



## Kansas Department of Education

- Steam propulsion was known in Greece before 400 BC
- Hero engine in 100 BC



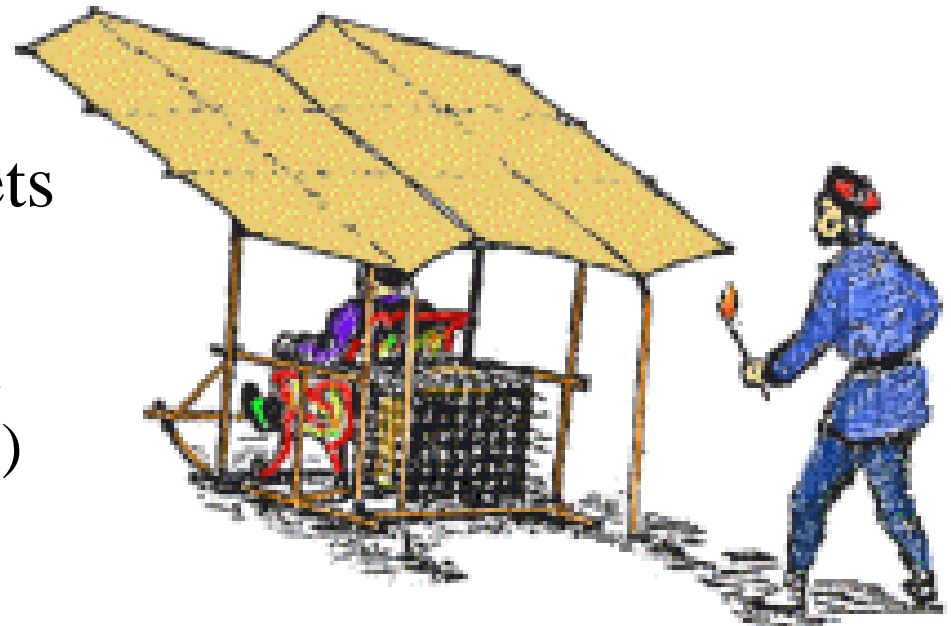


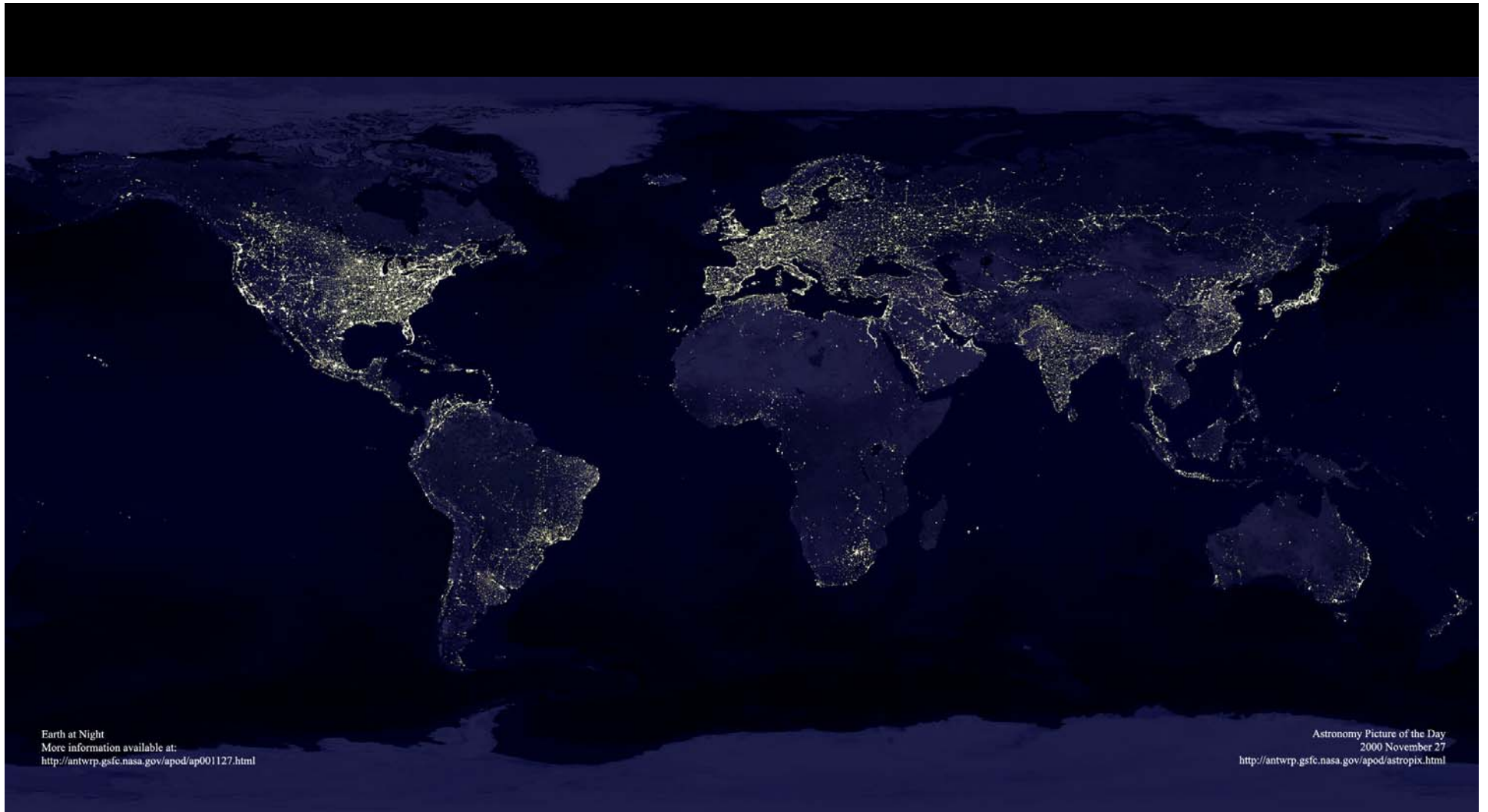
## Kansas Department of Education

- True rockets have internally stored propellants and energy



- Chinese started with true gunpowder rockets in 13<sup>th</sup> Century
  - Wan Hu tried manned flight (Unsuccessfully)





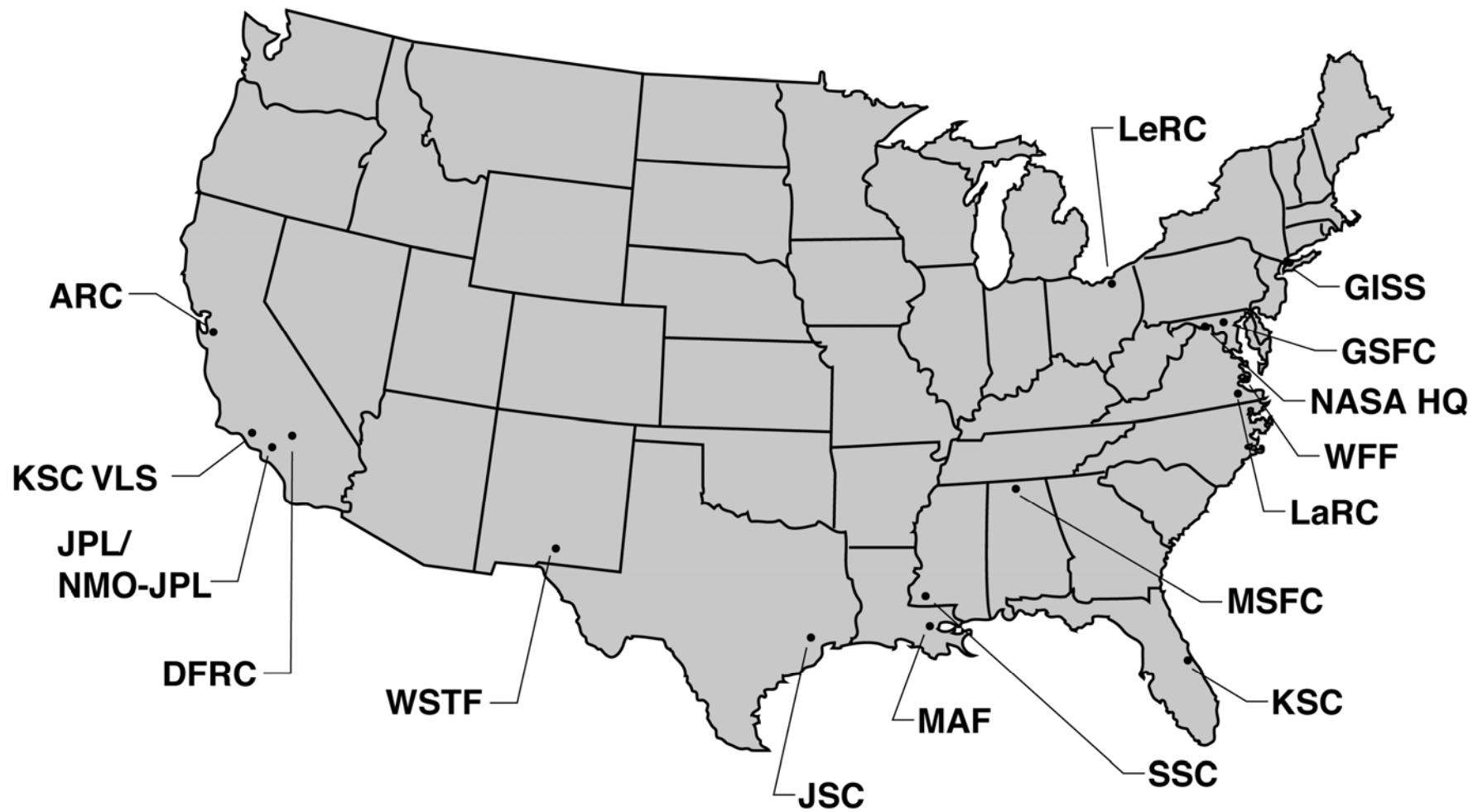
Earth at Night  
More information available at:  
<http://antwrp.gsfc.nasa.gov/apod/ap001127.html>

Astronomy Picture of the Day  
2000 November 27  
<http://antwrp.gsfc.nasa.gov/apod/astropix.html>

“The Earth is the cradle of mankind, but one cannot live in the cradle forever.”

