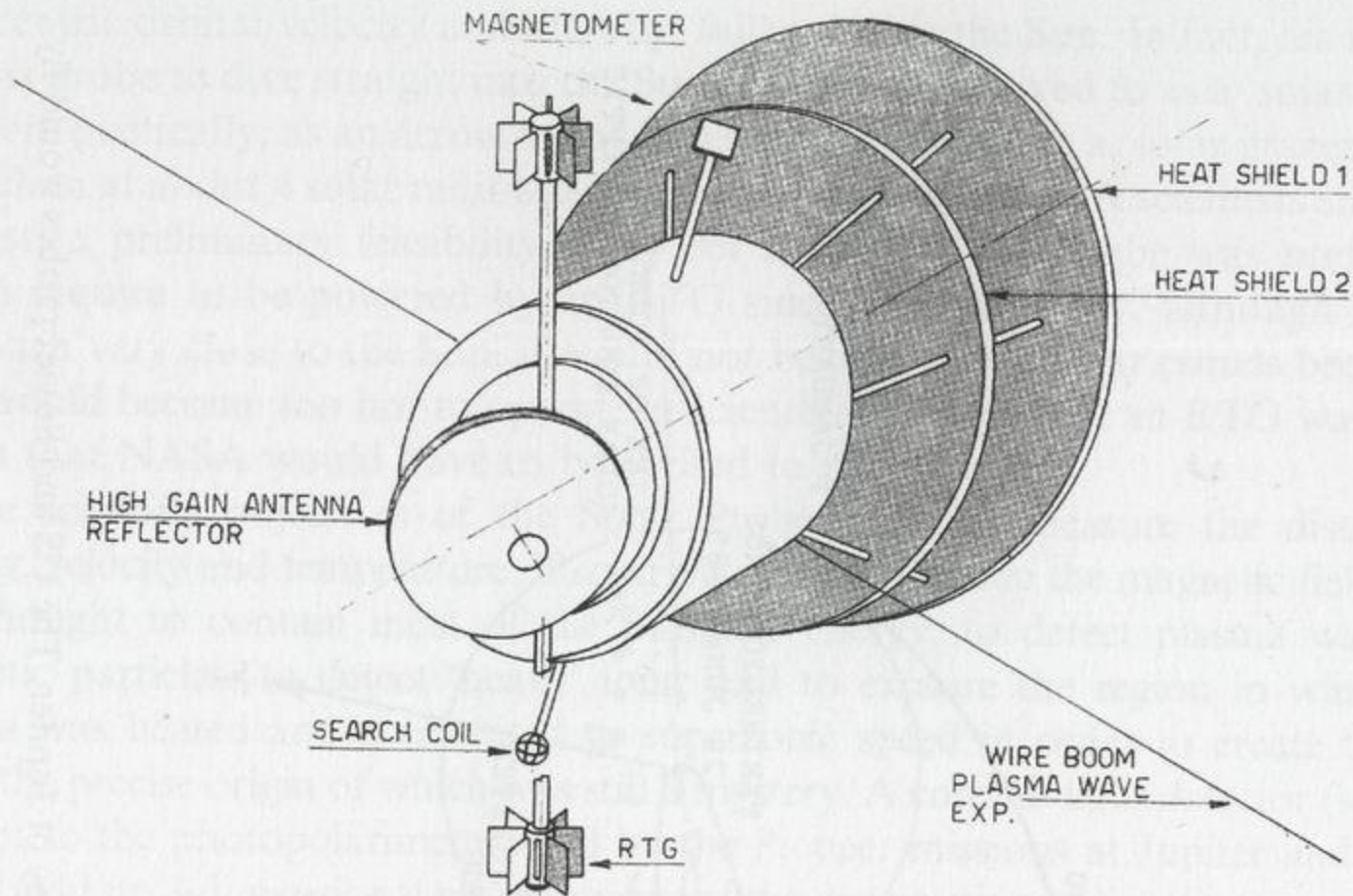
Galileo - jak šel čas



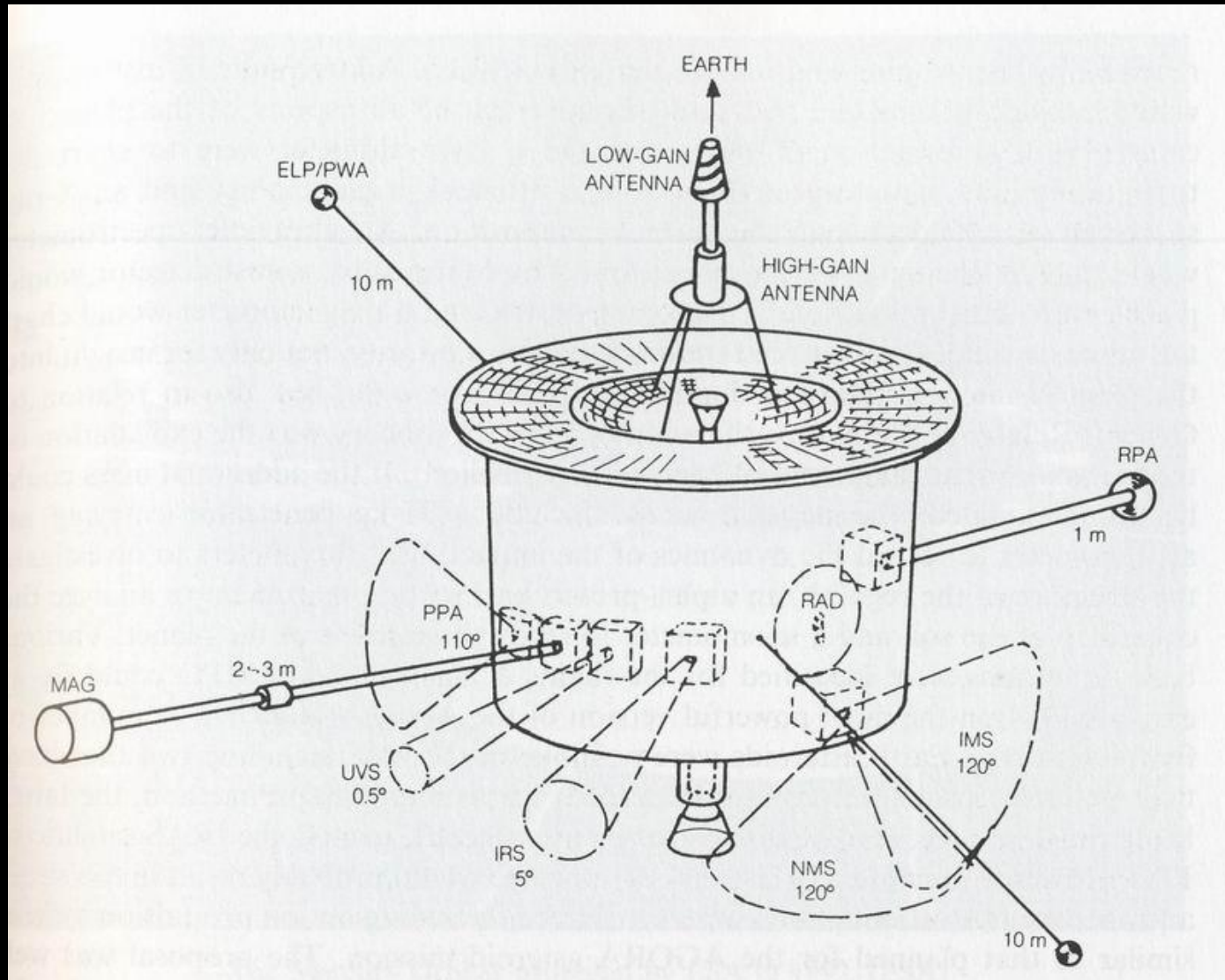


EVROPA ZNOVU NA SCÉNĚ

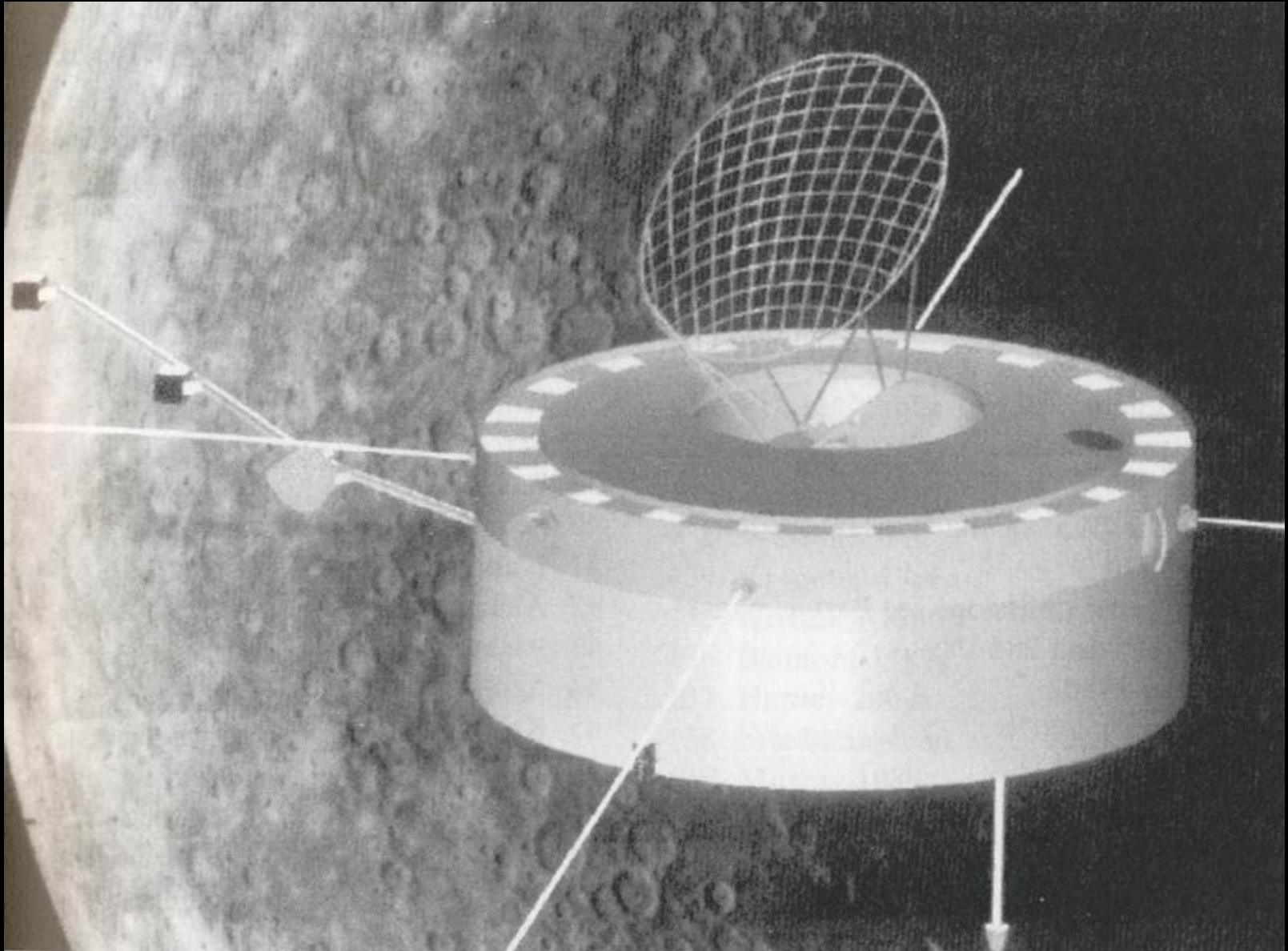
Sluneční sonda



Mars Kepler Orbiter (1988)



