

PROJETO FINAL DE PROJETO AERONÁUTICO ASSISTIDO POR COMPUTADOR

AILA 11811EAR

FILIPE 11811EAR

FLÁVIO NÓBREGA 11721EAR

LAURA PEREIRA DE CASTRO 11721EAR015

ONE SMALL STEP FOR A MAN

A GIANT LEAP FOR THE MANKIND



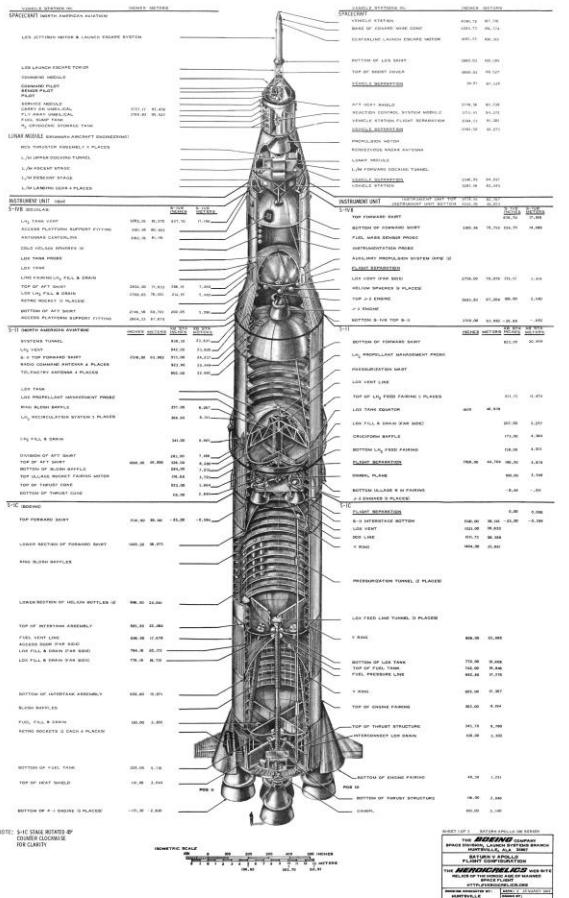
SATURN V

SATURN V

PROJETO

- SPACECRAFT
- INSTRUMENT UNIT
- S-IVB
- S-II
- S-IC
- F1 ENGINE
- J2 ENGINE

SATURN V APOLLO FLIGHT CONFIGURATION



Spacecraft

Instrument Unit

S-IVB

S-II

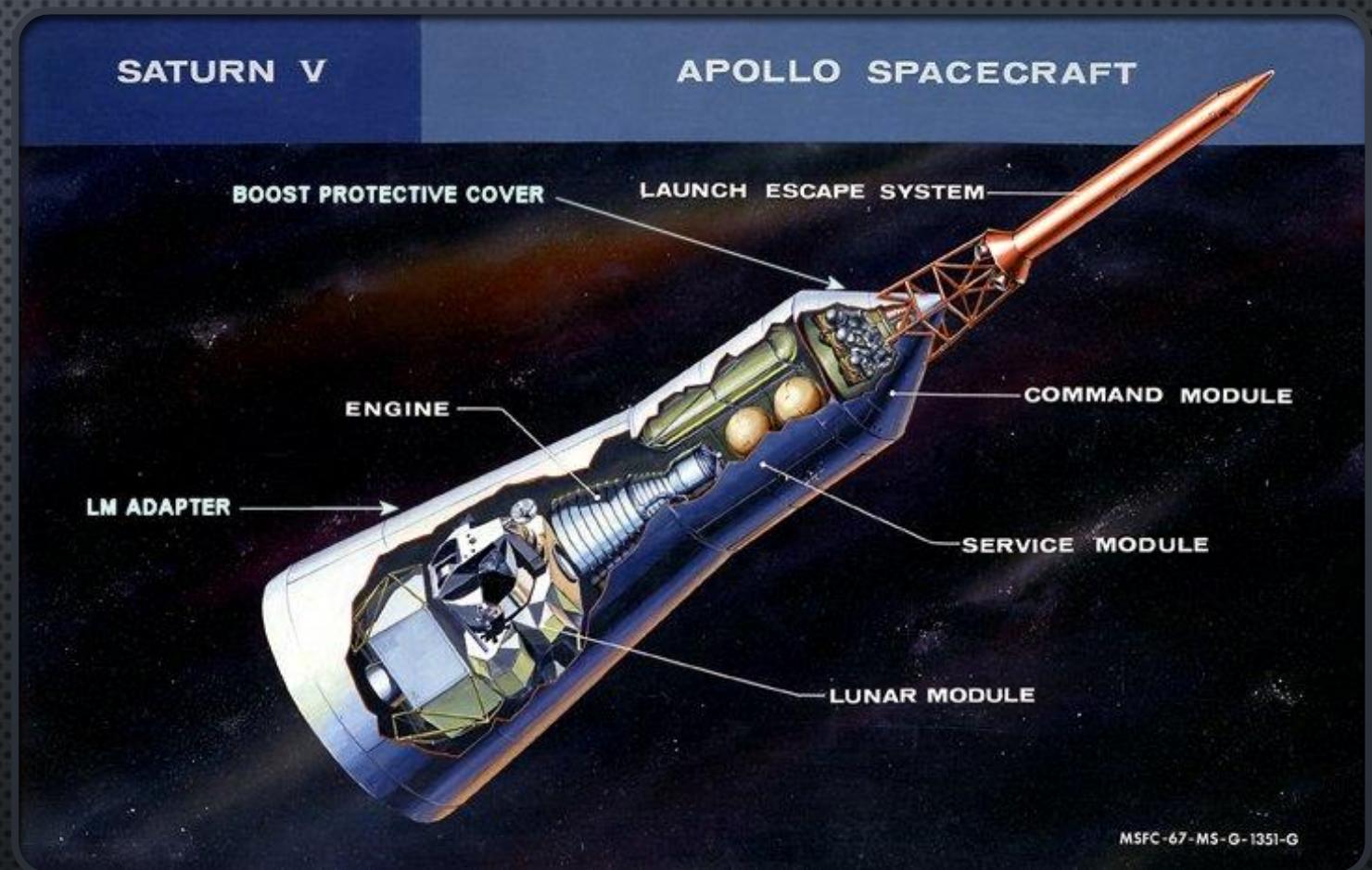
S-IC

J-2 Engine

F-1 Engine

SPACECRAFT

- SLA
- LES
- PBC
- SERVICE MODULE
- COMMAND MODULE
- LUNAR MODULE



Spacecraft

Instrument Unit