Konstantin Tsiolkovsky





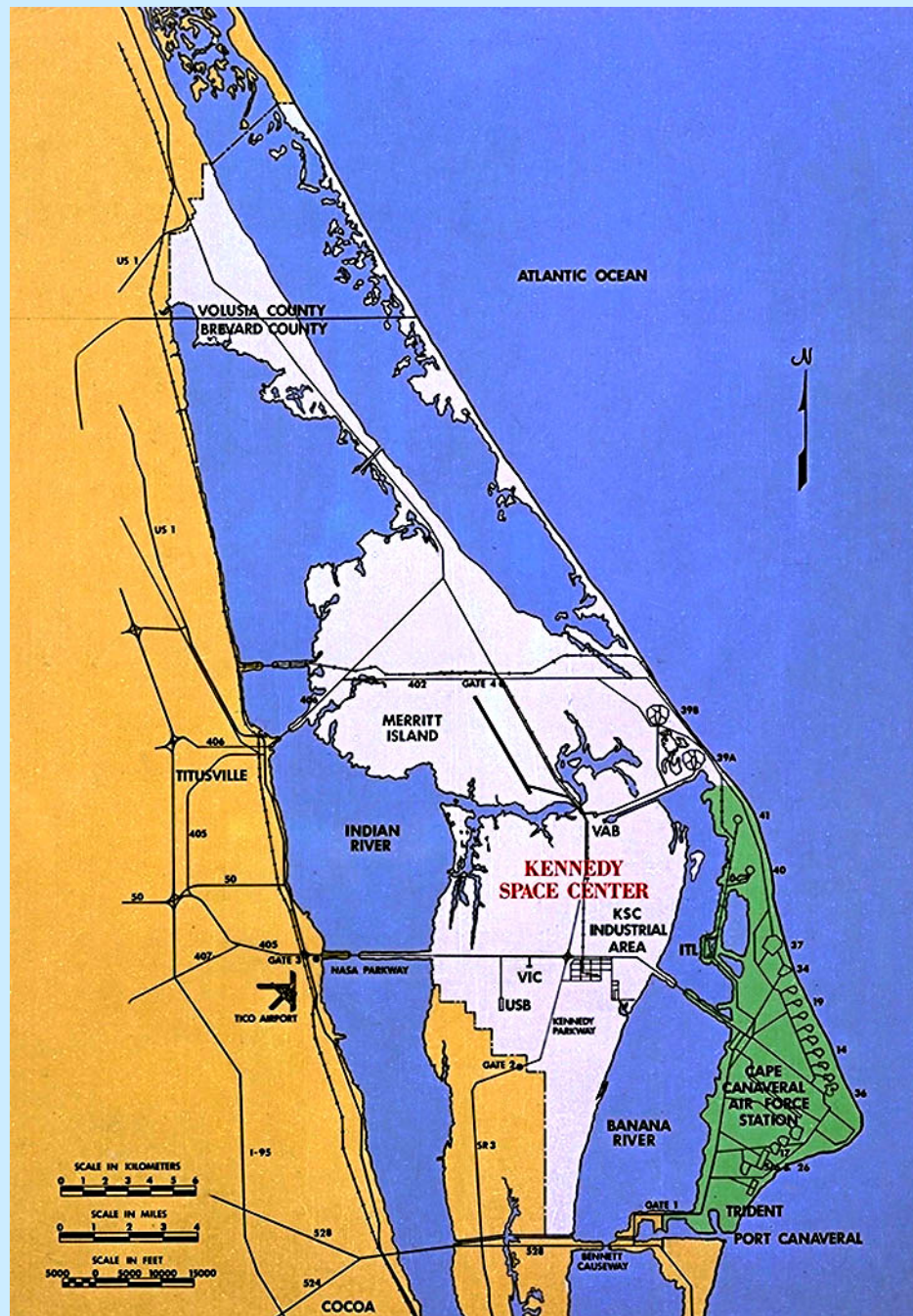


# Kennedy Space Center











# A Wildlife Refuge



ROCKETS









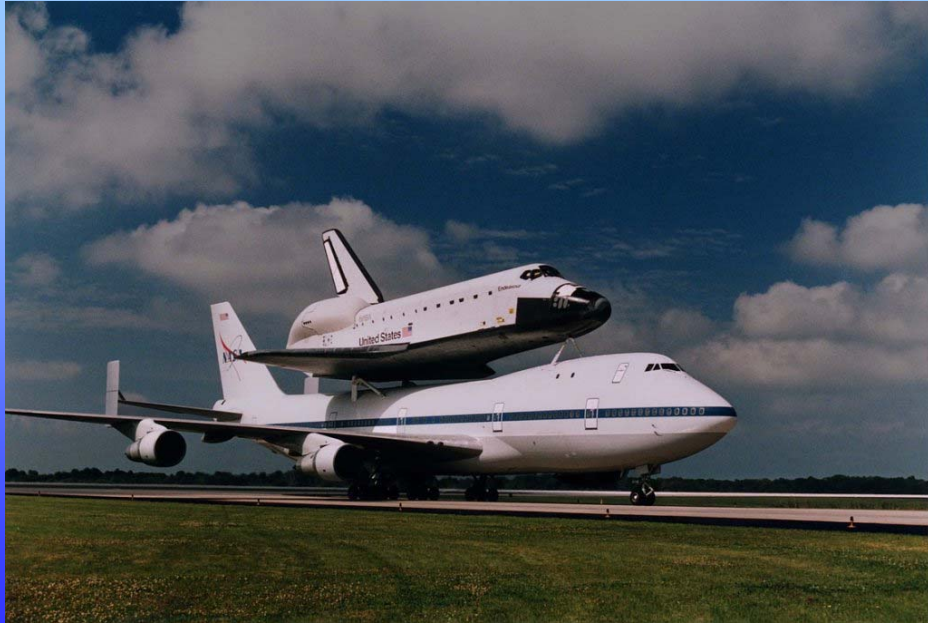