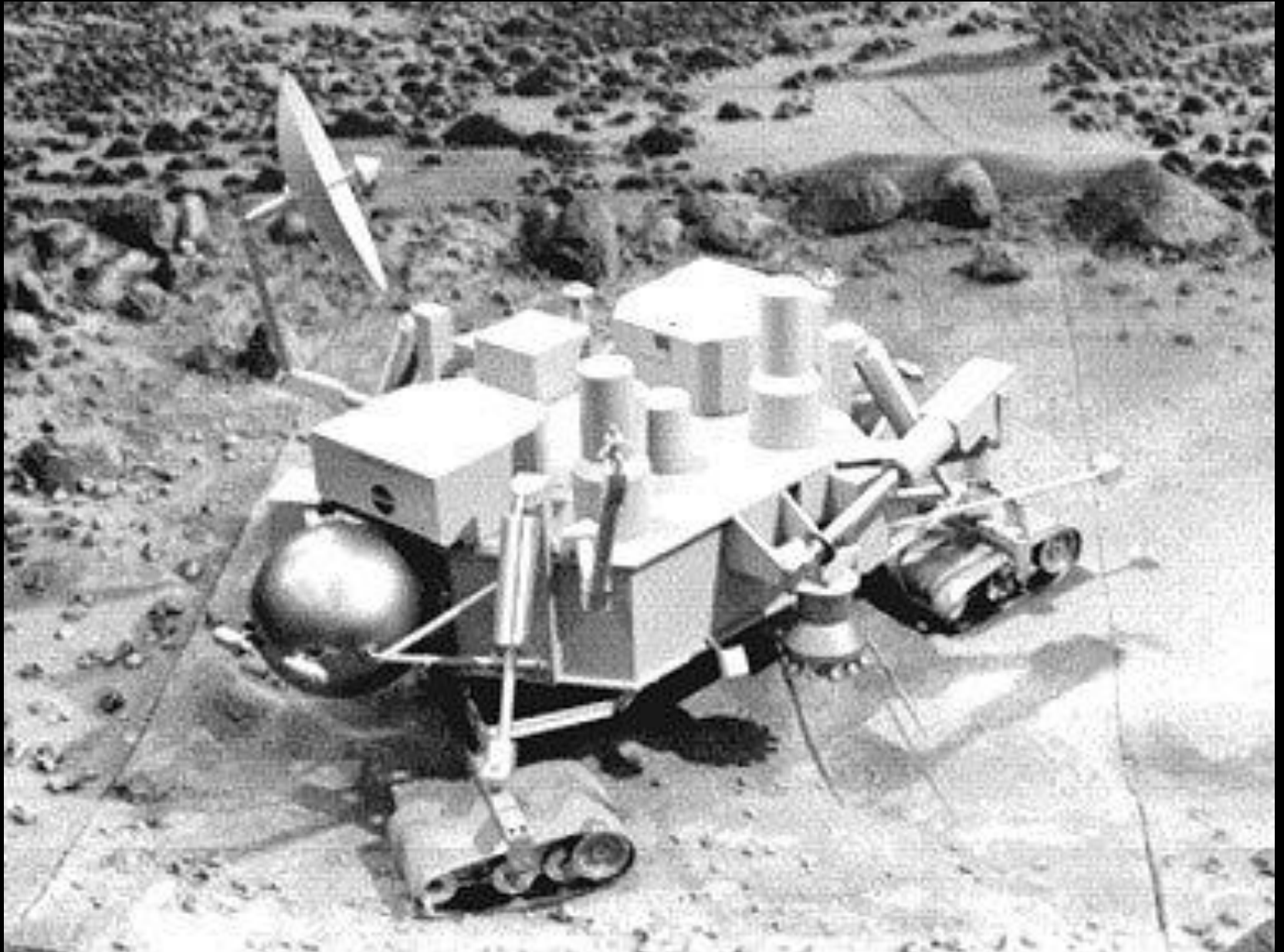
Mercury Orbiter (1992)



KOLA NA PLANETÁCH



150 m/hodinu, celkem 50 km.