S-IVB

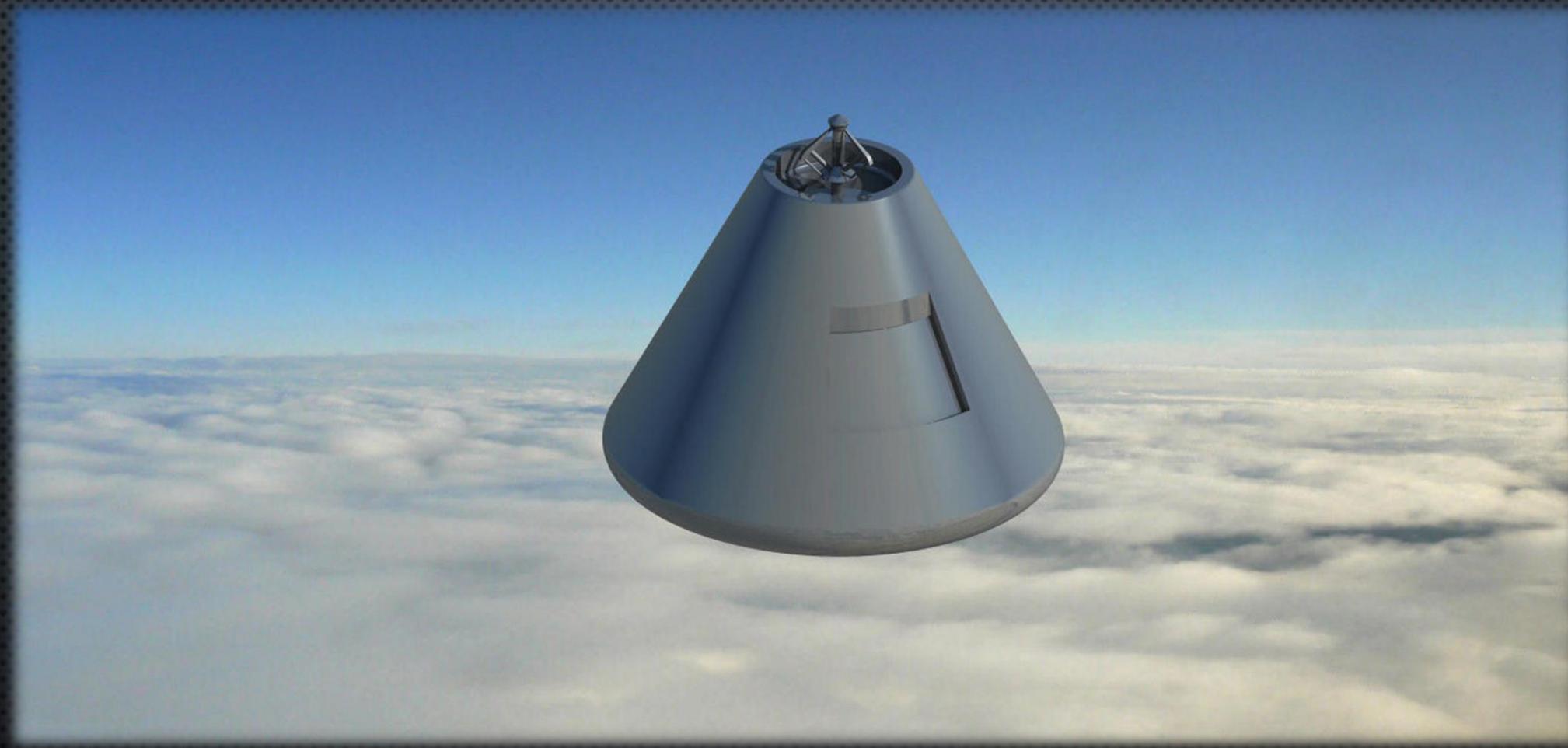
S-II

S-IC

J-2 Engine

F-1 Engine

SPACECRAFT



Spacecraft

Instrument Unit

S-IVB

S-II

S-IC

J-2 Engine

F-1 Engine

SPACECRAFT



Spacecraft

Instrument Unit

S-IVB

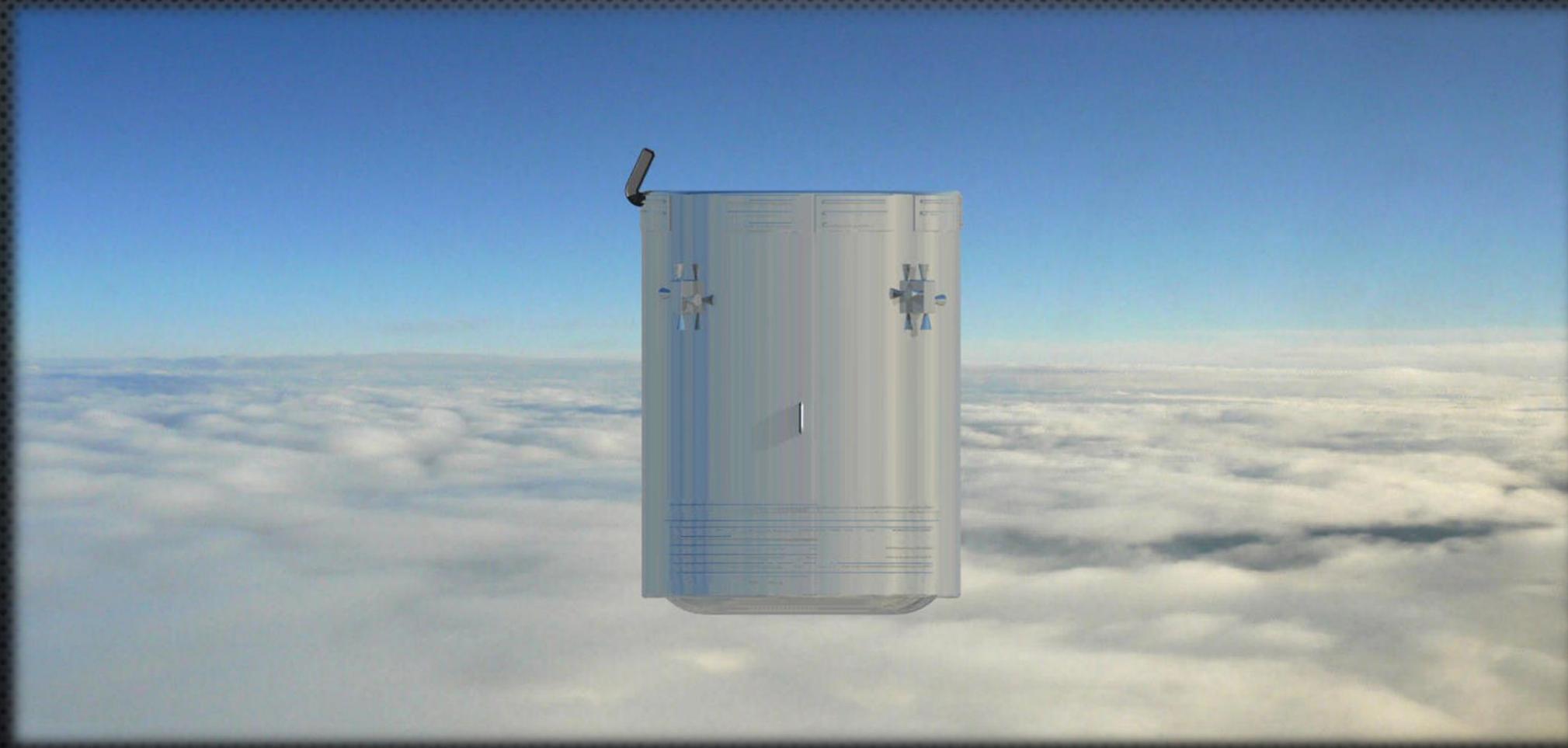
S-II

S-IC

J-2 Engine

F-1 Engine

SPACECRAFT



Spacecraft

Instrument Unit

S-IVB

S-II

S-IC

J-2 Engine

F-1 Engine

SPACECRAFT



Spacecraft

Instrument Unit

S-IVB

S-II

S-IC

J-2 Engine

F-1 Engine

SPACECRAFT



Spacecraft

Instrument Unit

S-IVB

S-II

S-IC

J-2 Engine

F-1 Engine

SPACECRAFT



Spacecraft

Instrument Unit

S-IVB

S-II

S-IC

J-2 Engine