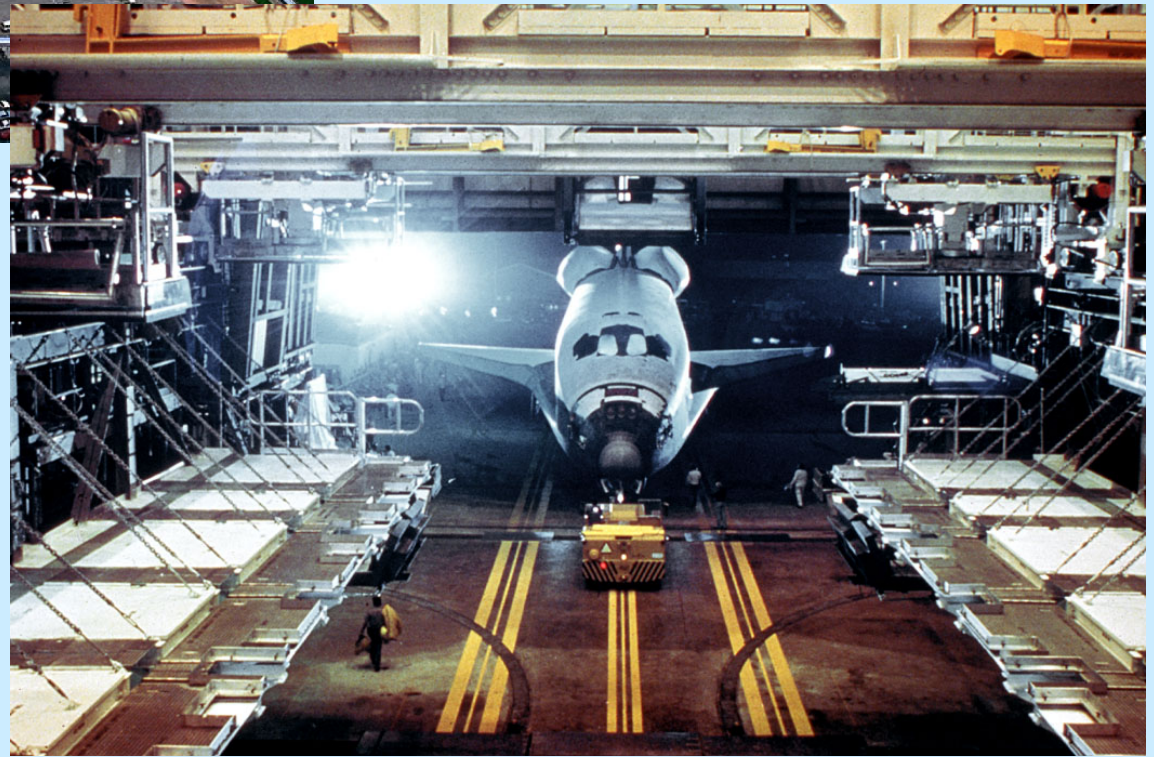




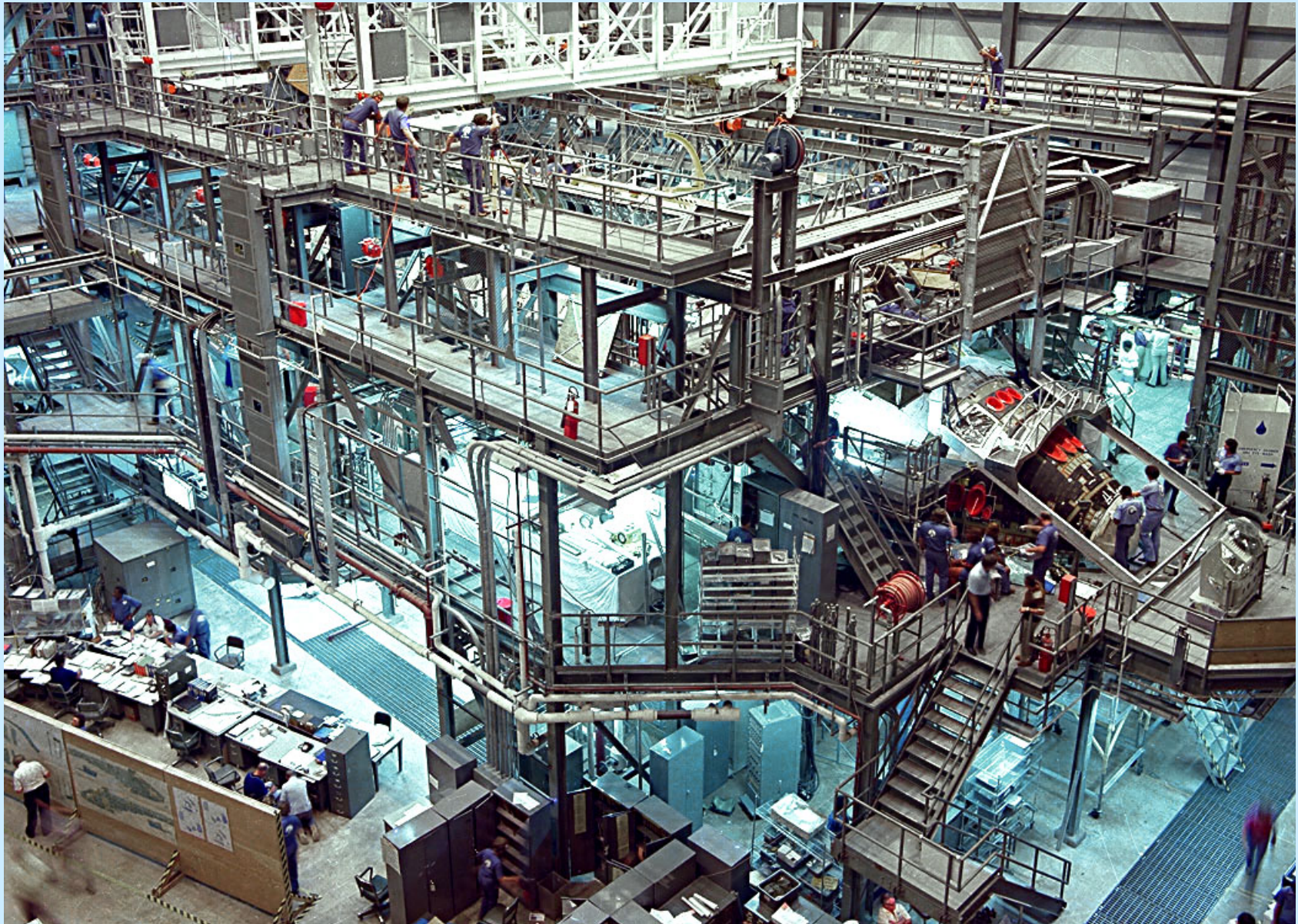




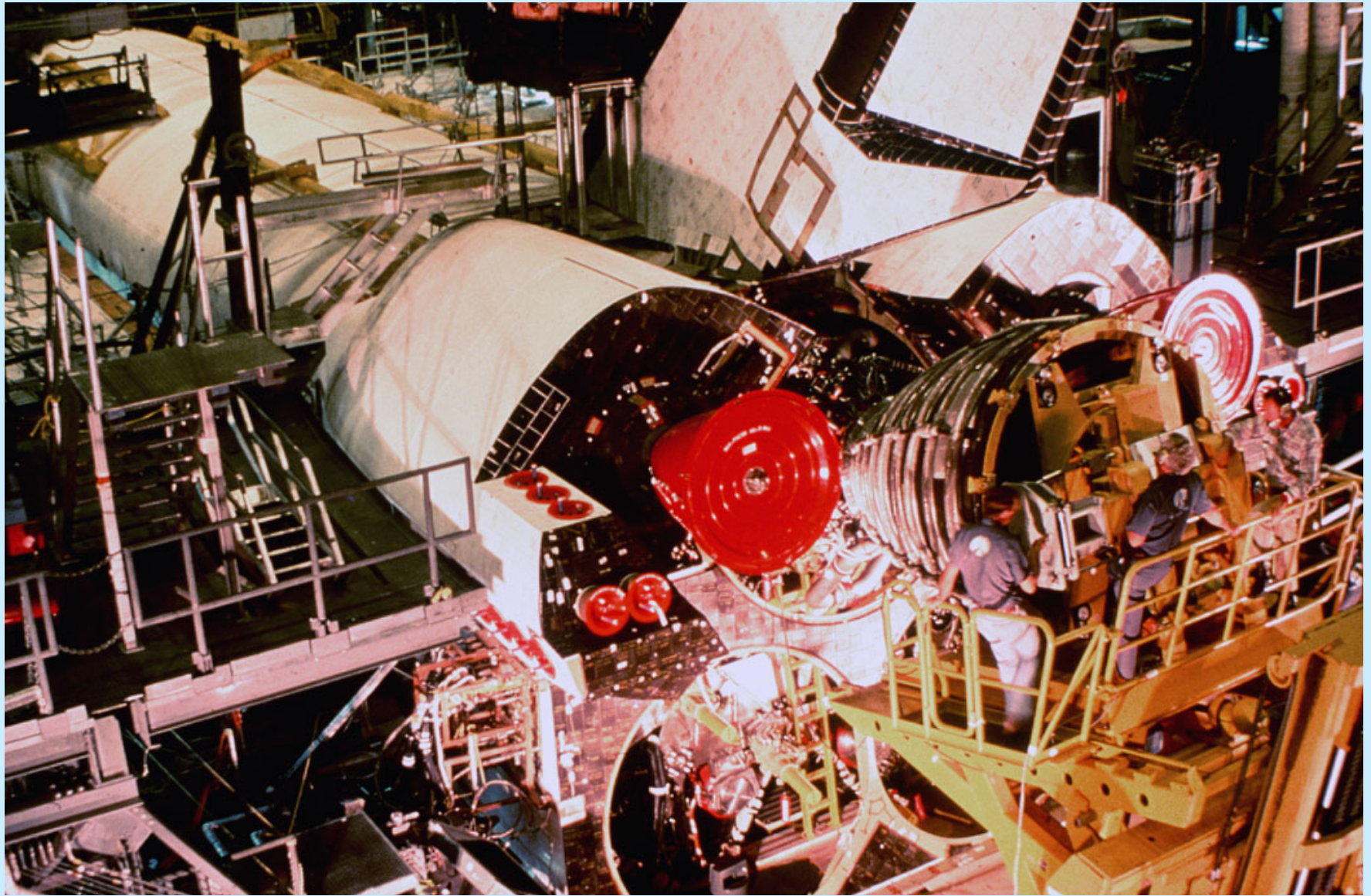