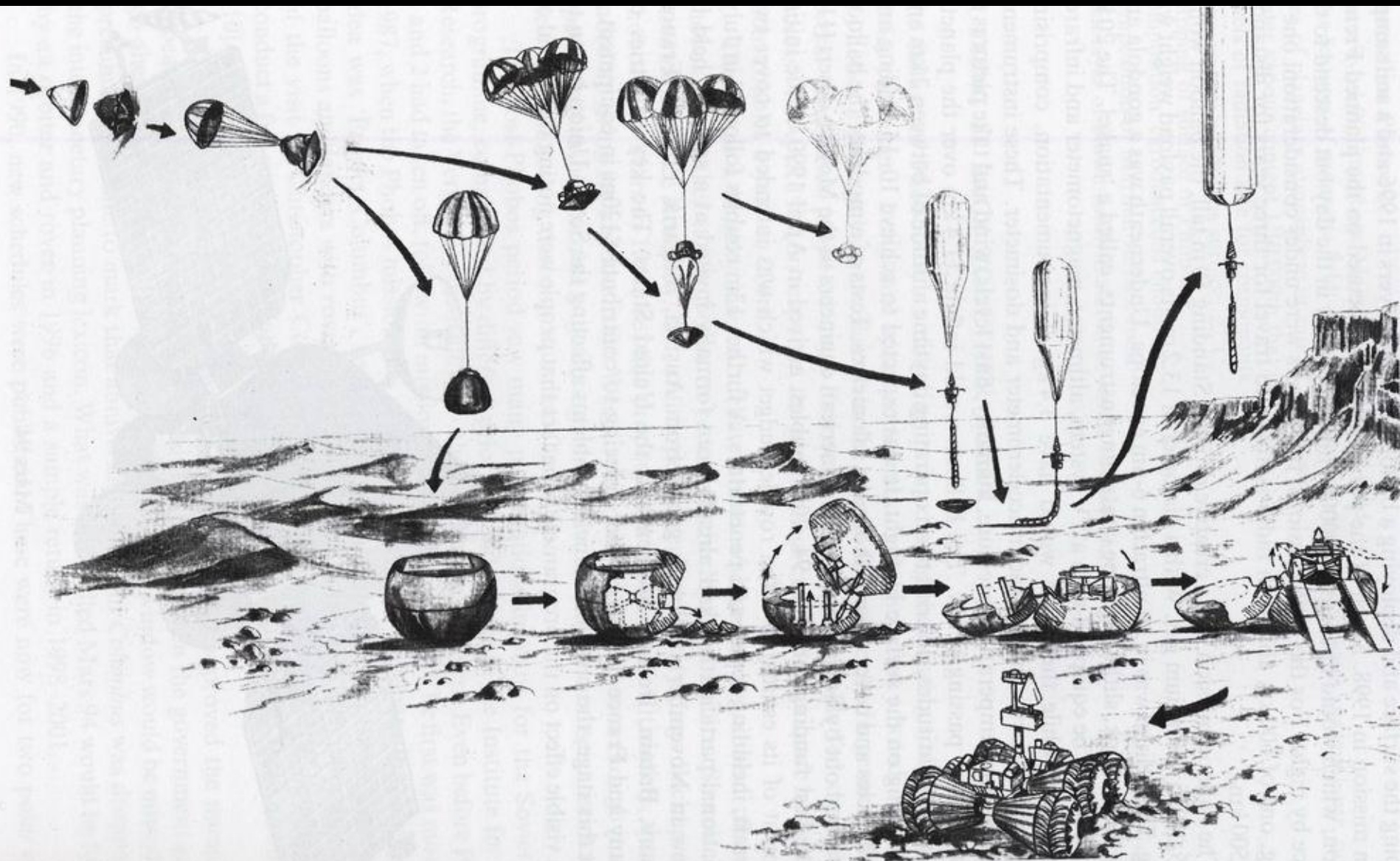


Mars Ball

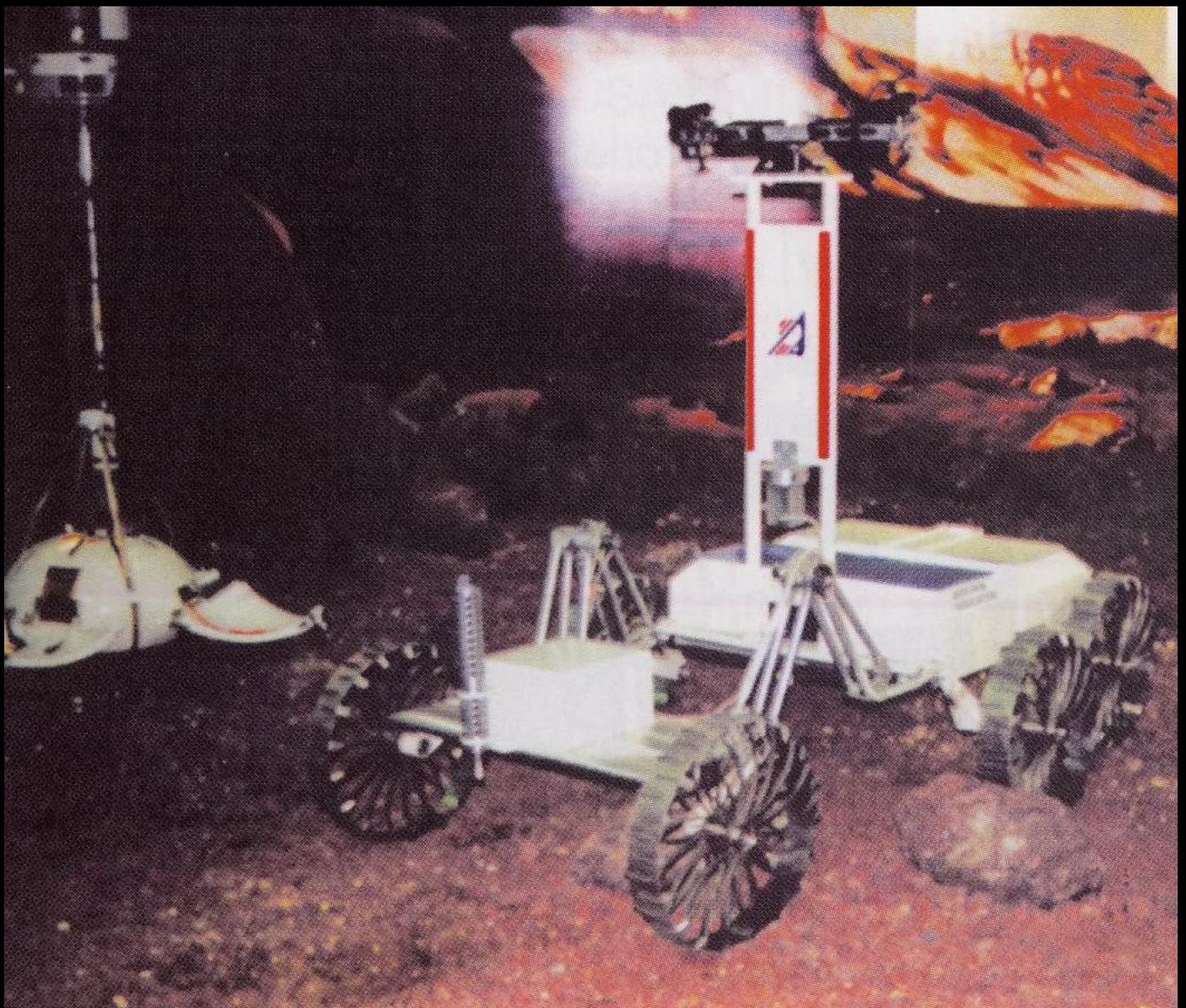





LAVOCHKIN
Association





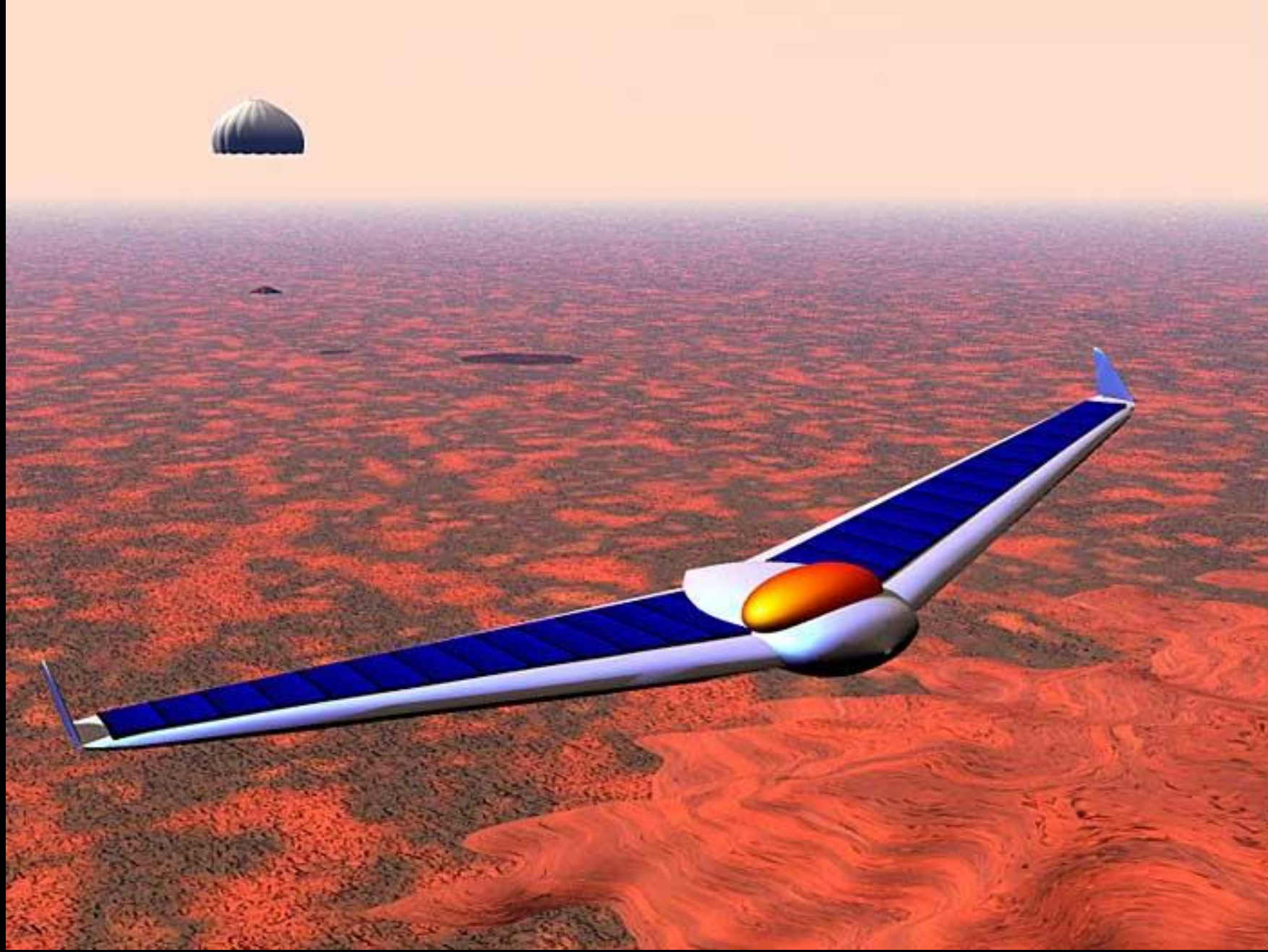


KŘÍDLA NAD MARSEM

Tři mise po čtyřech letounech.
Rozpětí 21 m, trup 6,5 m.
Odhazování sond cestou.
7 až 31 h, 10000 km.