F-1 Engine

SPACECRAFT



Spacecraft

Instrument Unit

S-IVB

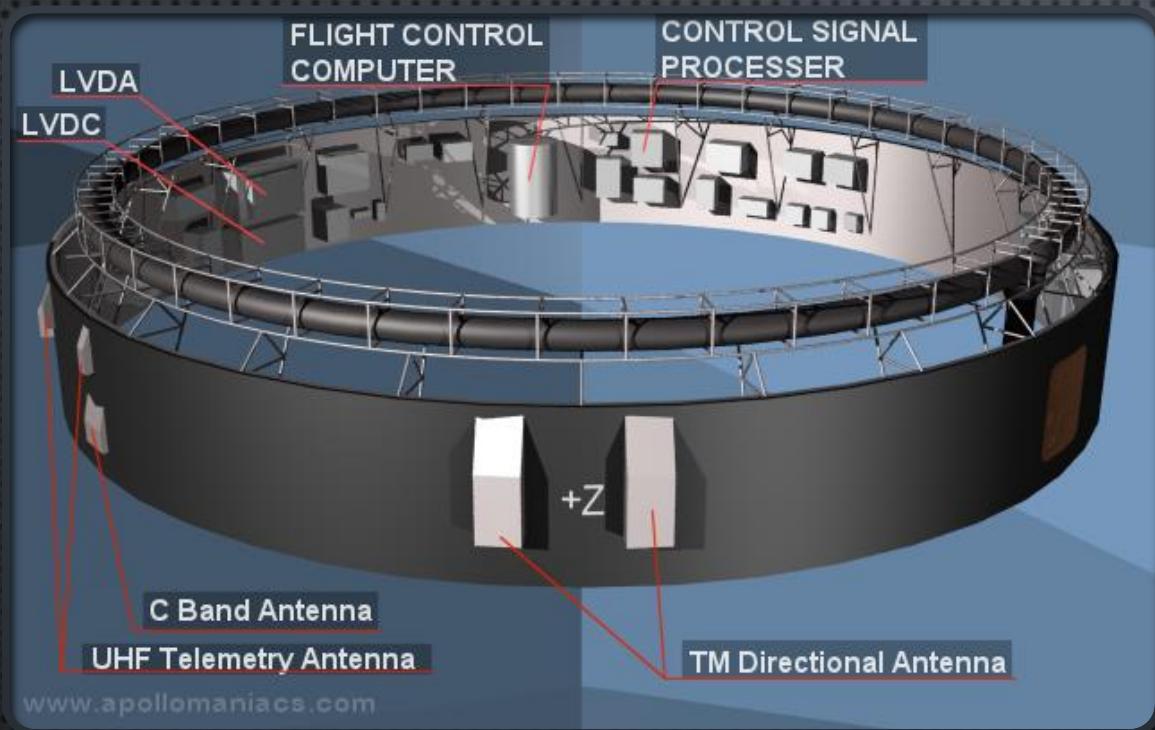
S-II

S-IC

J-2 Engine

F-1 Engine

INSTRUMENT UNIT



Spacecraft

Instrument Unit

S-IVB

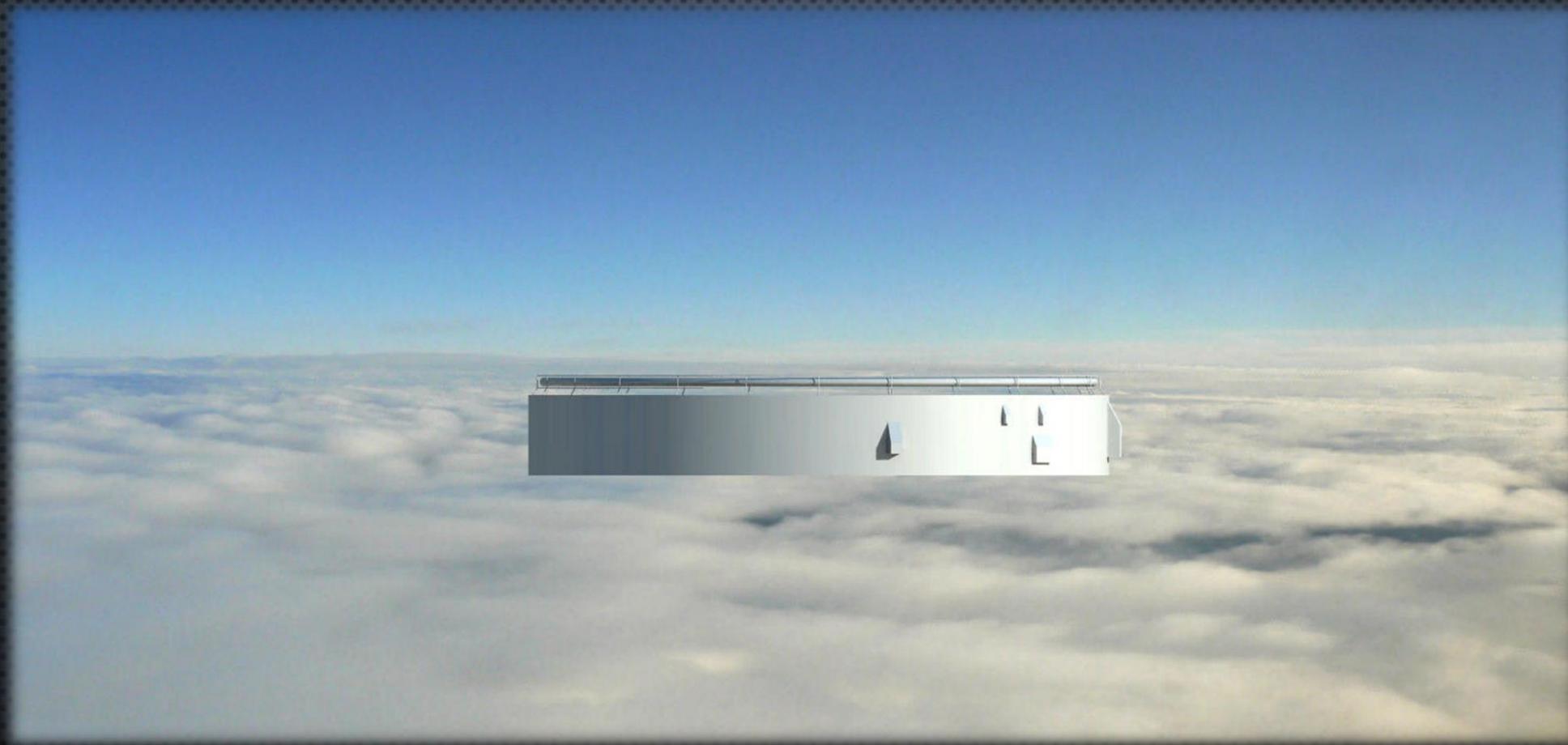
S-II

S-IC

J-2 Engine

F-1 Engine

INSTRUMENT UNIT



Spacecraft

Instrument Unit

S-IVB

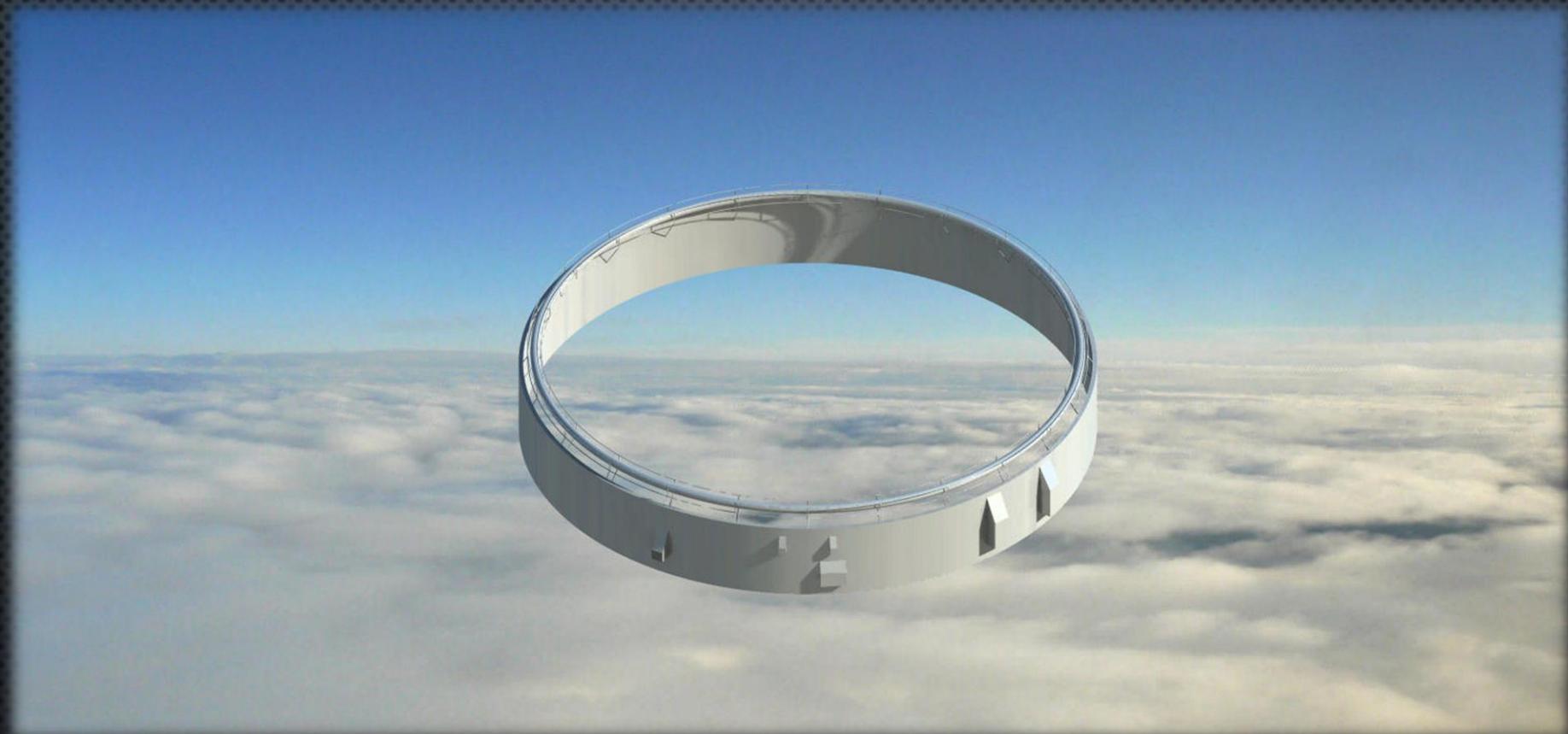
S-II

S-IC

J-2 Engine

F-1 Engine

INSTRUMENT UNIT



Spacecraft

Instrument Unit

S-IVB

S-II

S-IC

J-2 Engine

F-1 Engine

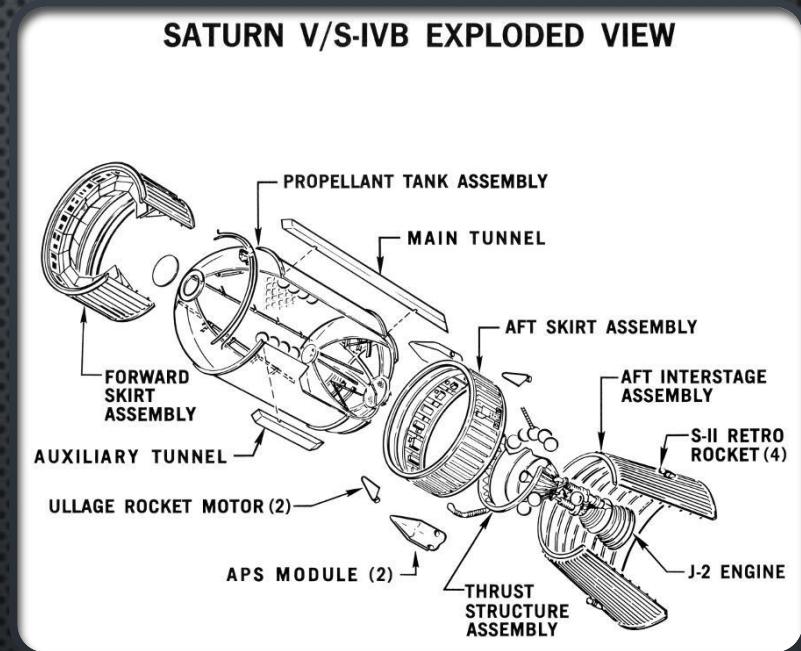
INSTRUMENT UNIT





S-IVB

- FORWARD SKIRT
- PROPELLANT TANK
- AFT SKIRT
- THRUST STRUCTURE