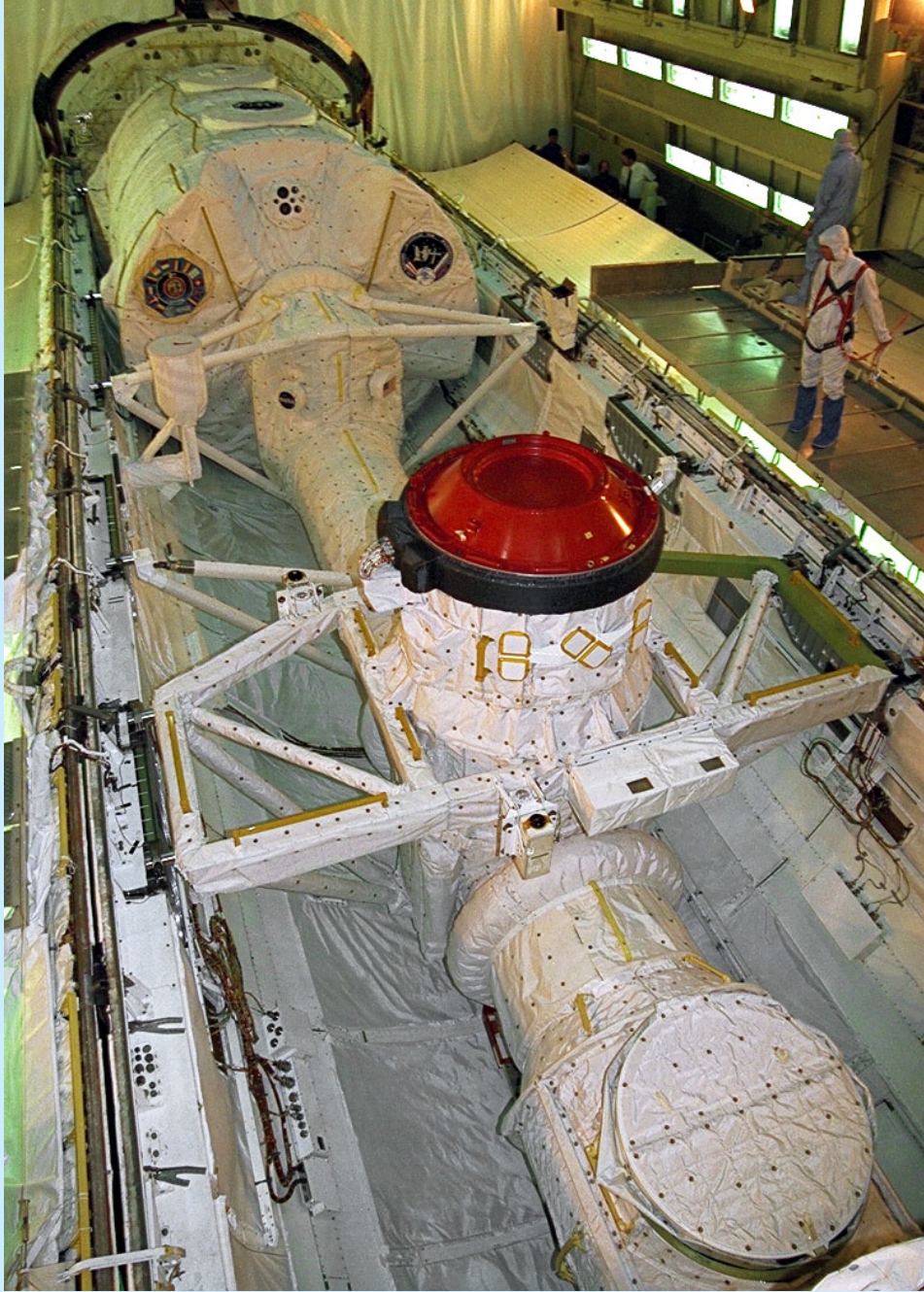








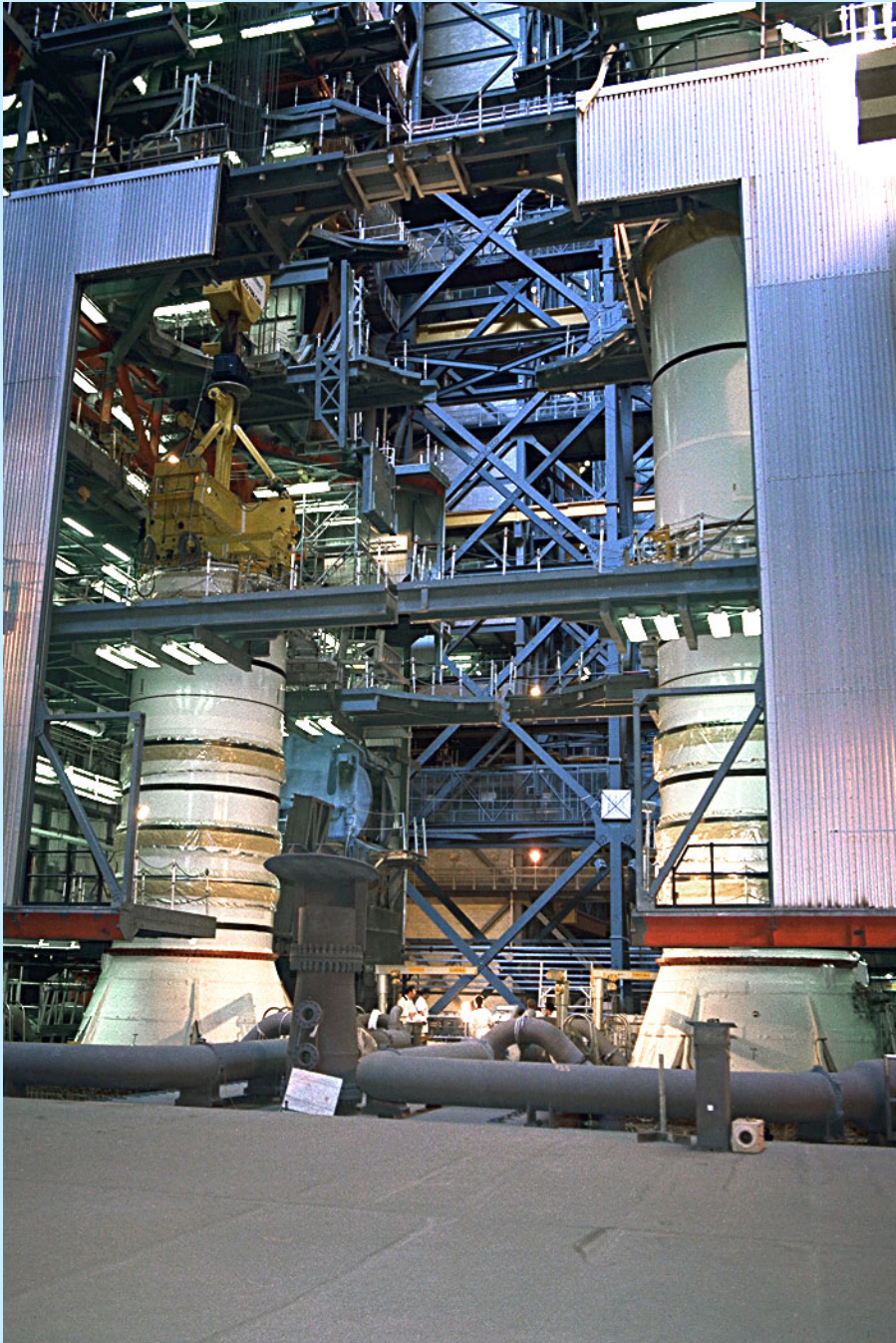




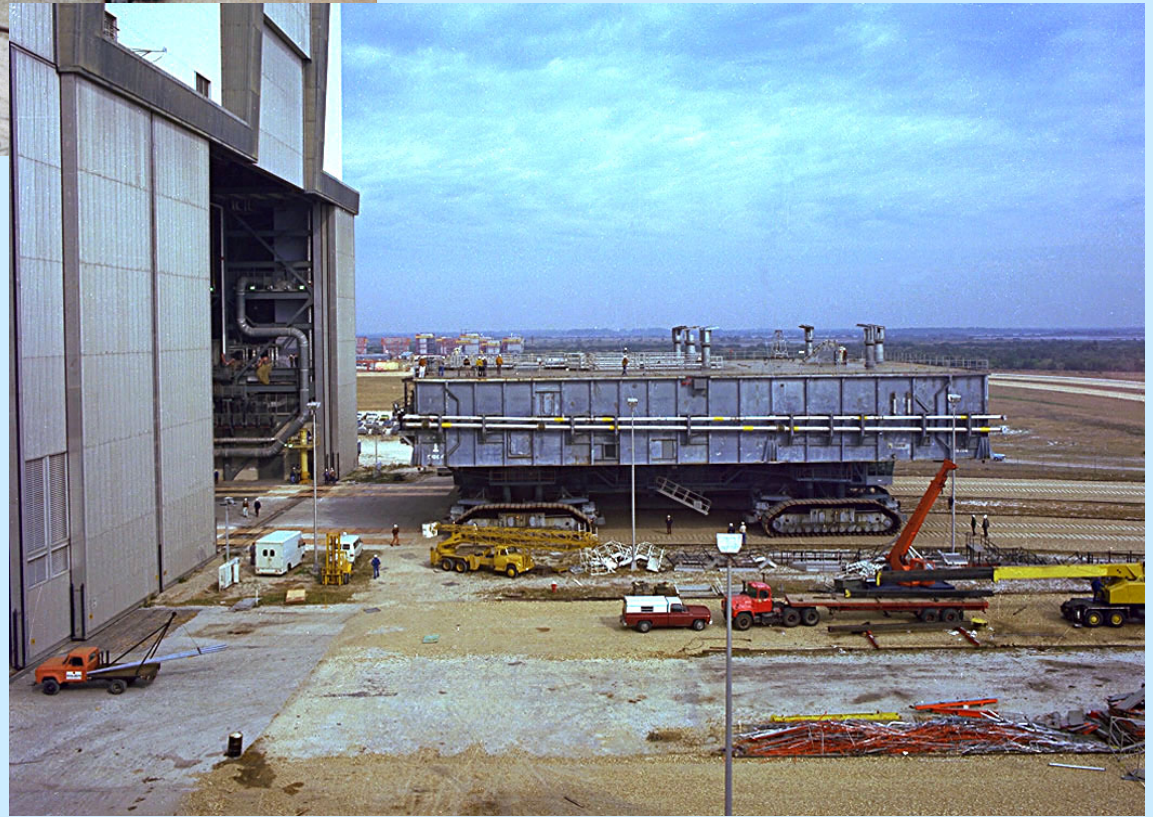
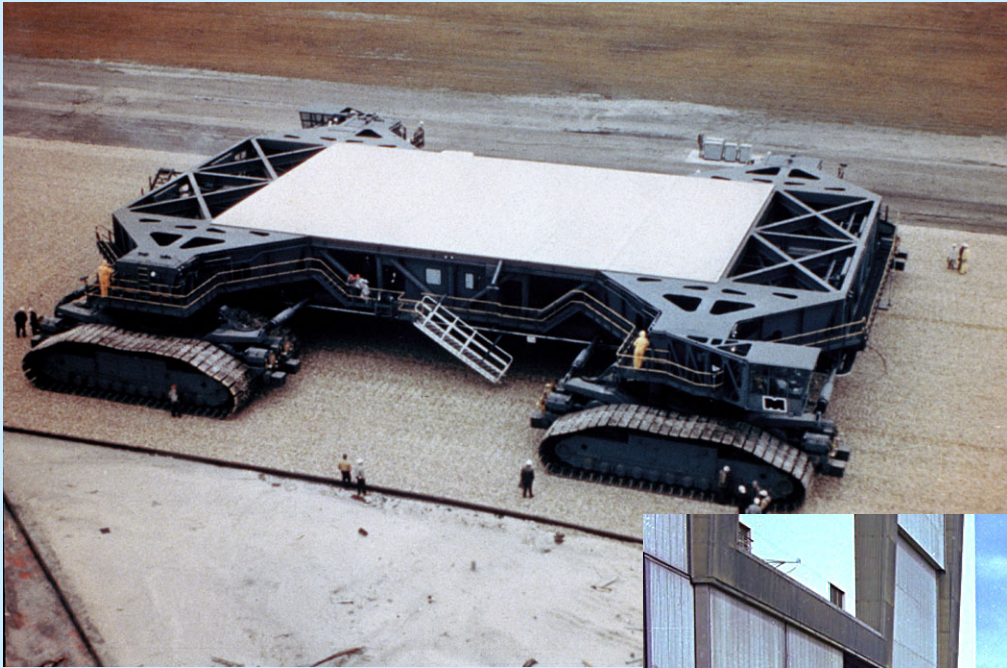