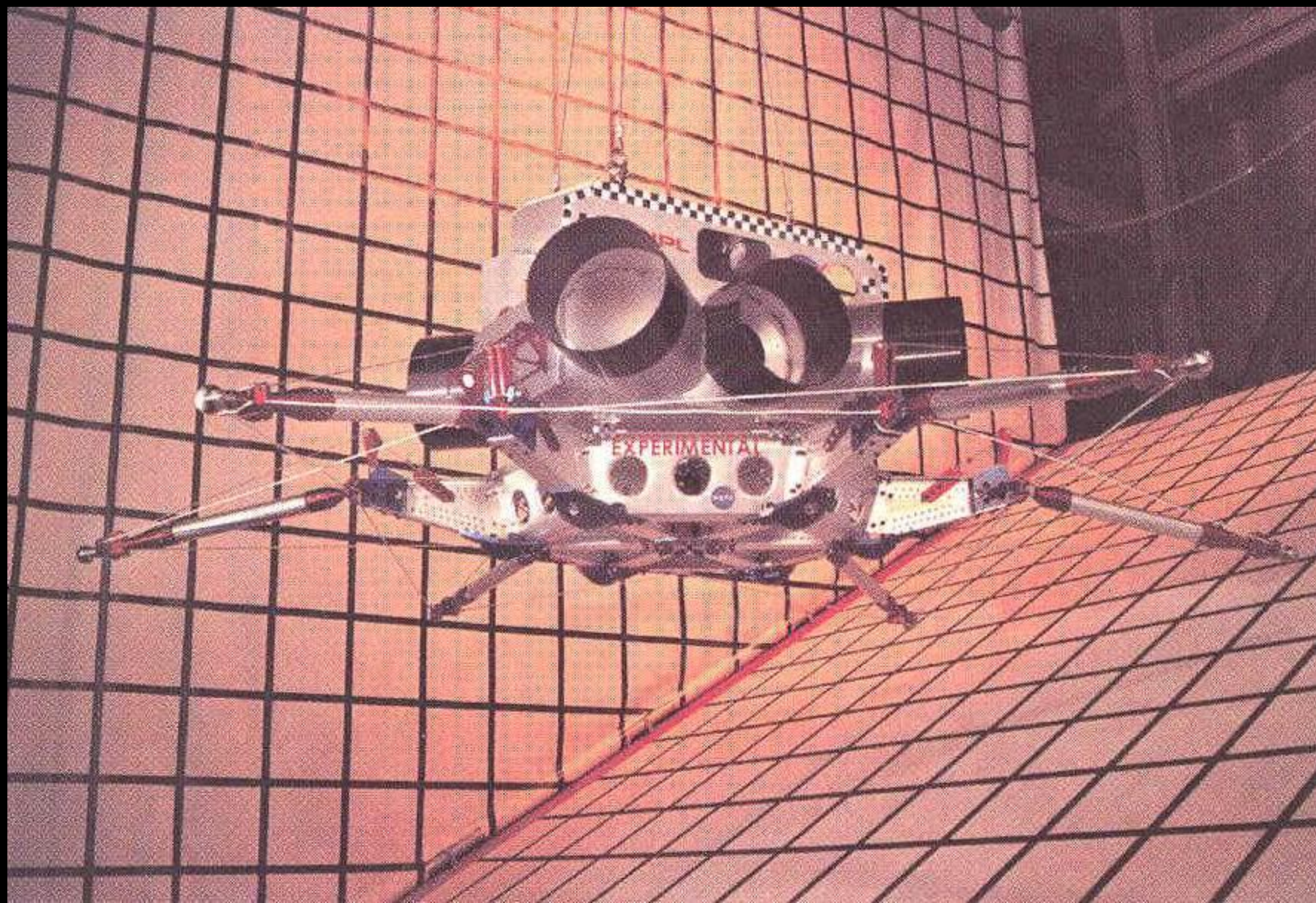


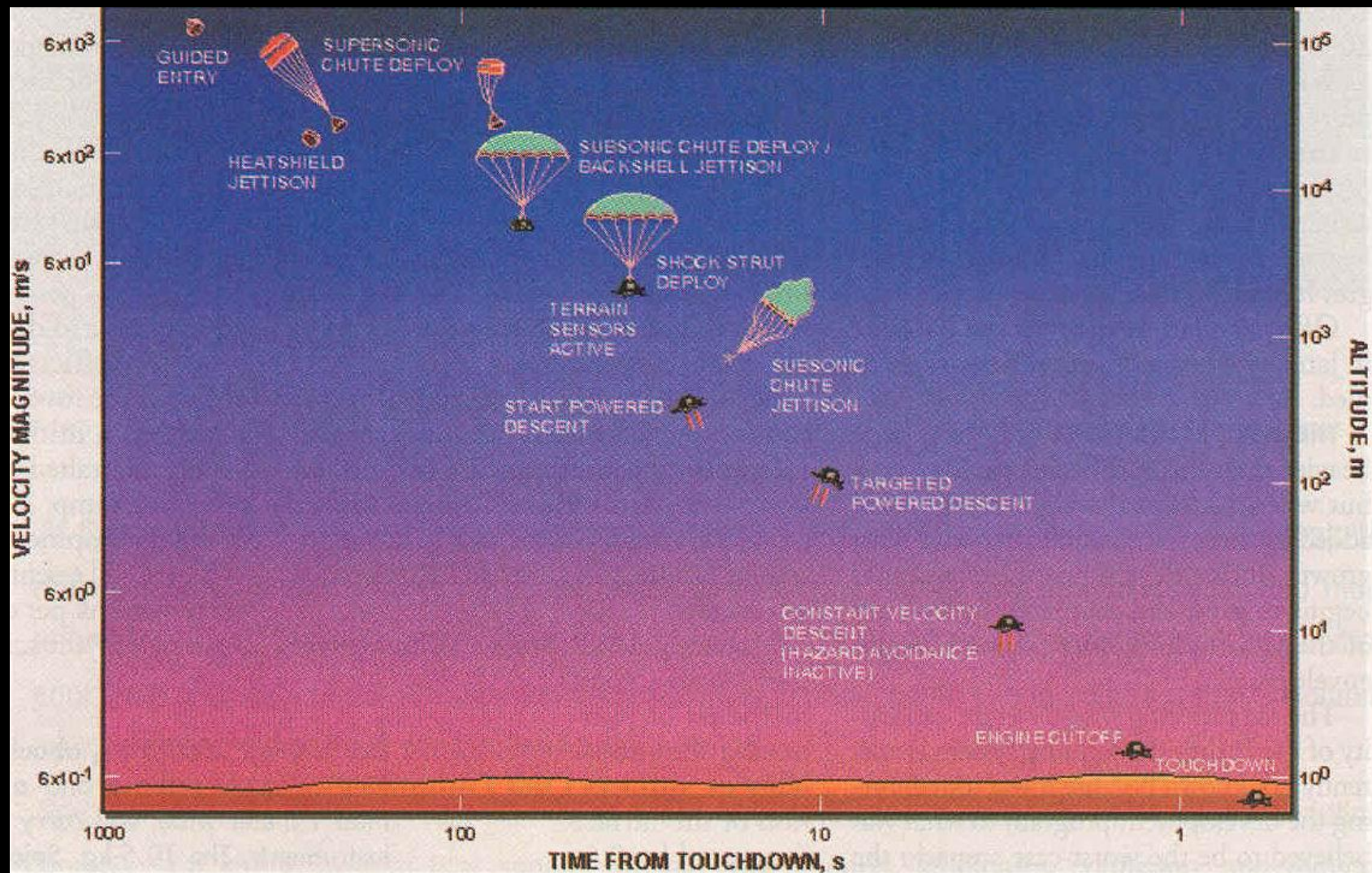


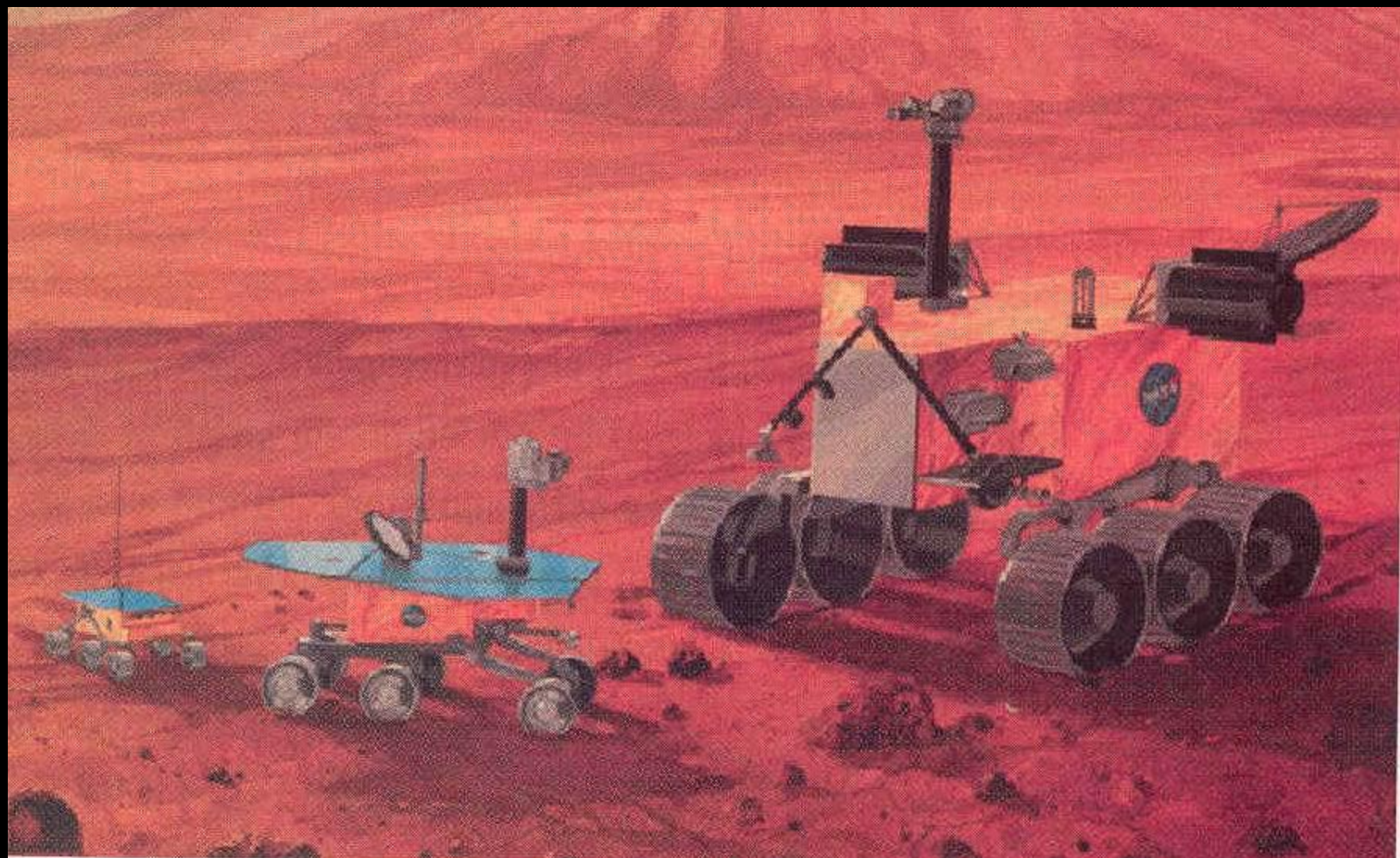
NA MARS „INTELIGENTNĚ“

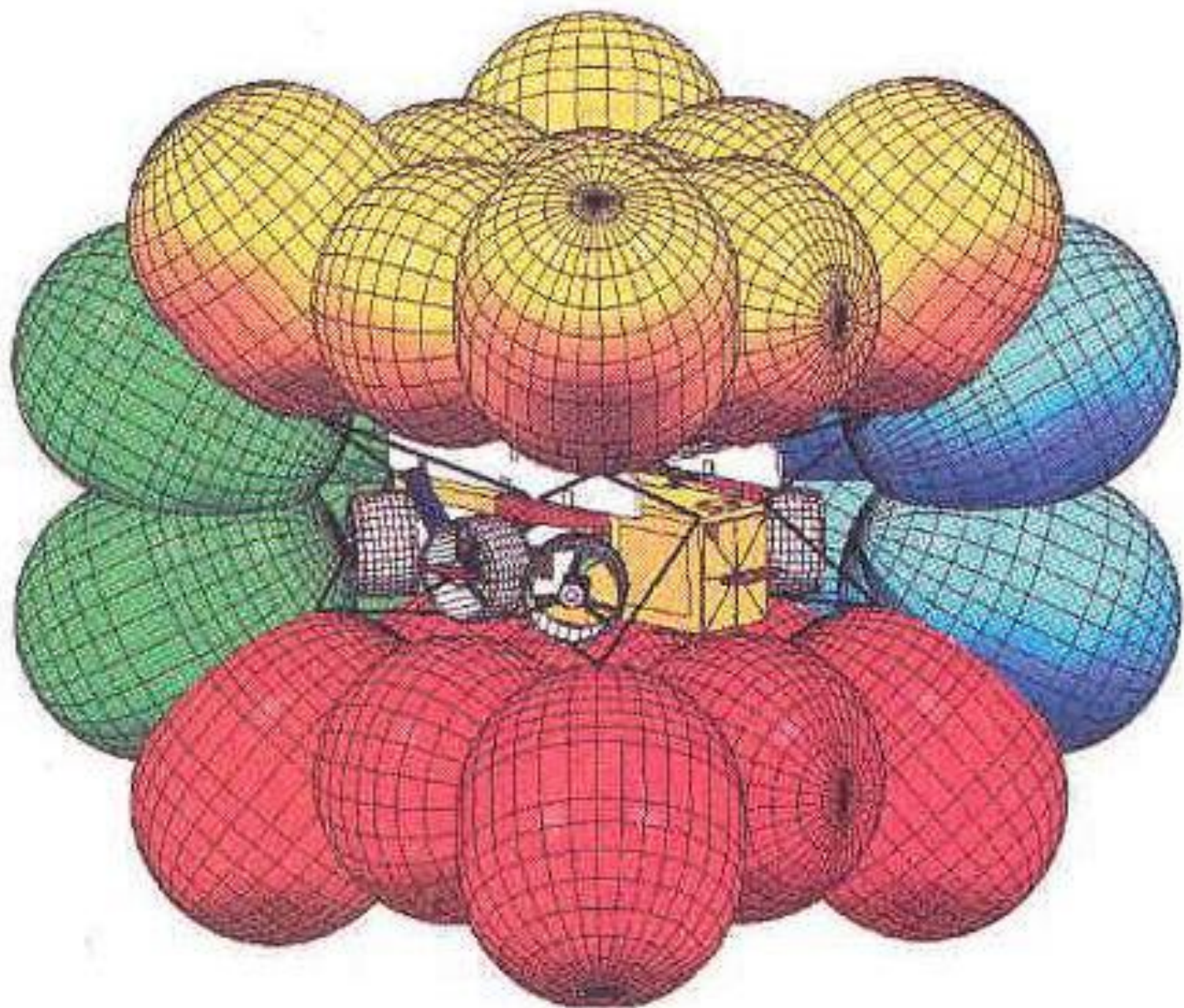
„Intelligentní“ přistávací platforma



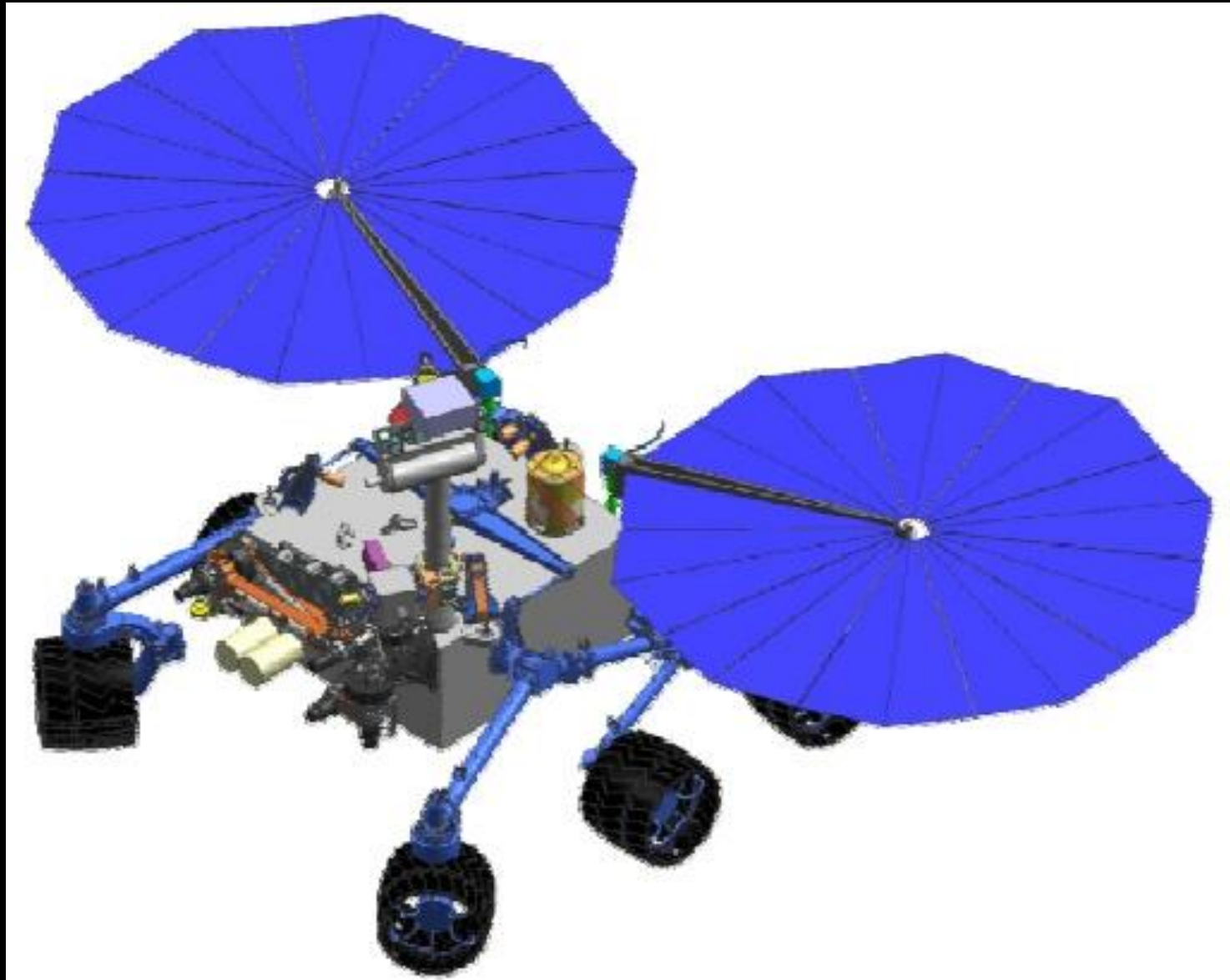