- J-2 ENGINE



Spacecraft

Instrument Unit

S-IVB

S-II

S-IC

J-2 Engine

F-1 Engine

S-IVB



Spacecraft

Instrument Unit

S-IVB

S-II

S-IC

J-2 Engine

F-1 Engine

S-IVB



Spacecraft

Instrument Unit

S-IVB

S-II

S-IC

J-2 Engine

F-1 Engine

S-IVB



Spacecraft

Instrument Unit

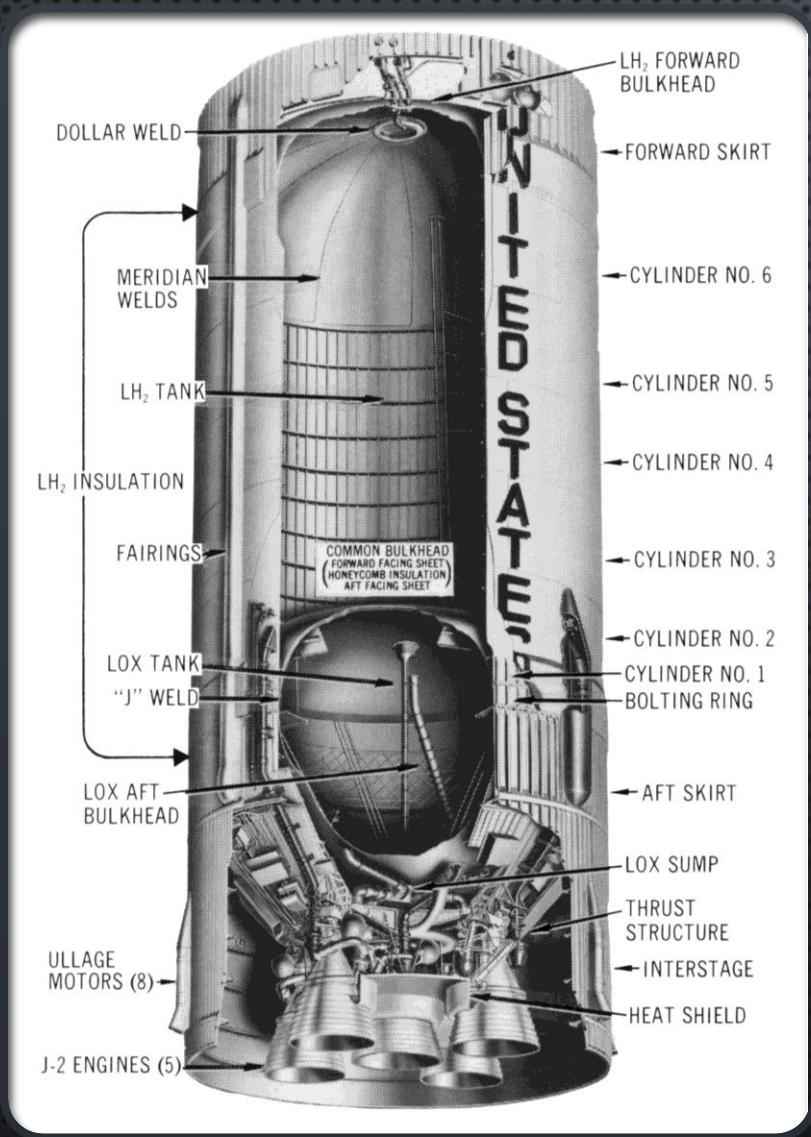
S-IVB

S-II

S-IC

J-2 Engine

F-1 Engine



S-II

- FORWARD SKIRT
- LH₂ TANK
- LOX TANK
- 5 J-2 ENGINES

Spacecraft

Instrument Unit

S-IVB

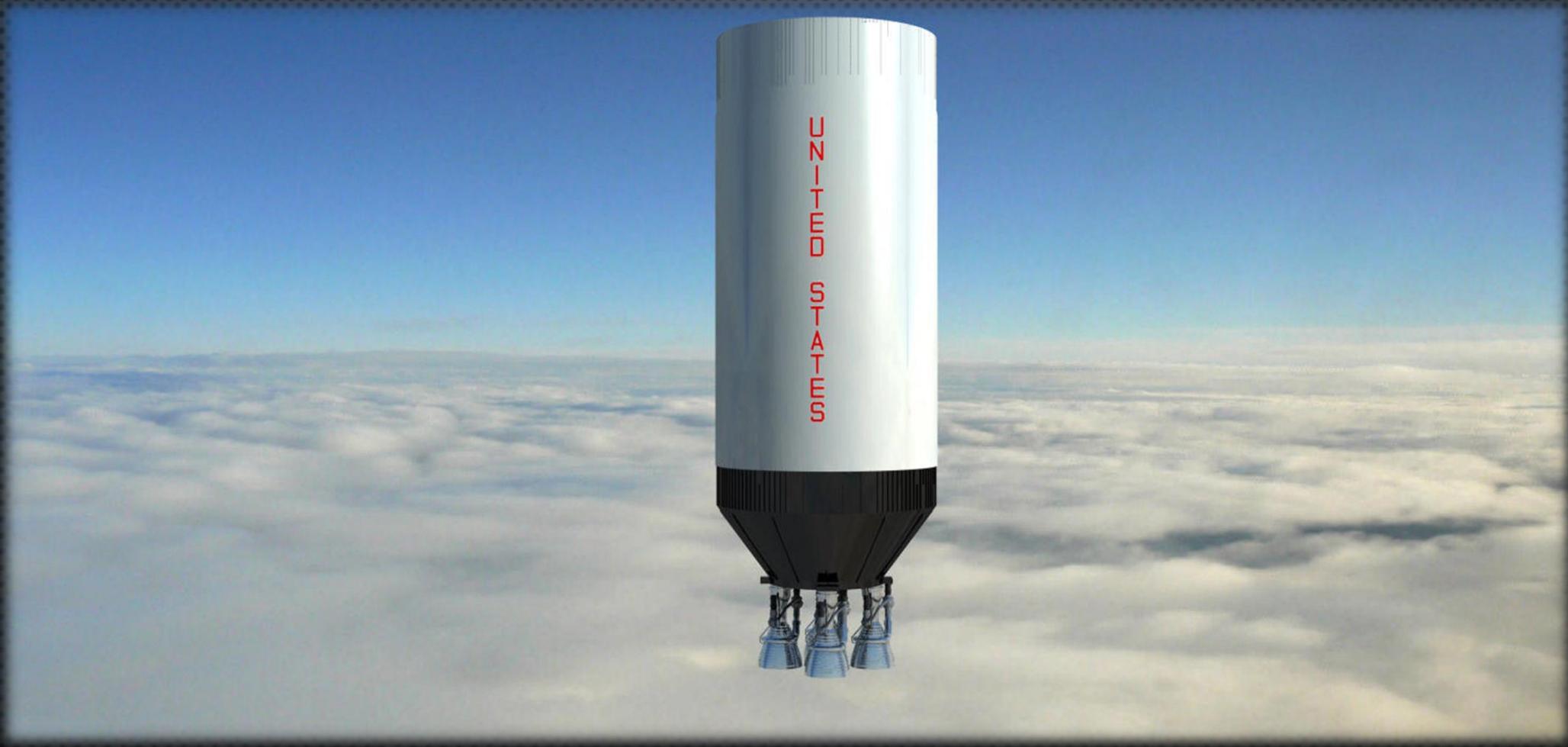
S-II

S-IC

J-2 Engine

F-1 Engine

S-II



Spacecraft

Instrument Unit

S-IVB

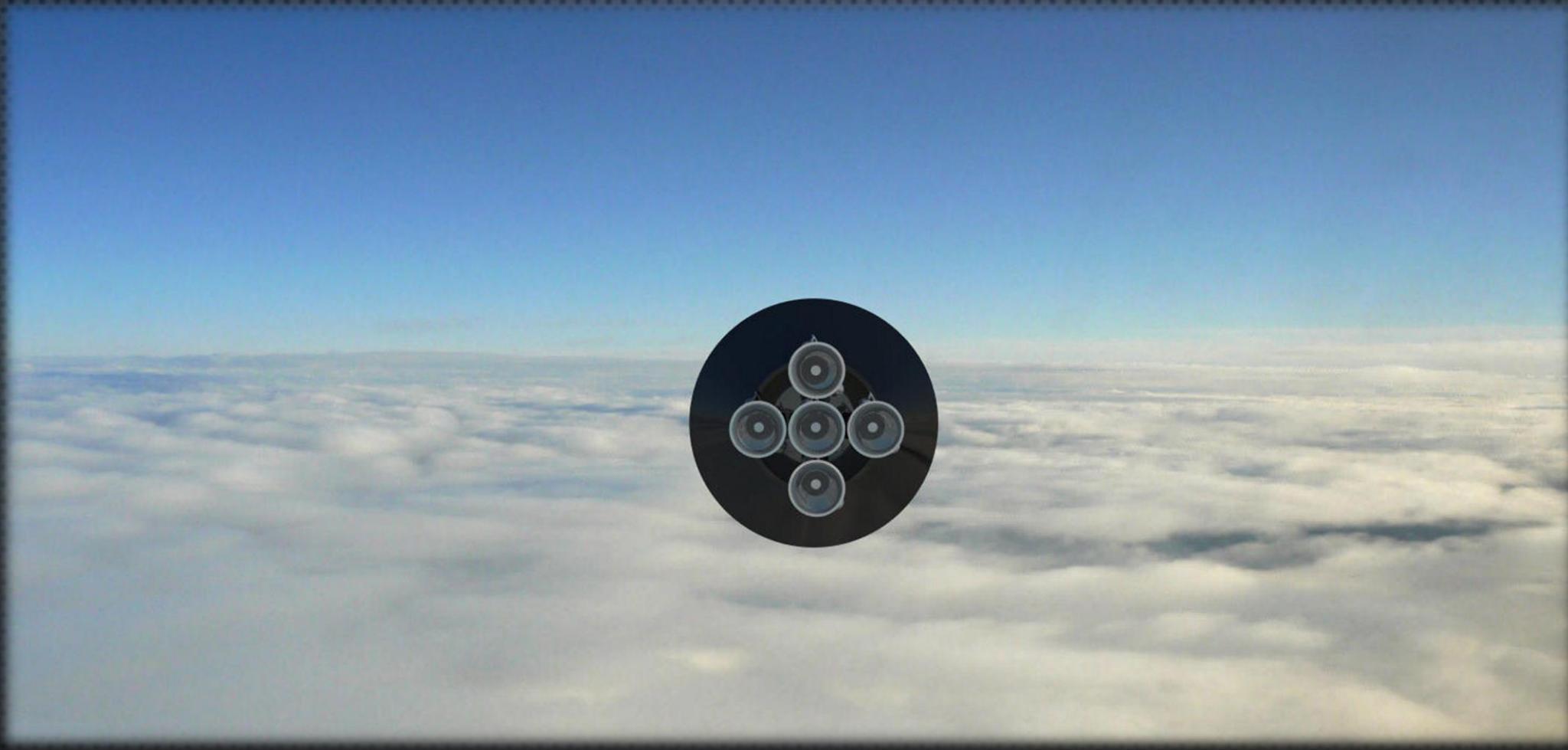