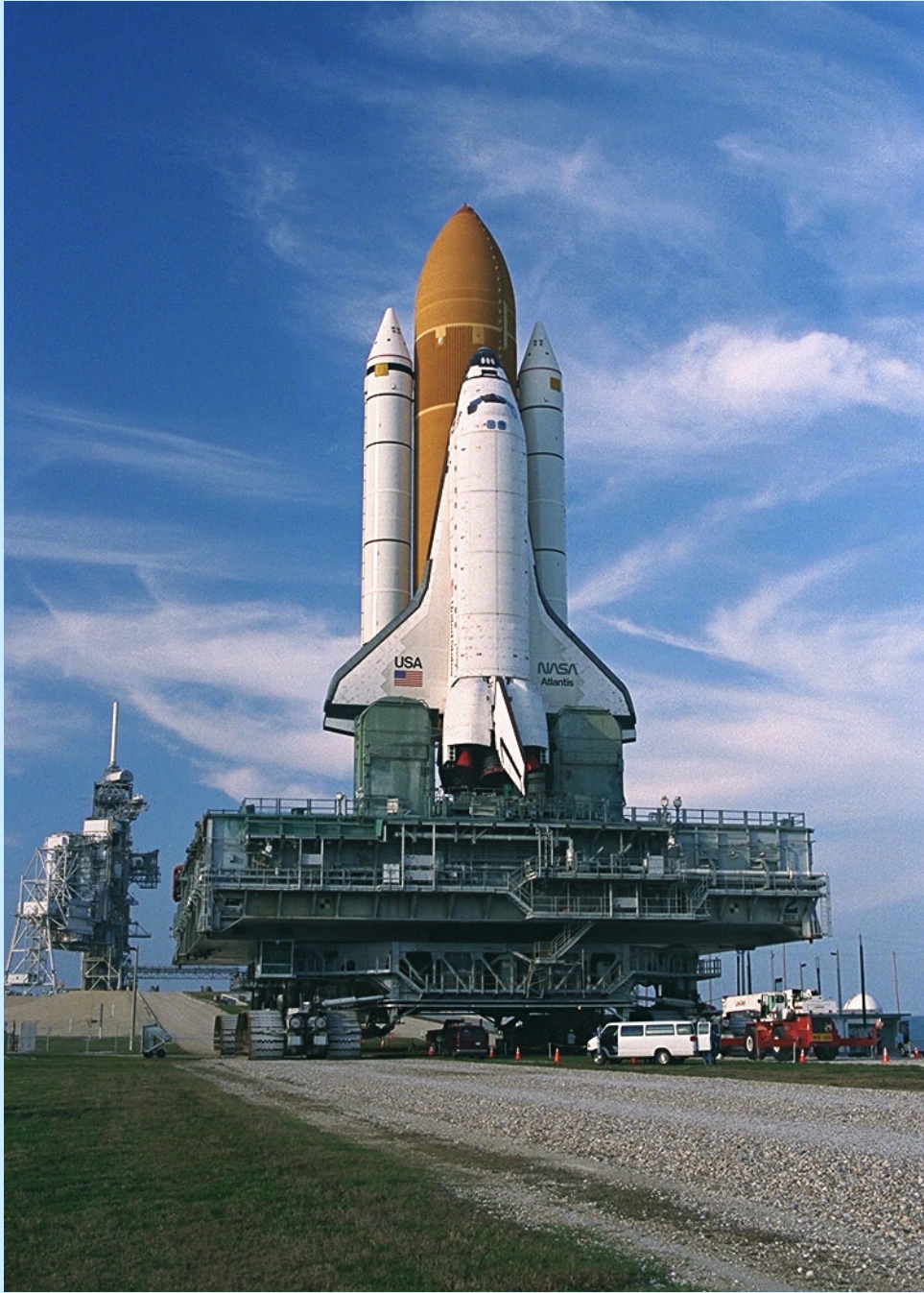




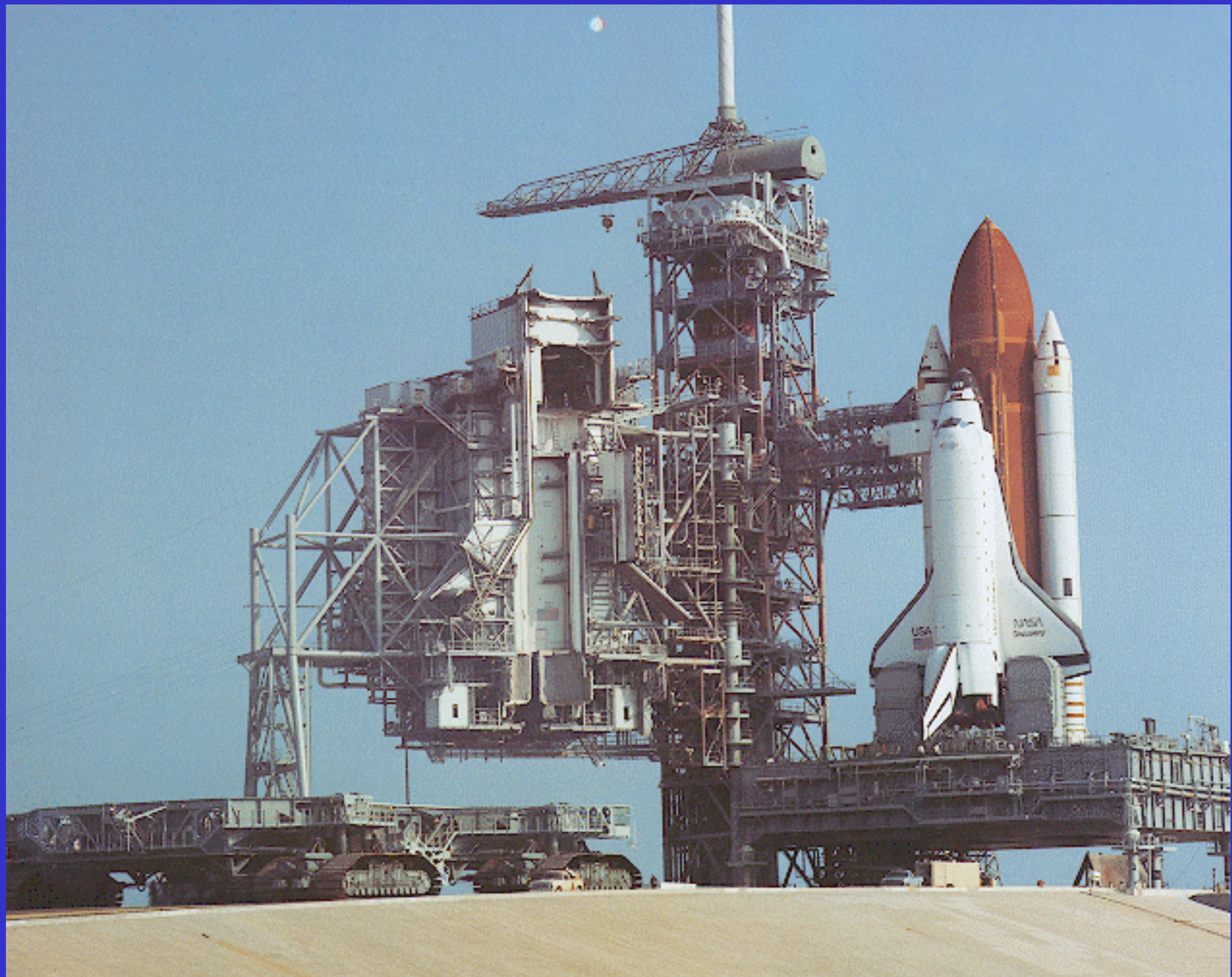




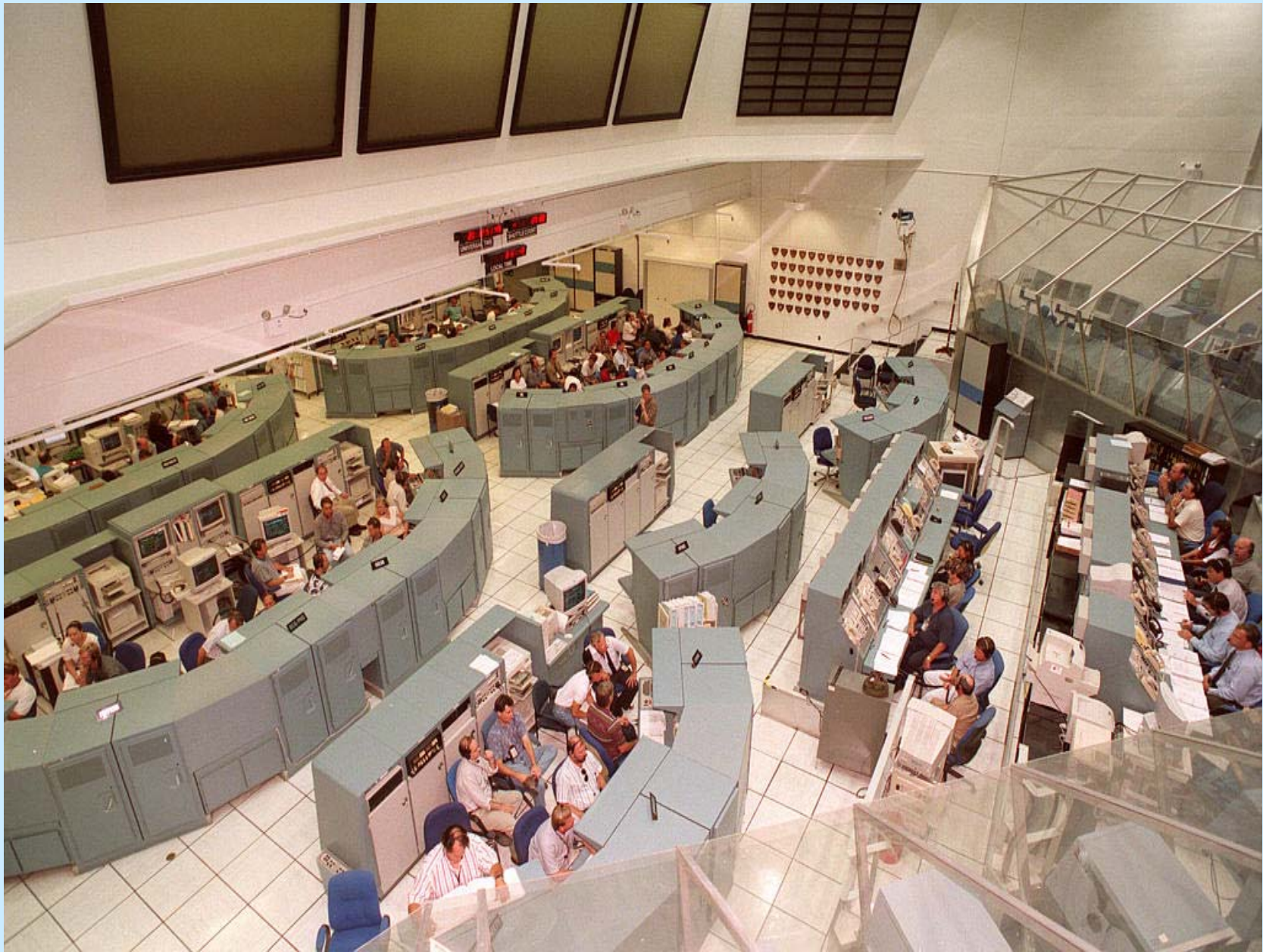




























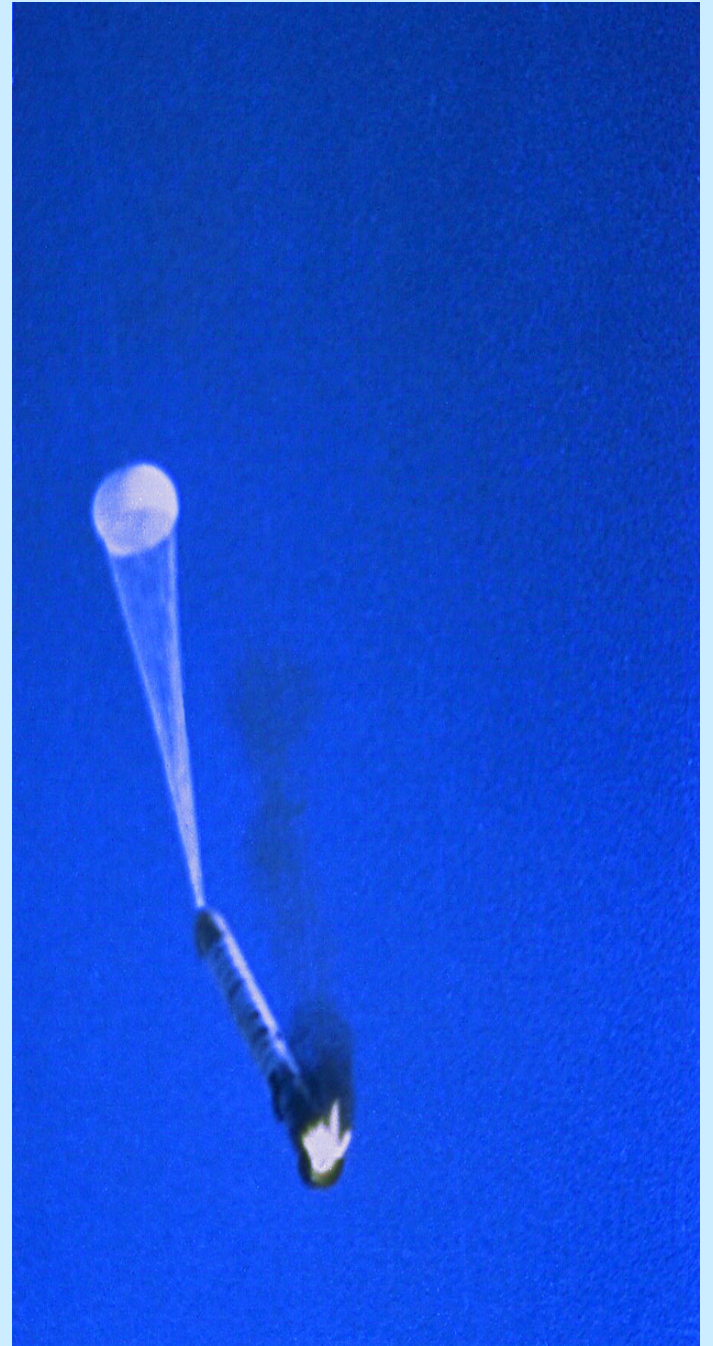
