Mars Astrobiology Explorer-Cacher



ZAKLETÉ PLUTO

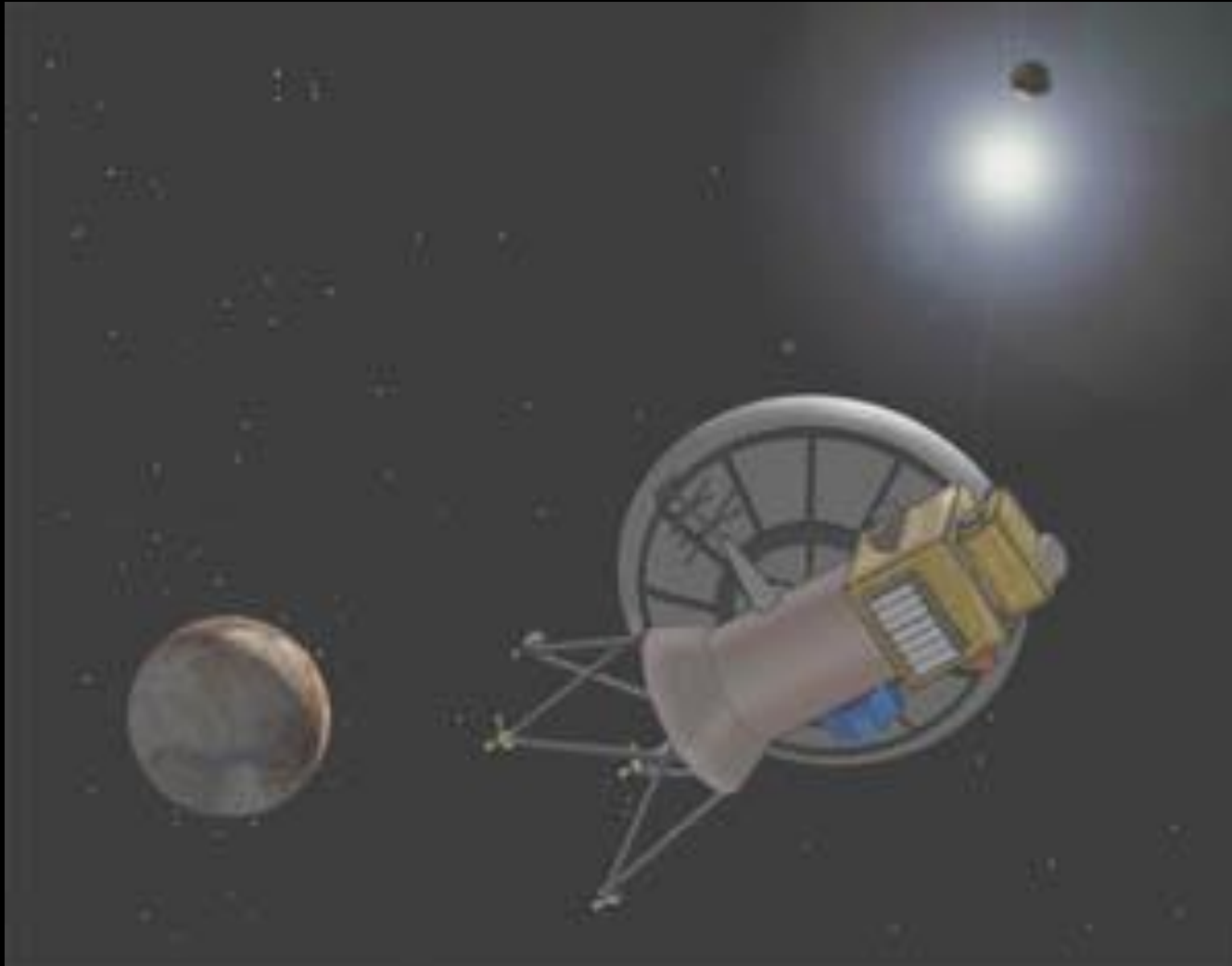
1967: raketa Starlet, sonda
Starlite (11 kg) .

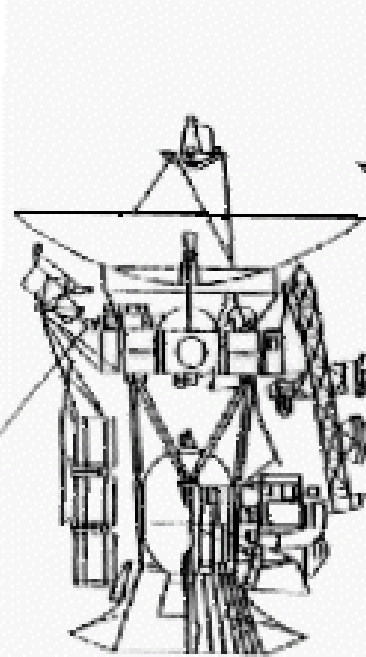
1989: Pluto-350 (Delta-II,
malá subsonda) .



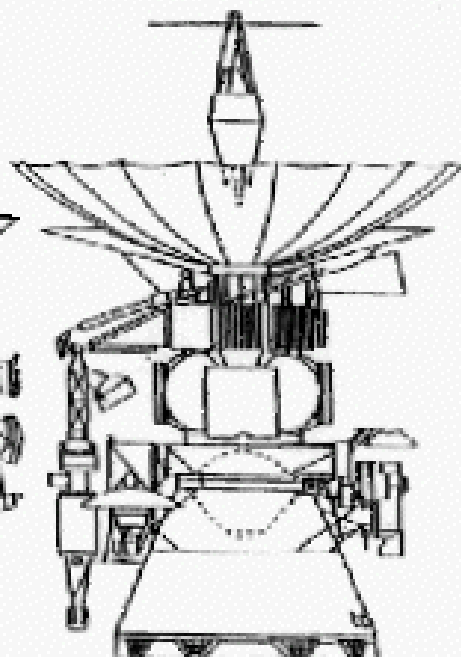
Pluto Fast Flyby (1992)