S-II

S-IC

J-2 Engine

F-1 Engine

S-II



Spacecraft

Instrument Unit

S-IVB

S-II

S-IC

J-2 Engine

F-1 Engine

S-II



Spacecraft

Instrument Unit

S-IVB

S-II

S-IC

J-2 Engine

F-1 Engine

S-II



Spacecraft

Instrument Unit

S-IVB

S-II

S-IC

J-2 Engine

F-1 Engine

S-II



Spacecraft

Instrument Unit

S-IVB

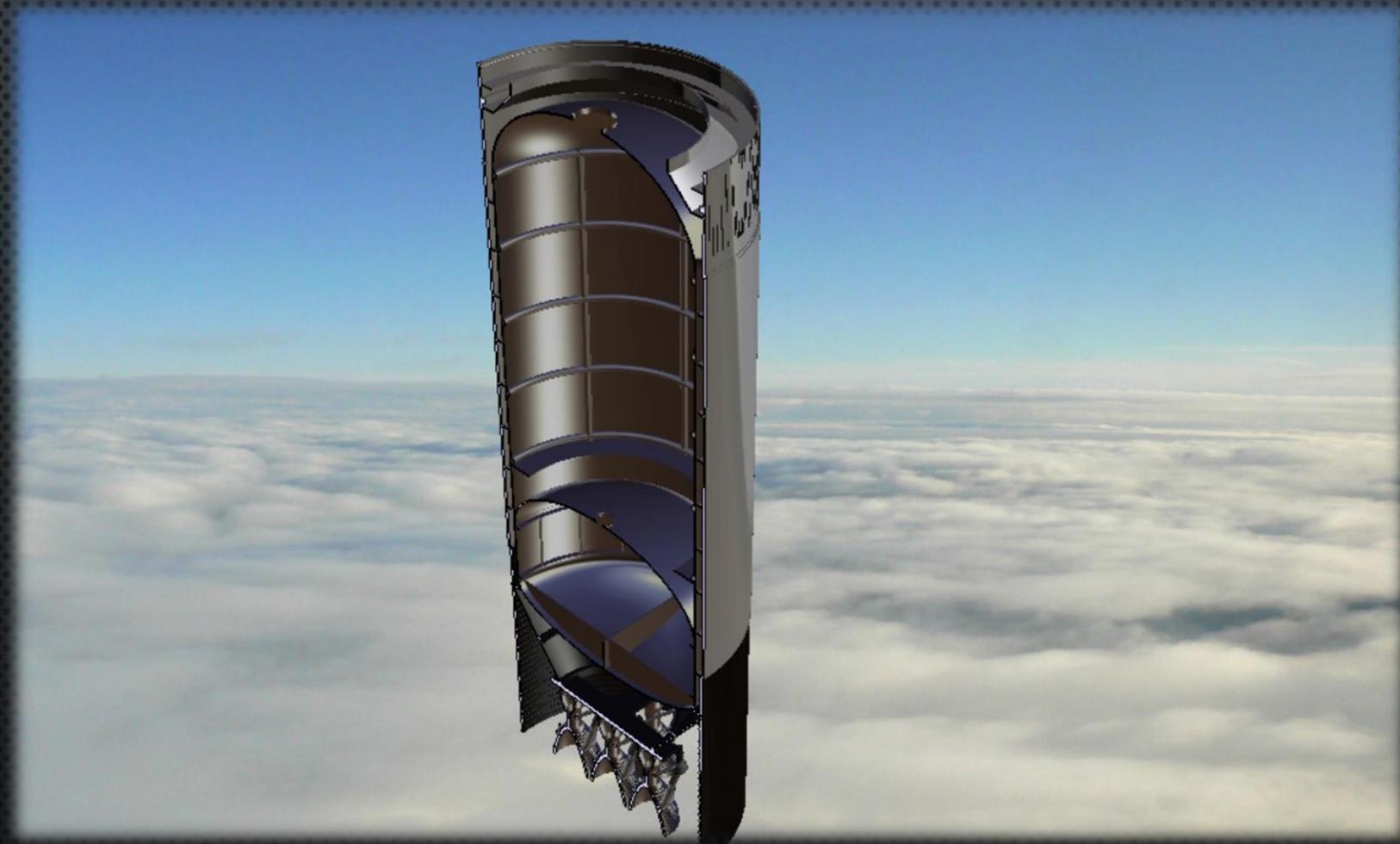
S-II

S-IC

J-2 Engine

F-1 Engine

S-II



Spacecraft

Instrument Unit

S-IVB

S-II

S-IC

J-2 Engine

F-1 Engine



S-IC

- Forward Skirt
- Oxidizer Tank
- Fuel Tank
- 5 F-1 Engines

Spacecraft

Instrument Unit

S-IVB

S-II

S-IC

J-2 Engine

F-1 Engine