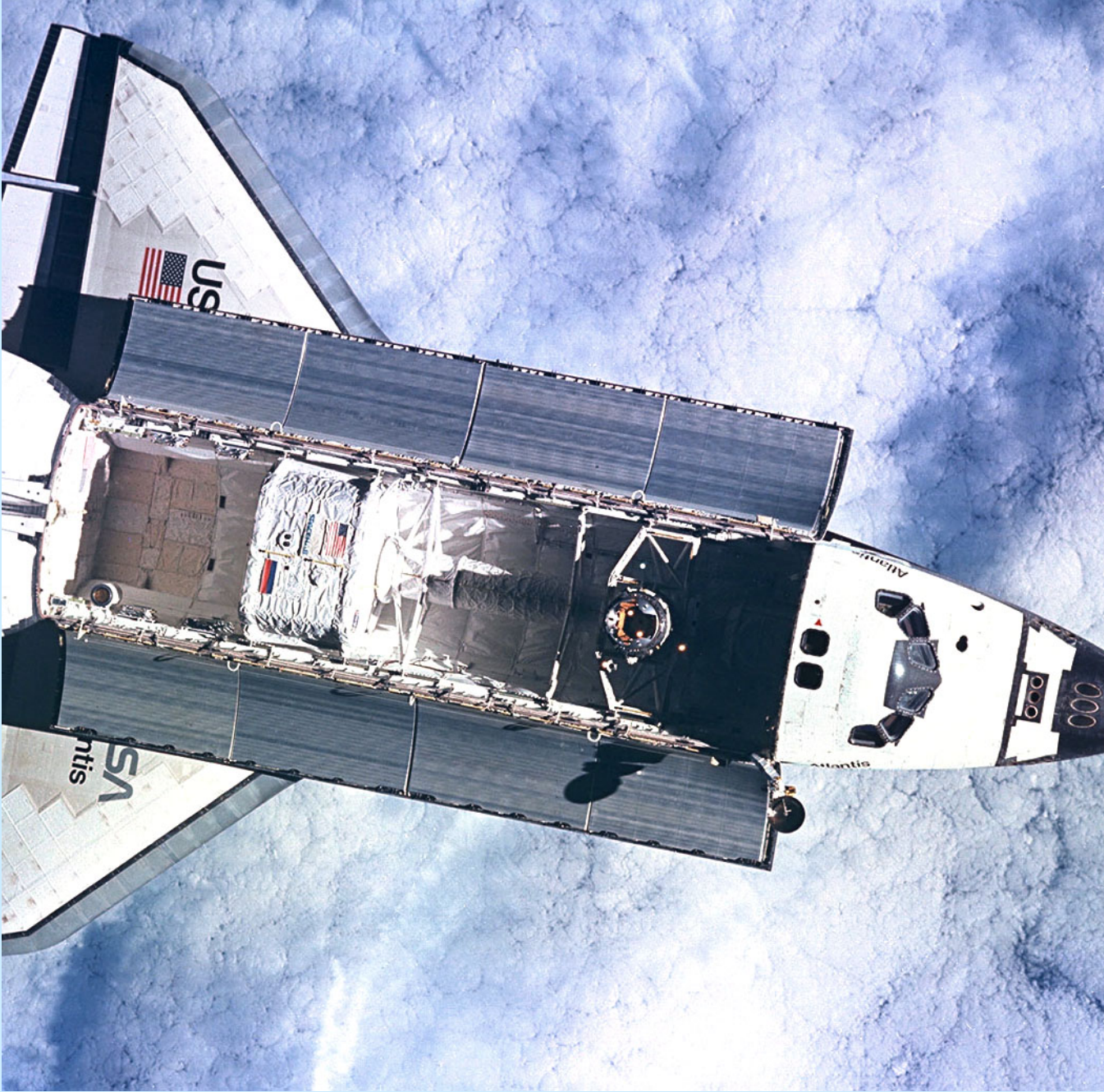












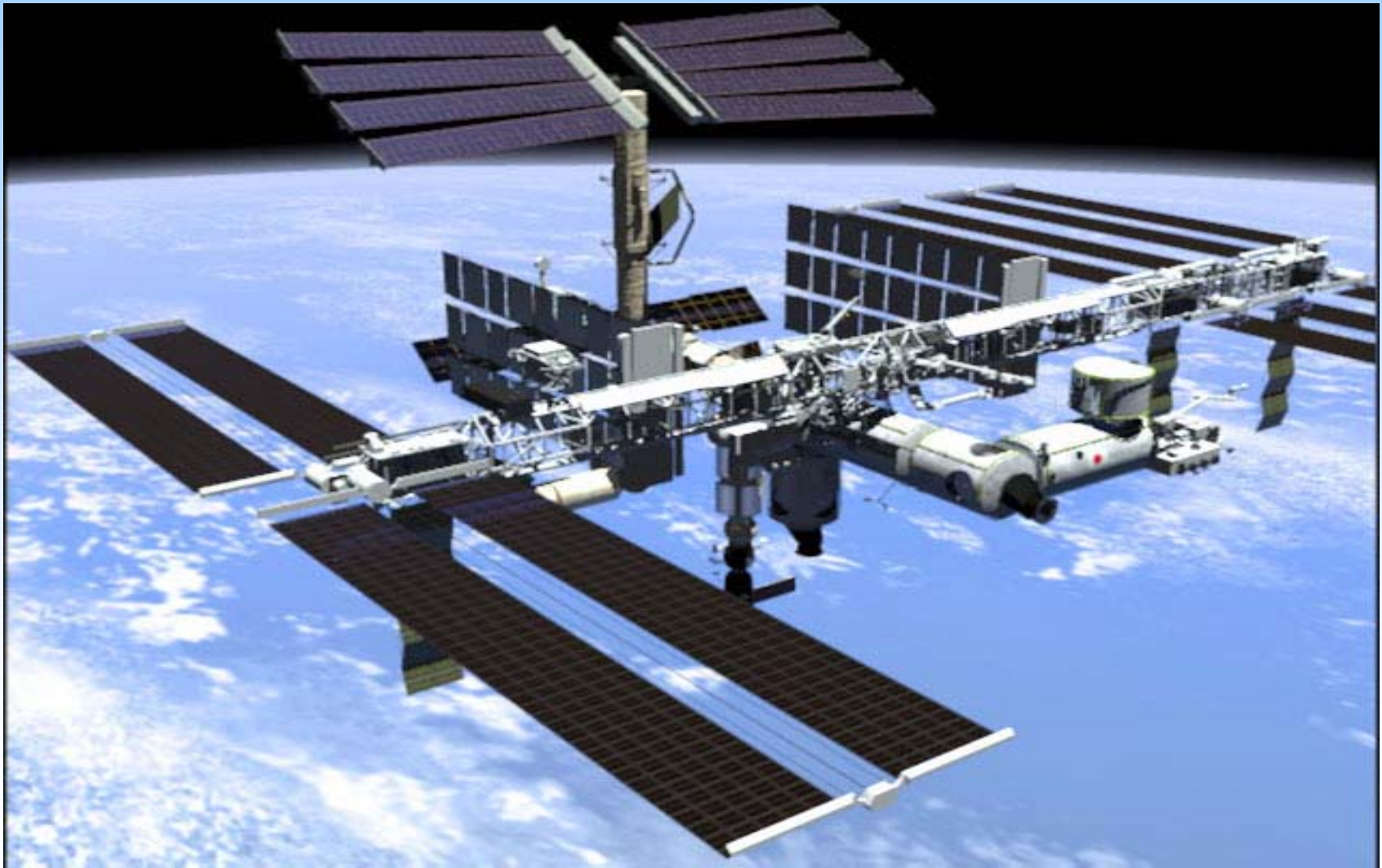






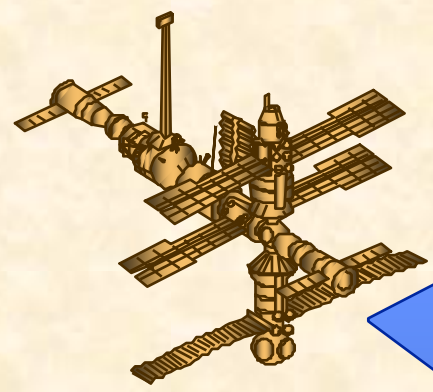


# The International Space Station

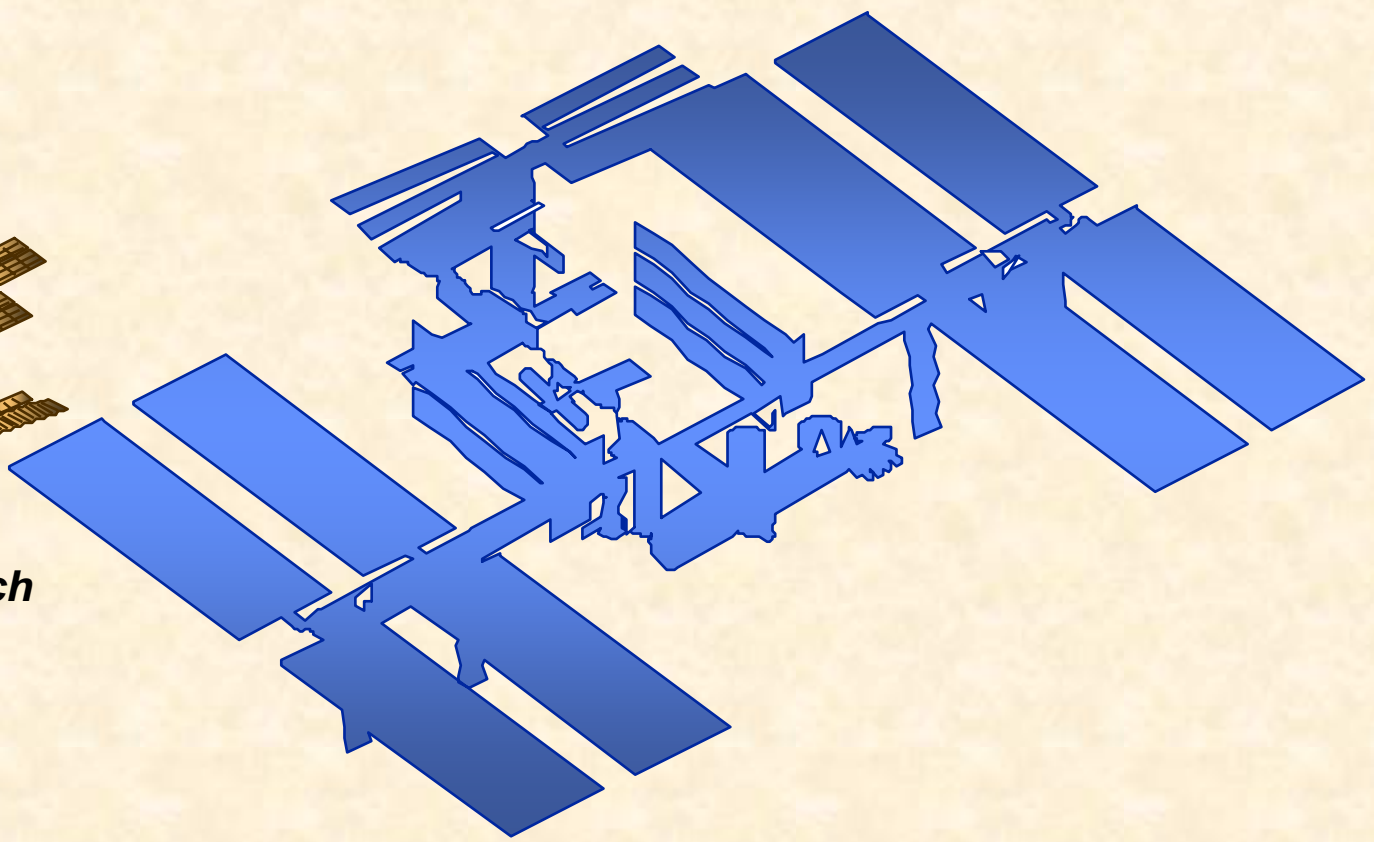




# Size Comparison of Mir and International Space Station



*Mir reference sketch*



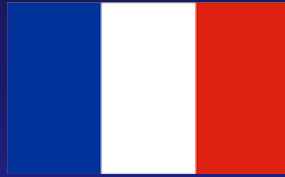
	<u>Length</u>	<u>Width</u>	<u>Height</u>	<u>Weight</u>
<i>Mir</i>	108 ft	98 ft	89 ft	90 metric tons
ISS	290 ft	358 ft	131 ft	406 metric tons