Chemické baterie (!), Titan IV/ Proton

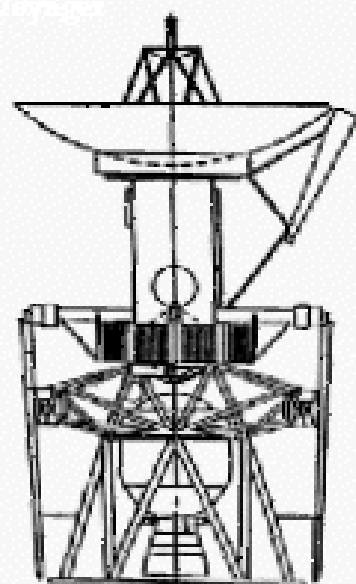




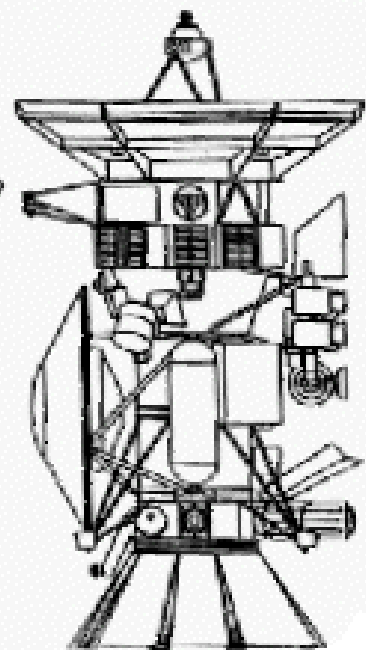
Voyager



Galileo



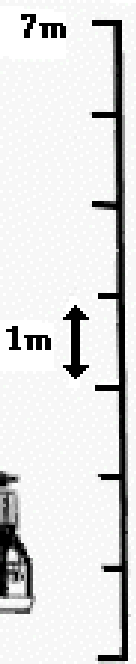
Magellan



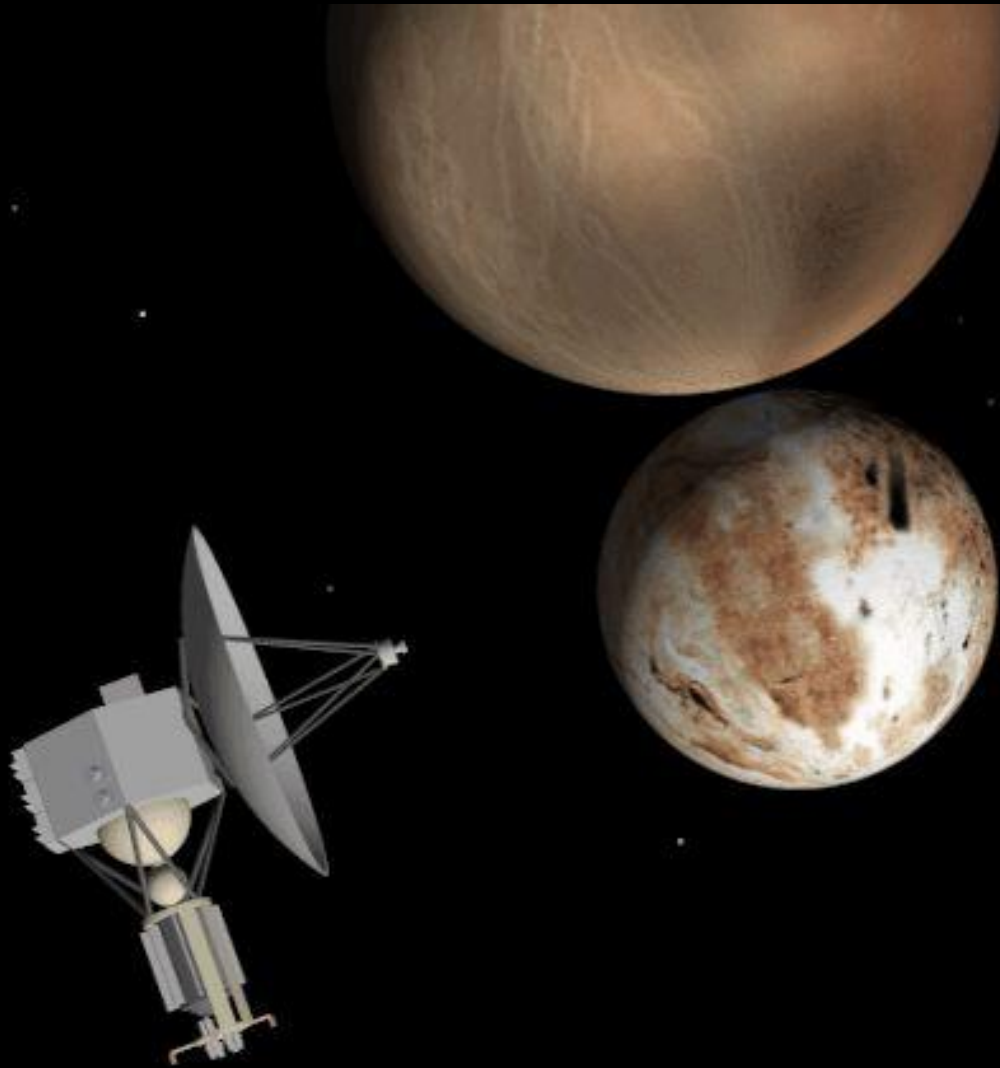
Cassini



Pluto Fast Flyby

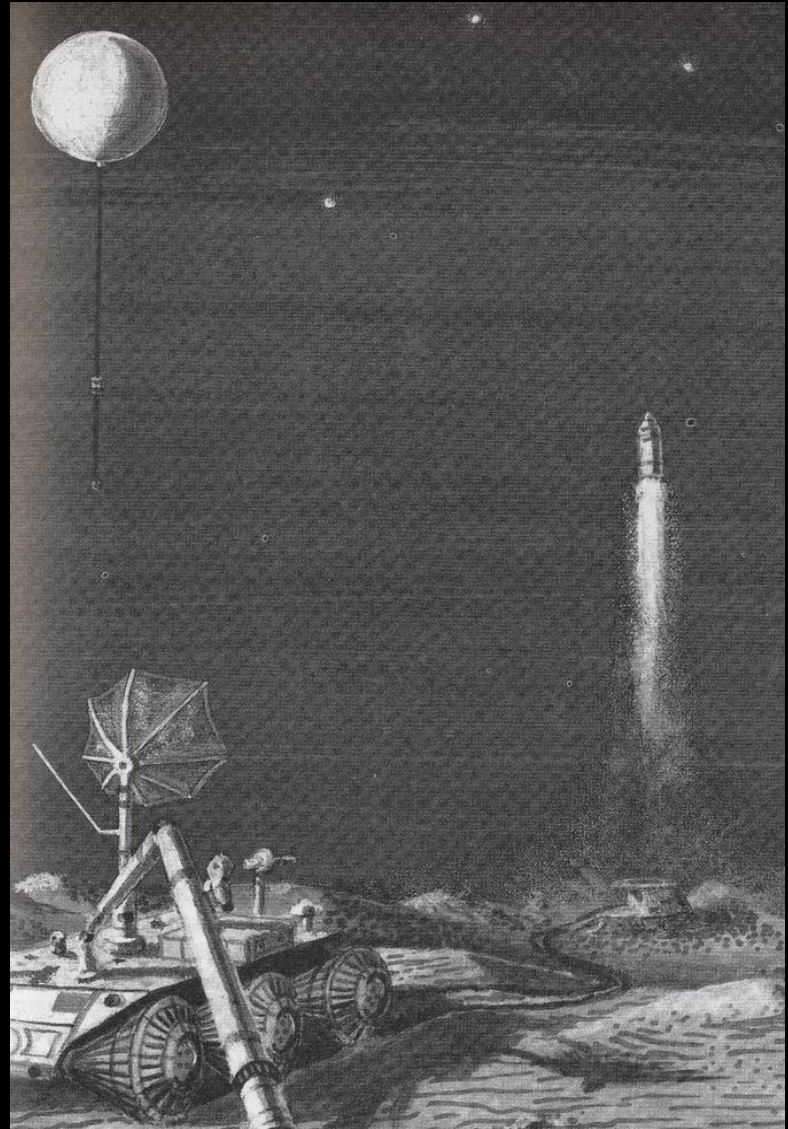
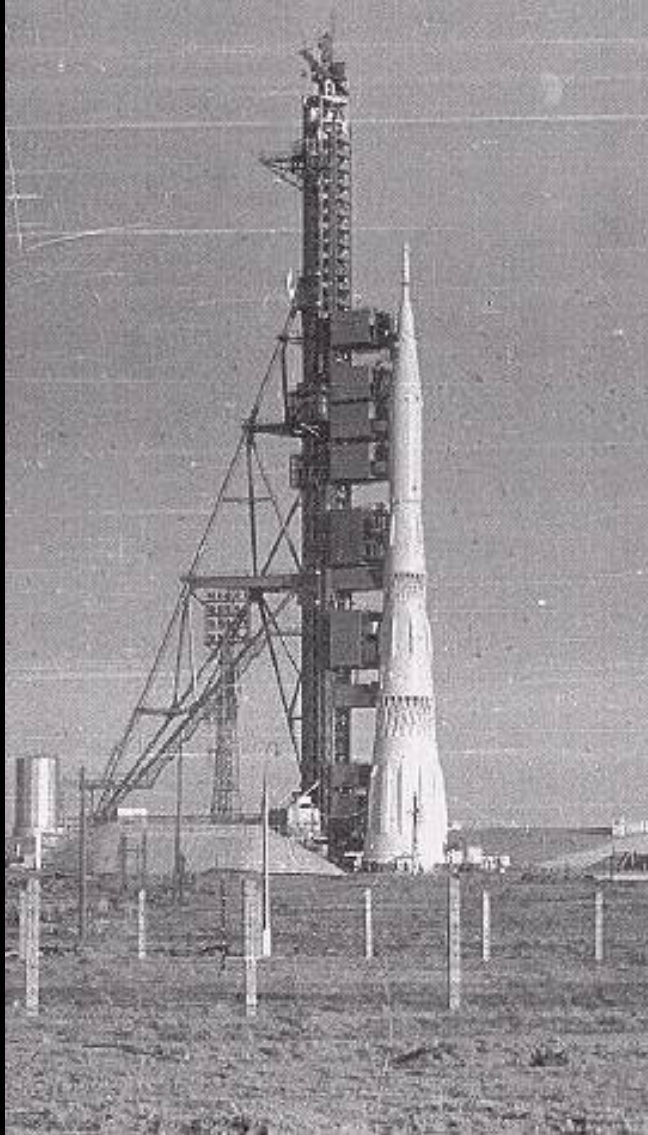