S-IC



Spacecraft

Instrument Unit

S-IVB

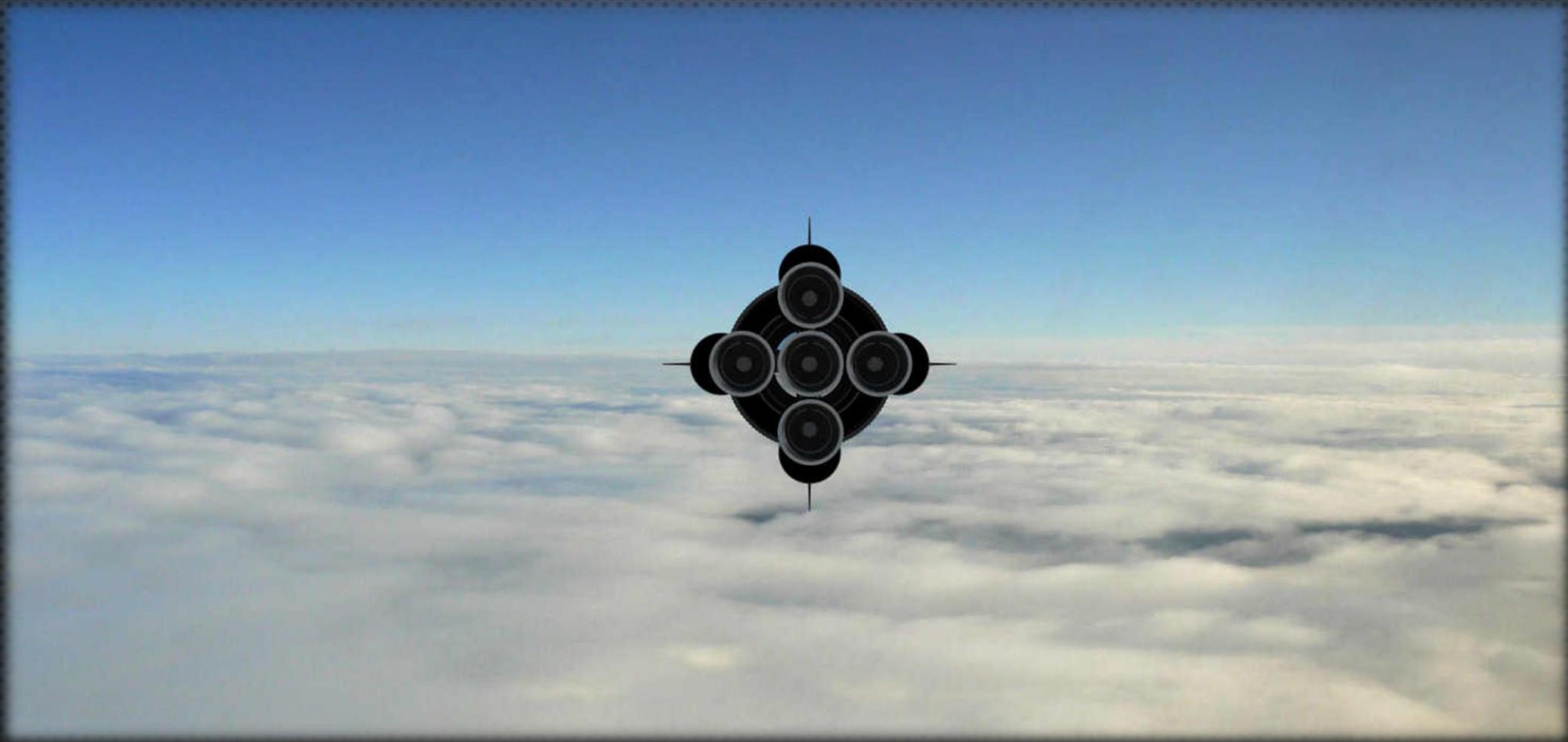
S-II

S-IC

J-2 Engine

F-1 Engine

S-IC



Spacecraft

Instrument Unit

S-IVB

S-II

S-IC

J-2 Engine

F-1 Engine

S-IC



Spacecraft

Instrument Unit

S-IVB

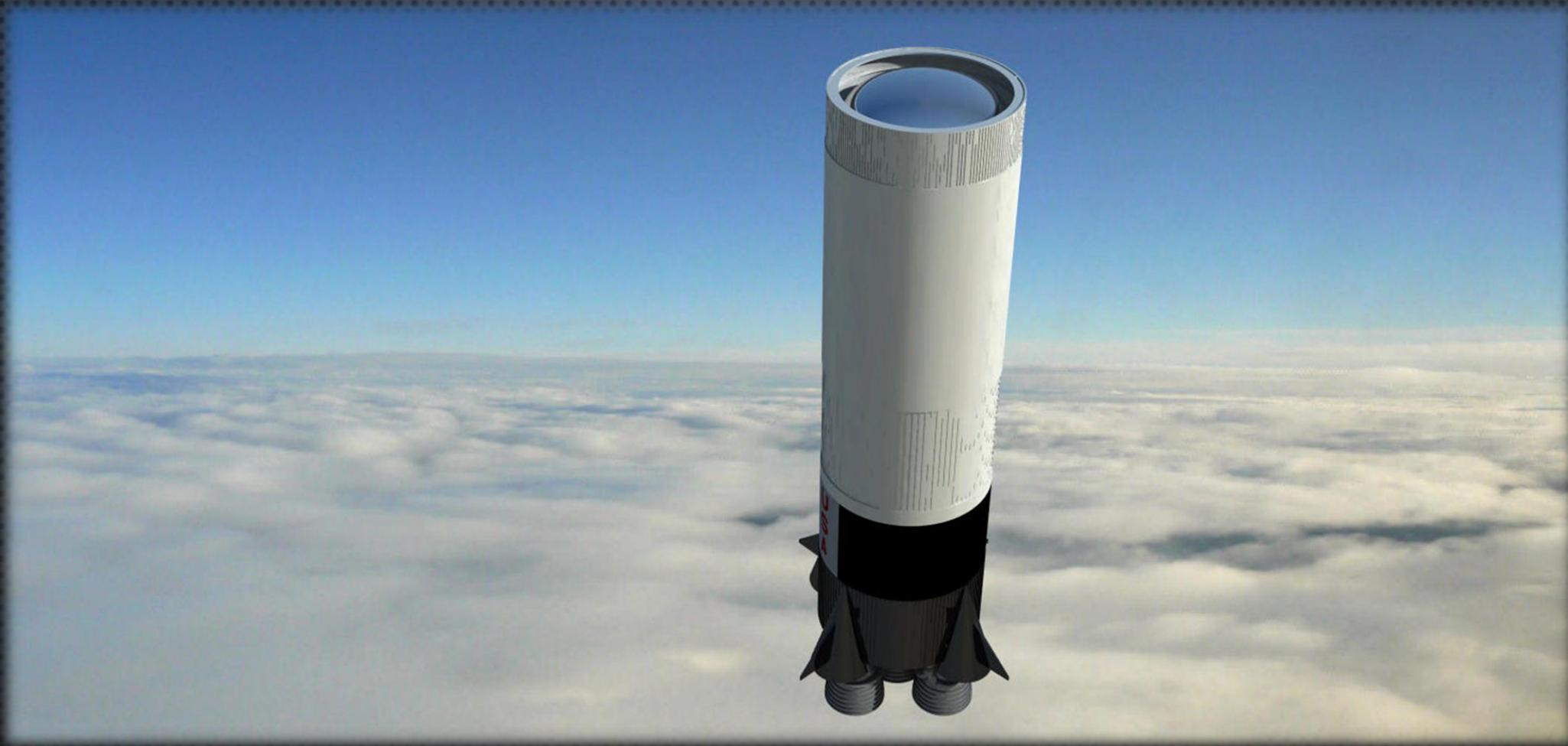
S-II

S-IC

J-2 Engine

F-1 Engine

S-IC



Spacecraft

Instrument Unit

S-IVB

S-II

S-IC

J-2 Engine

F-1 Engine

S-IC



Spacecraft

Instrument Unit

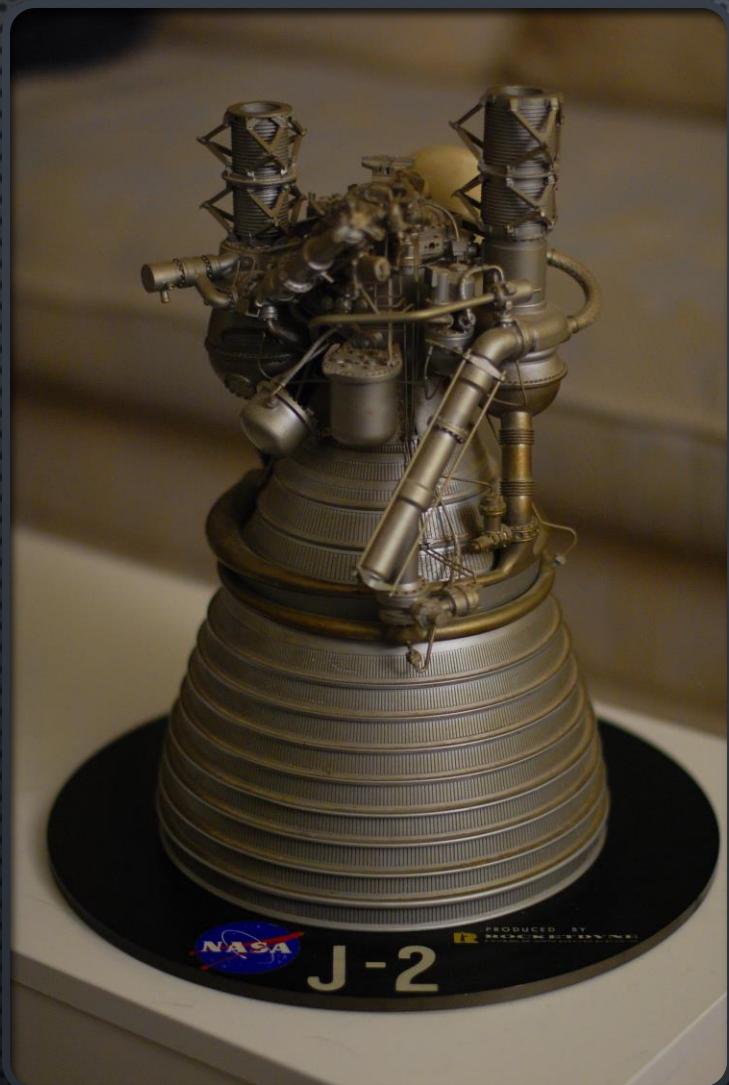
S-IVB

S-II

S-IC

J-2 Engine

F-1 Engine



J-2 ENGINE

Rocketdyne engine

Fuel: Cryogenic Liquid Hydrogen (LH_2)

Oxydizer: Liquid Oxygen (O_2)

Spacecraft

Instrument Unit

S-IVB

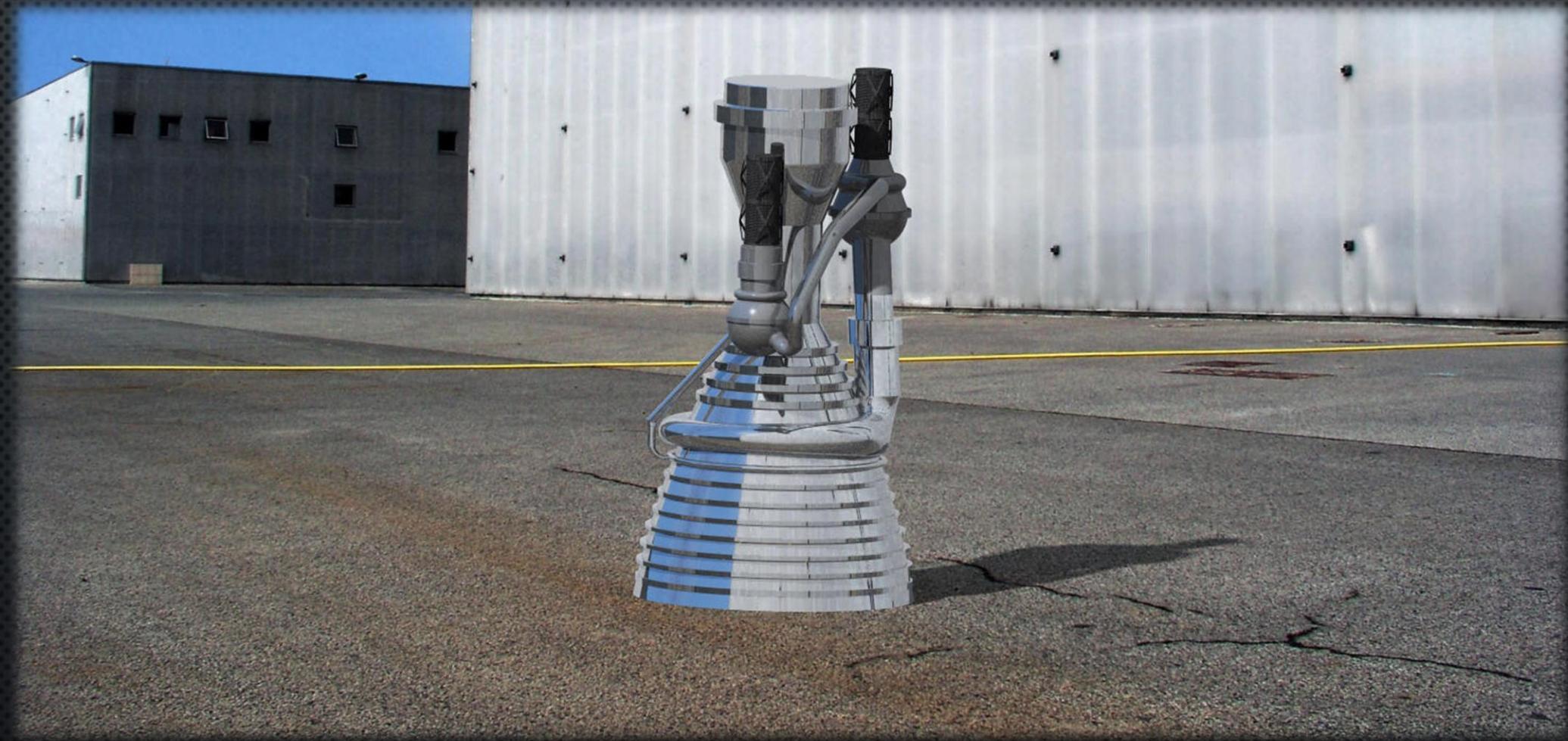
S-II

S-IC

J-2 Engine

F-1 Engine

J-2 ENGINE



Spacecraft

Instrument Unit

S-IVB

S-II

S-IC

J-2 Engine

F-1 Engine

J-2 ENGINE



Spacecraft

Instrument Unit

S-IVB

S-II

S-IC

J-2 Engine

F-1 Engine

J-2 ENGINE



Spacecraft

Instrument Unit

S-IVB

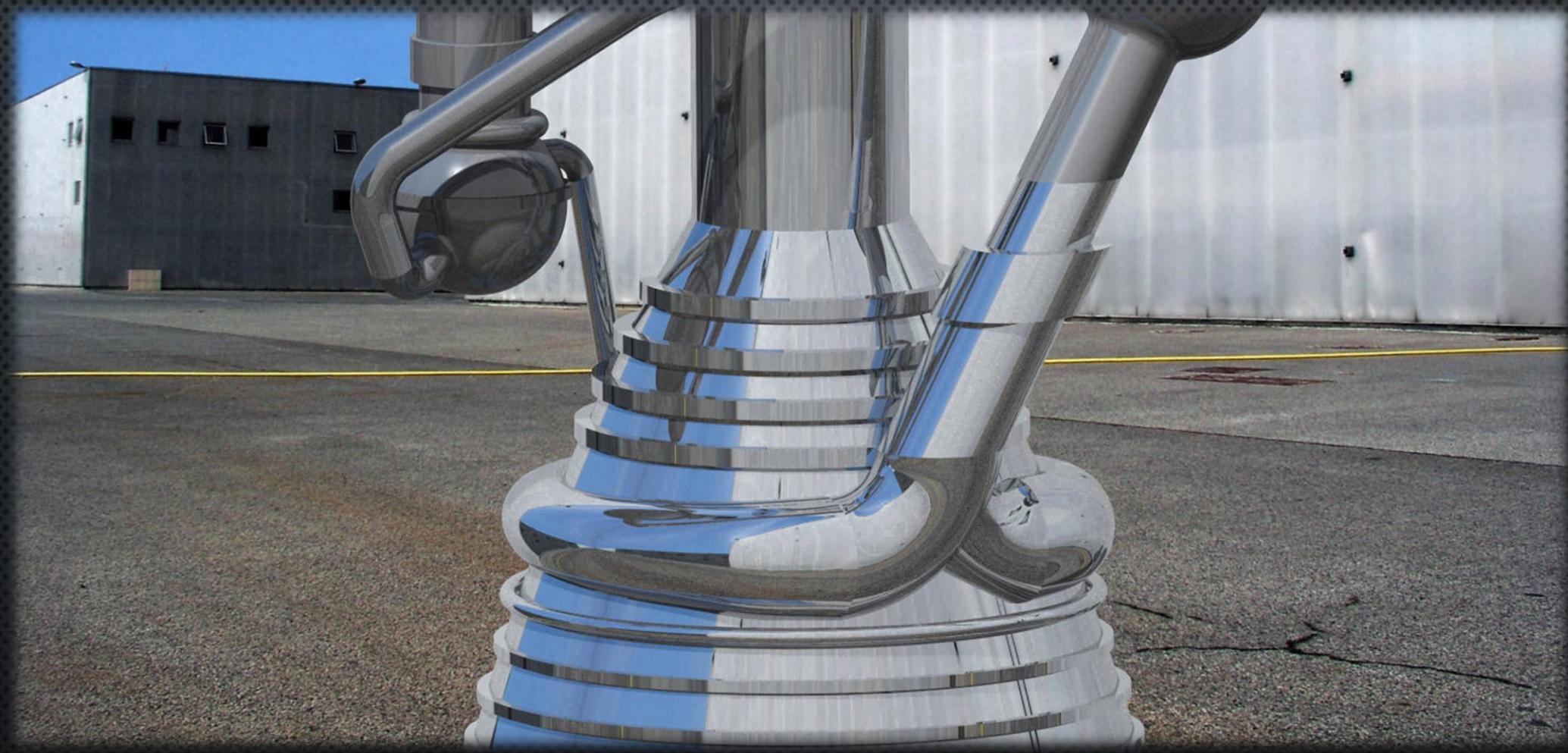
S-II

S-IC

J-2 Engine

F-1 Engine

J-2 ENGINE



Spacecraft

Instrument Unit

S-IVB

S-II

S-IC

J-2 Engine

F-1 Engine



F-1 ENGINE

Rocketdyne engine

Fuel: Cryogenic Liquid Hydrogen (LH_2)

Oxydizer: Liquid Oxygen (O_2)

Spacecraft

Instrument Unit

S-IVB

S-II

S-IC

J-2 Engine

F-1 Engine

F-1 ENGINE



Spacecraft

Instrument Unit

S-IVB

S-II

S-IC

J-2 Engine