Pluto Express/Pluto Kuiper Express



BITVA O KÁMEN Z MARSU

17. září 1975



5 Н М

8 орбитальный отсек
земля - марс

7 приборный
отсек

6 аэродинамический
экран

5 посадочная
ступень

4 I ступень взлета

3 II ступень взлета

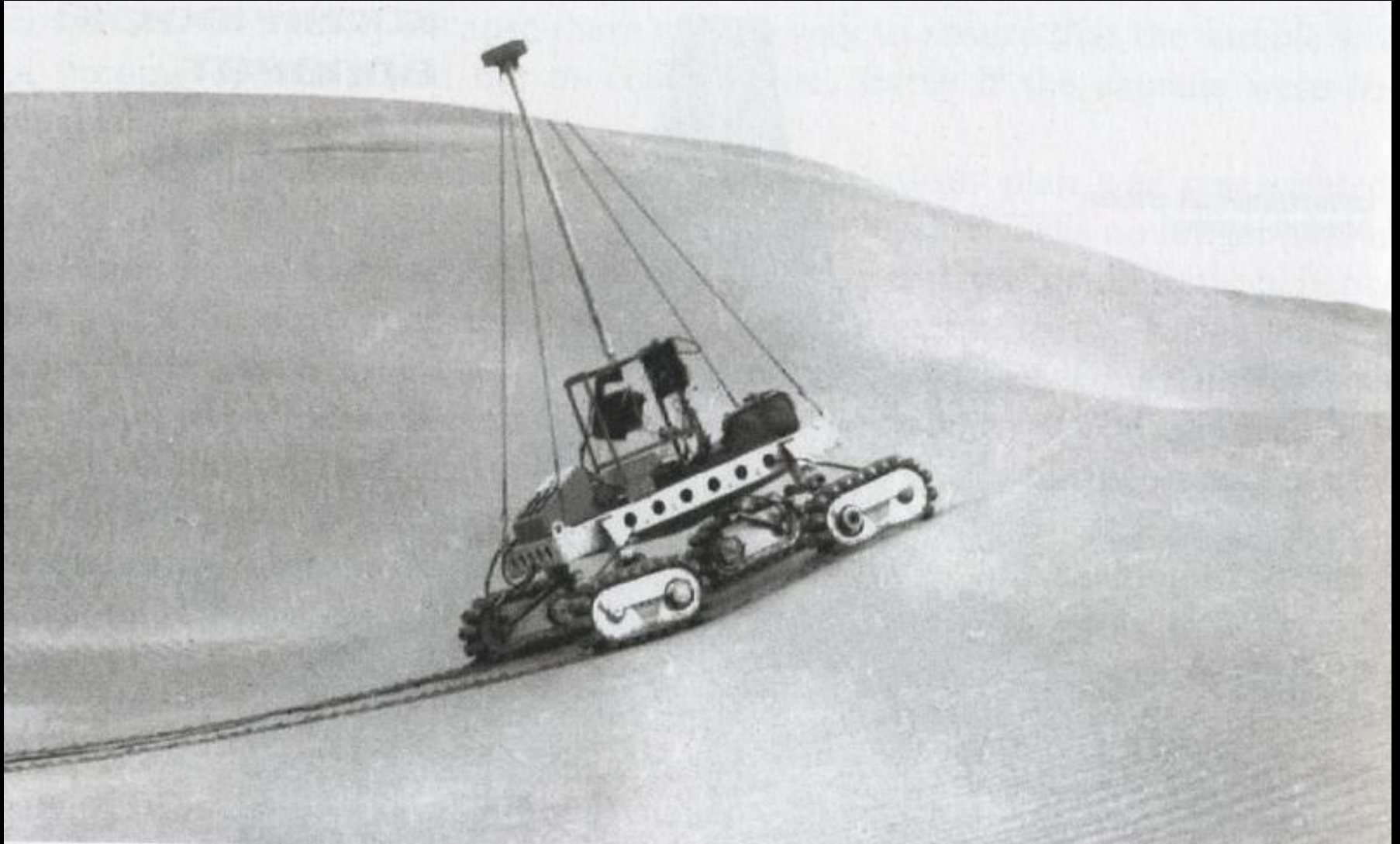
2 орбитальный отсек
марс - земля

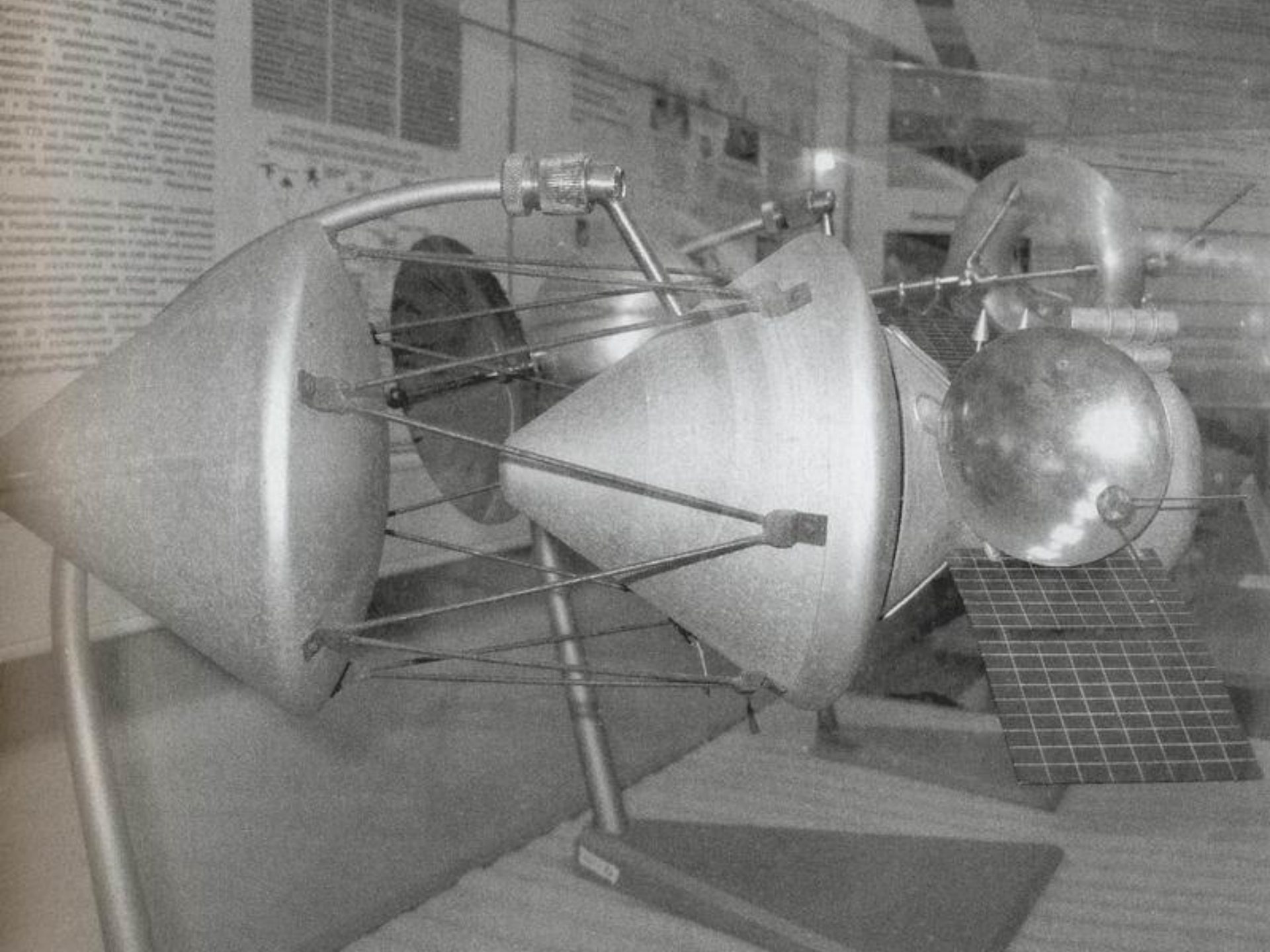