F-1 Engine

F-1 ENGINE



Spacecraft

Instrument Unit

S-IVB

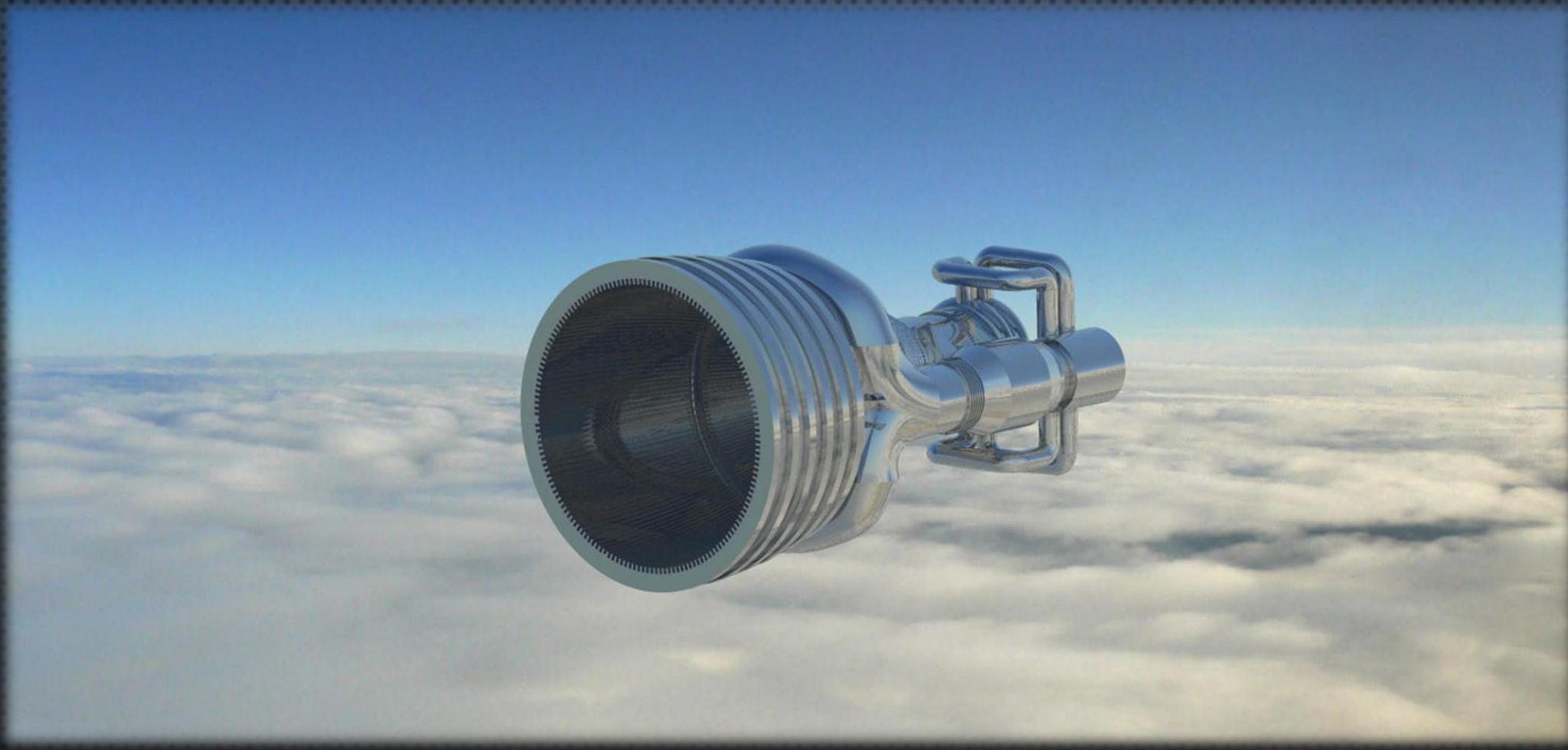
S-II

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Spacecraft

Instrument Unit

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J-2 Engine

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Spacecraft

Instrument Unit

S-IVB

S-II

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J-2 Engine

F-1 Engine

F-1 ENGINE



MONTAGEM DOS ESTÁGIOS



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Spacecraft

Instrument Unit

S-IVB

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MONTAGEM DOS ESTÁGIOS



Spacecraft

Instrument Unit

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MONTAGEM DOS ESTÁGIOS





OBRIGADO!