1 возвращаемый
аппарат

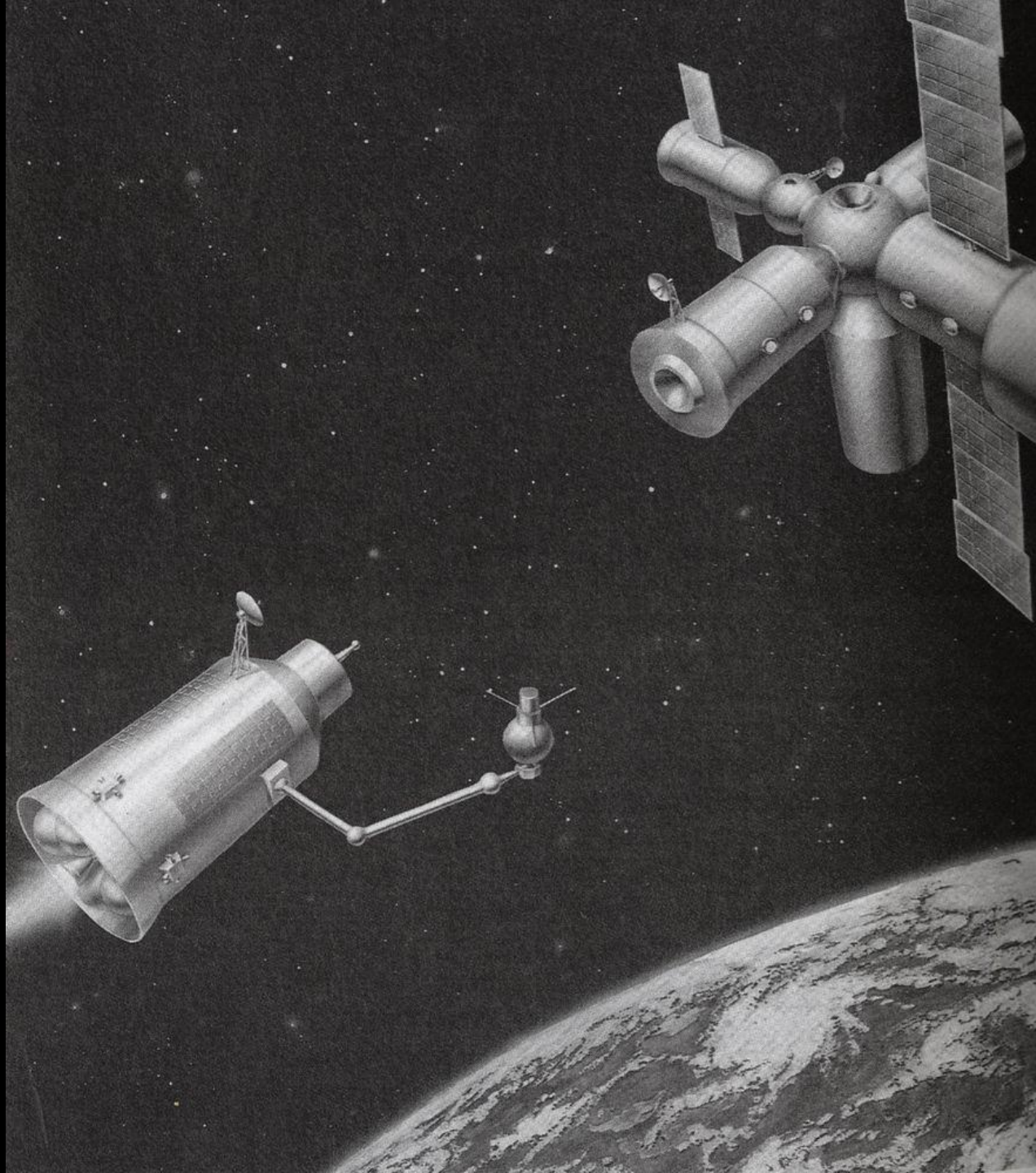
9 посадочный
аппарат

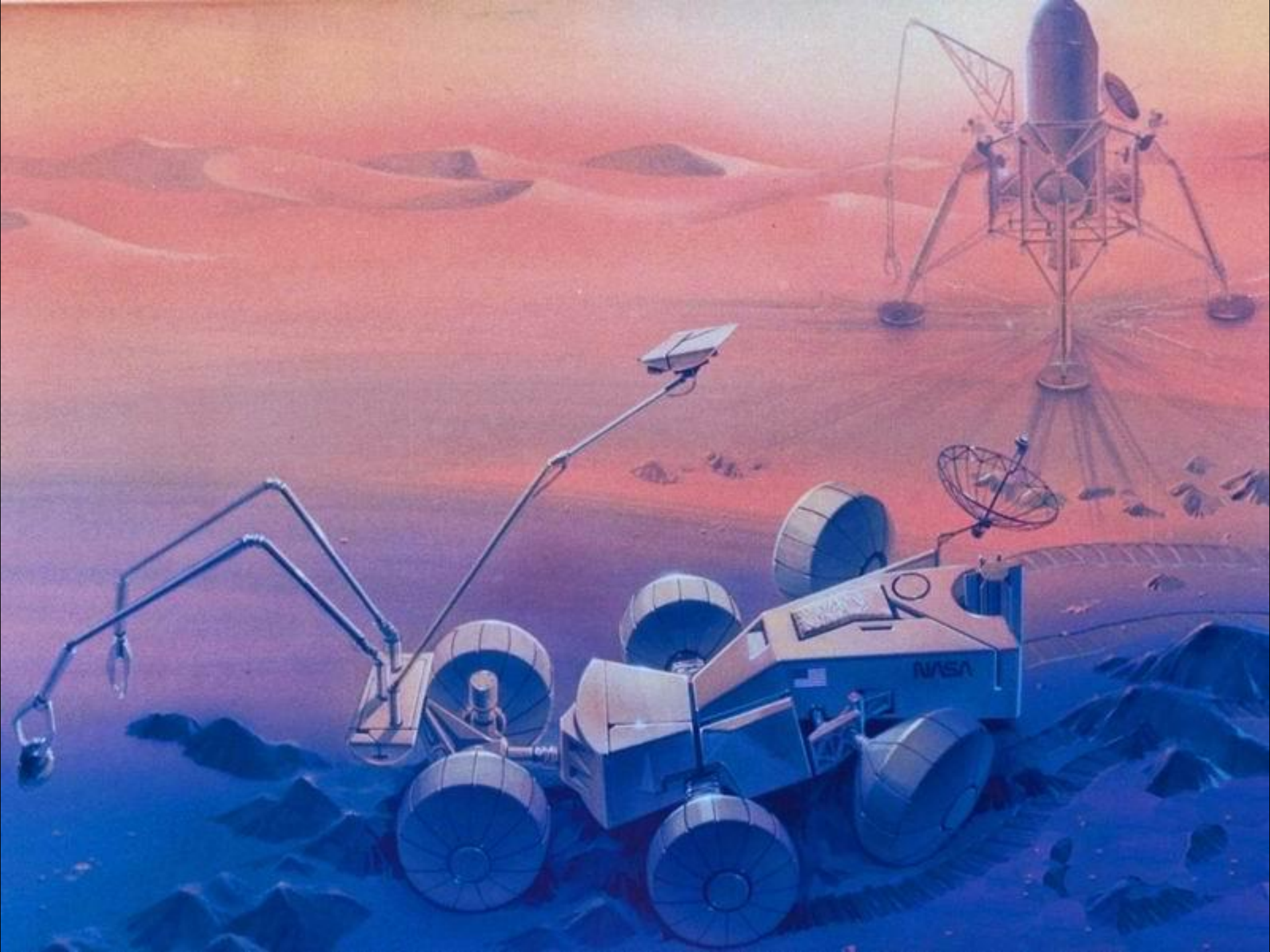


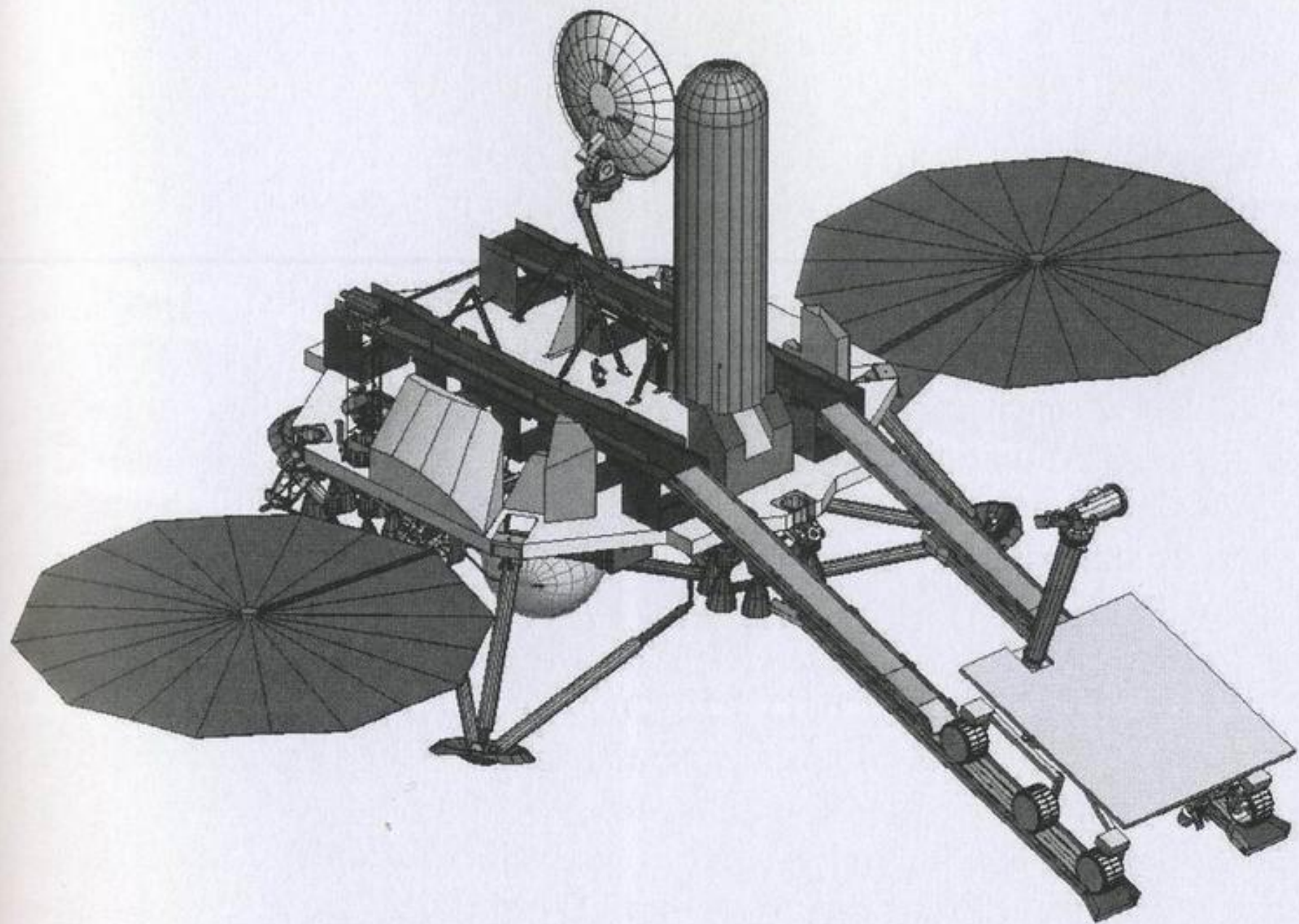
5M (vozidlo z referenční mise)





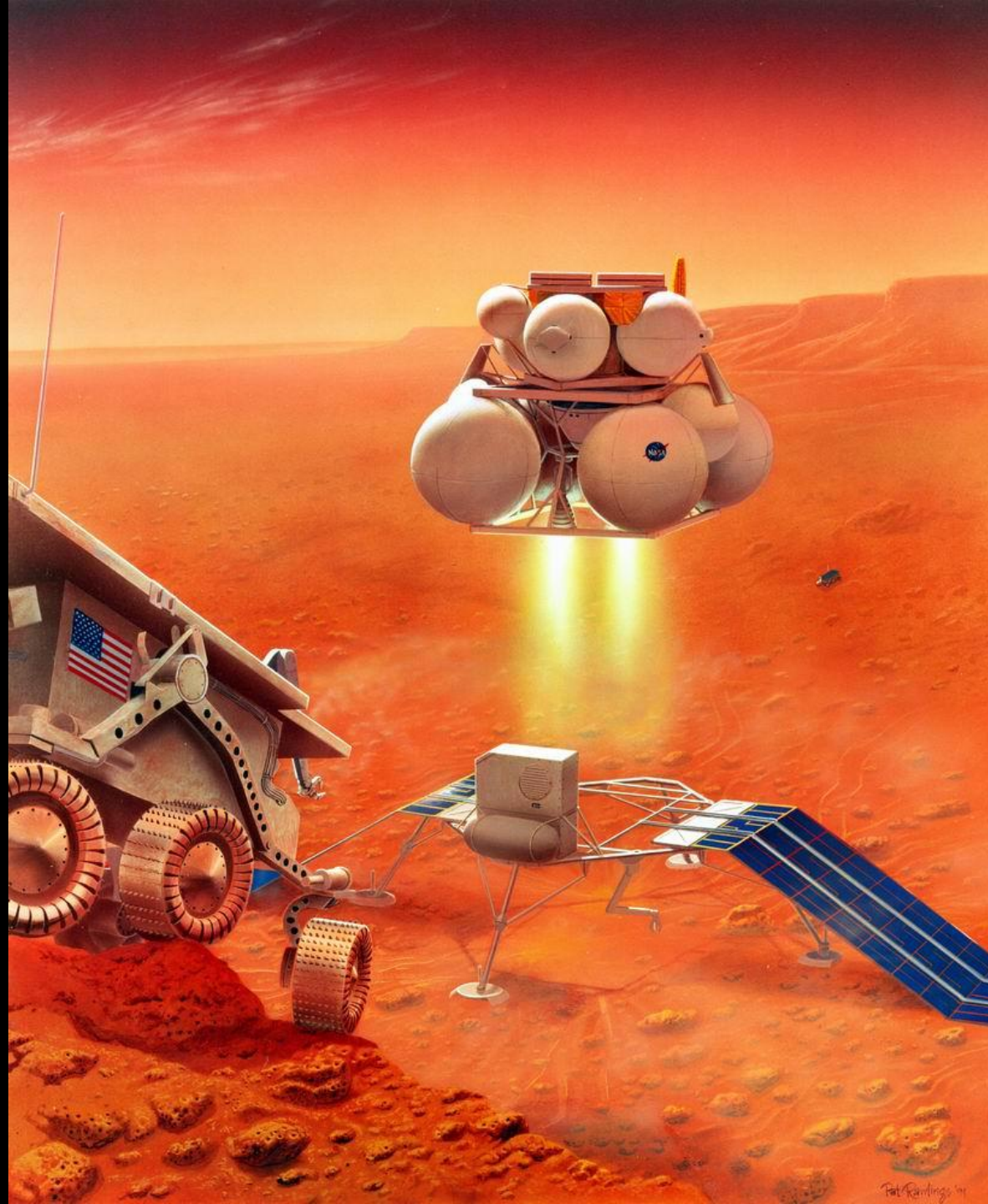












Děkuji
za pozornost!

Ing. Tomáš PŘIBYL
tomas.pribyl@seznam.cz
www.kosmonaut.cz