Belgium



Brazil



France



Spain



The Netherlands



Germany



Sweden



Canada



Norway



Italy



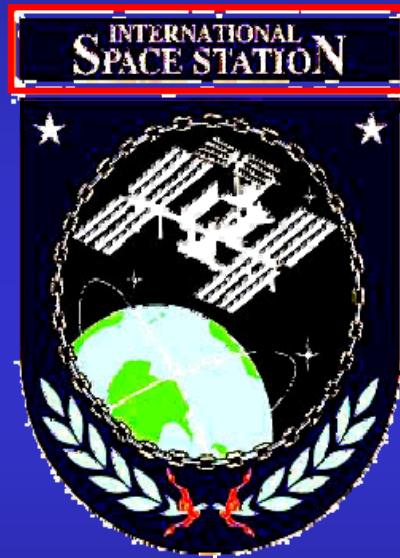
Russia



United Kingdom



United States



Japan



Denmark

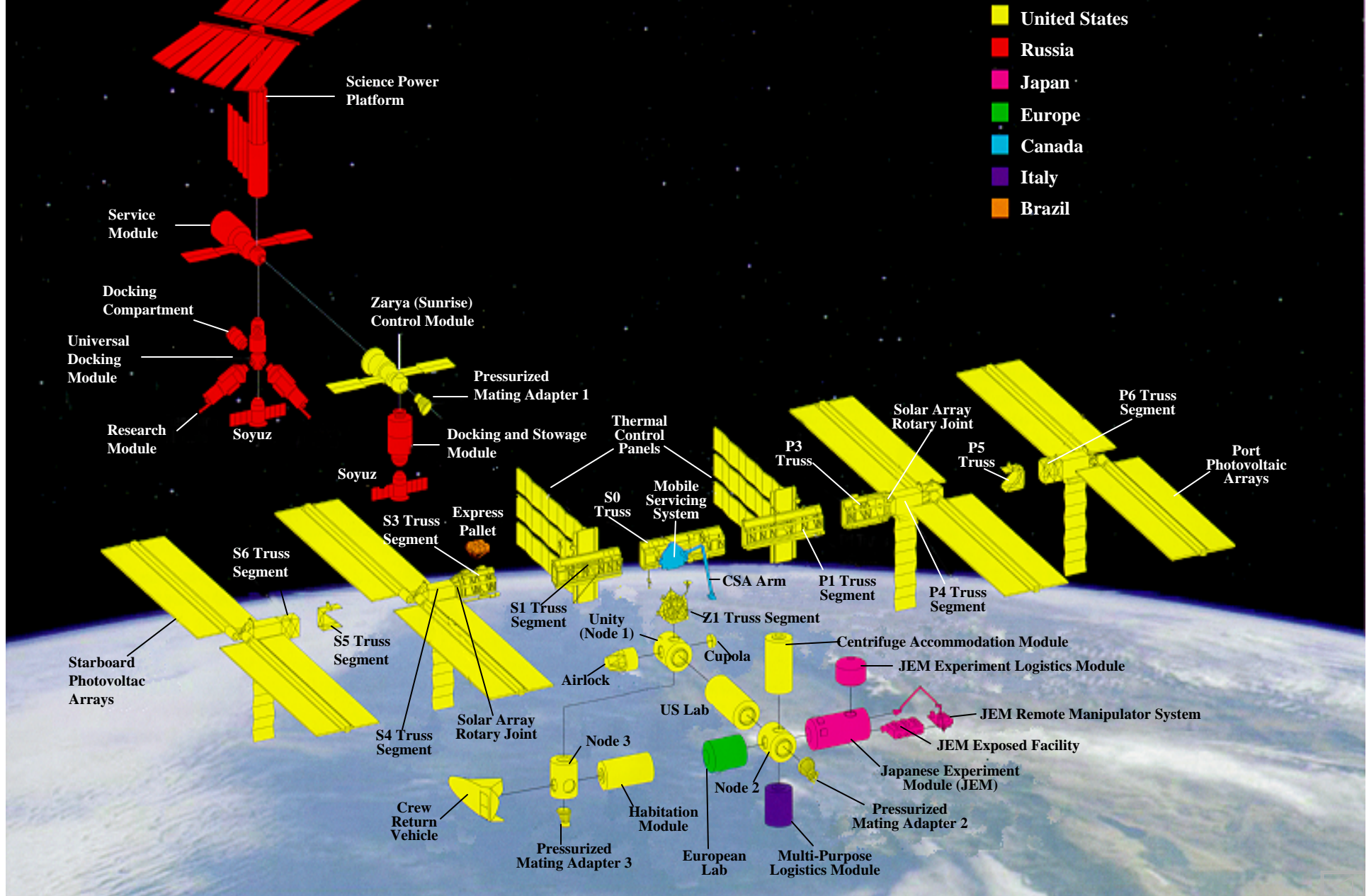


Switzerland





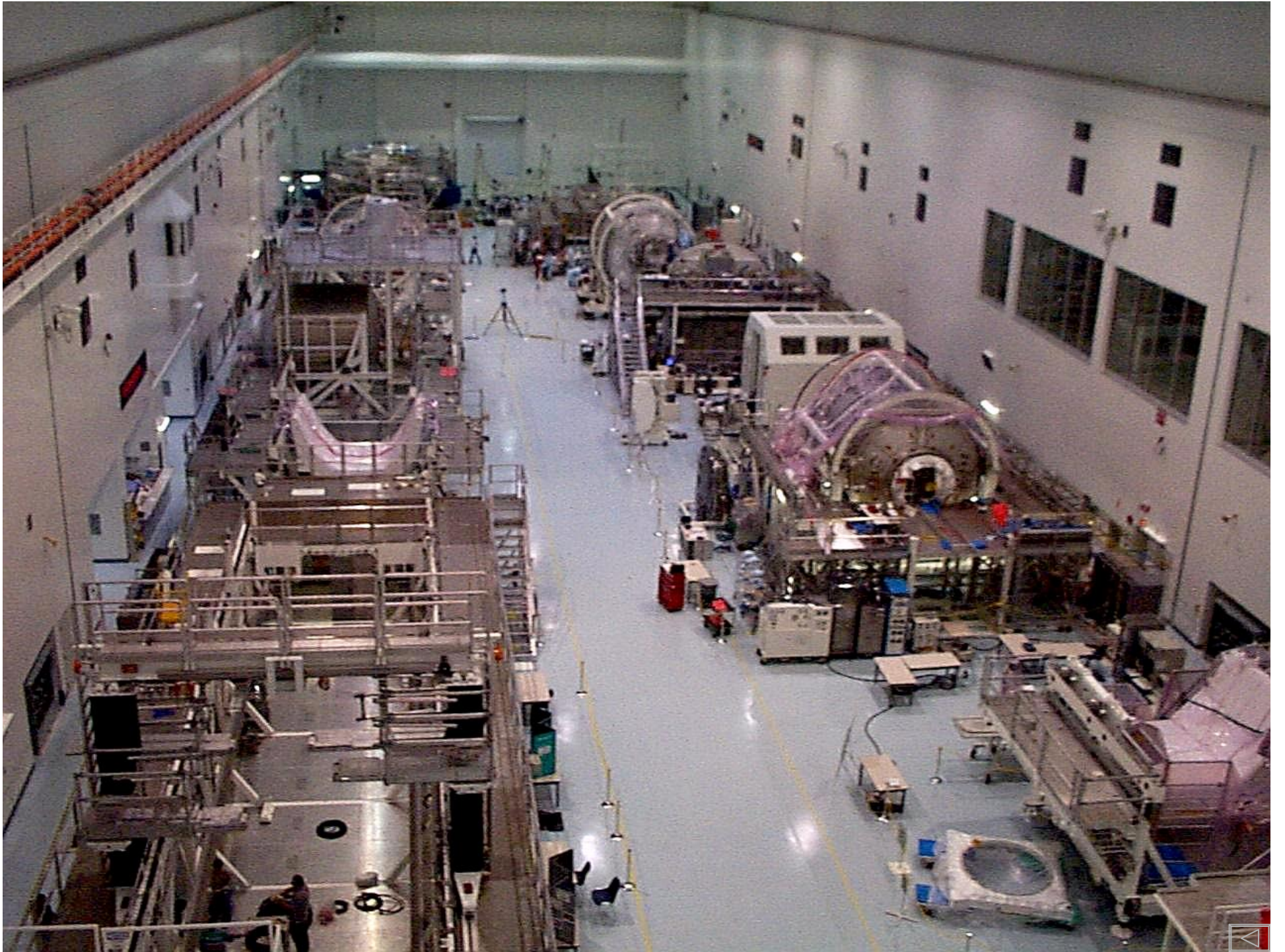
# International Space Station













# Space Station Mobile Servicing System

Mobil Transporter  
8A Mission

Mobil Base  
System  
UF-2 Mission

Arm  
Remote  
Manipulator  
System  
6A Mission

CSA

SPAR

Special  
Purpose  
Dexterous  
Manipulator  
UF-4 Mission

Canadian technology...

it's out of this world.

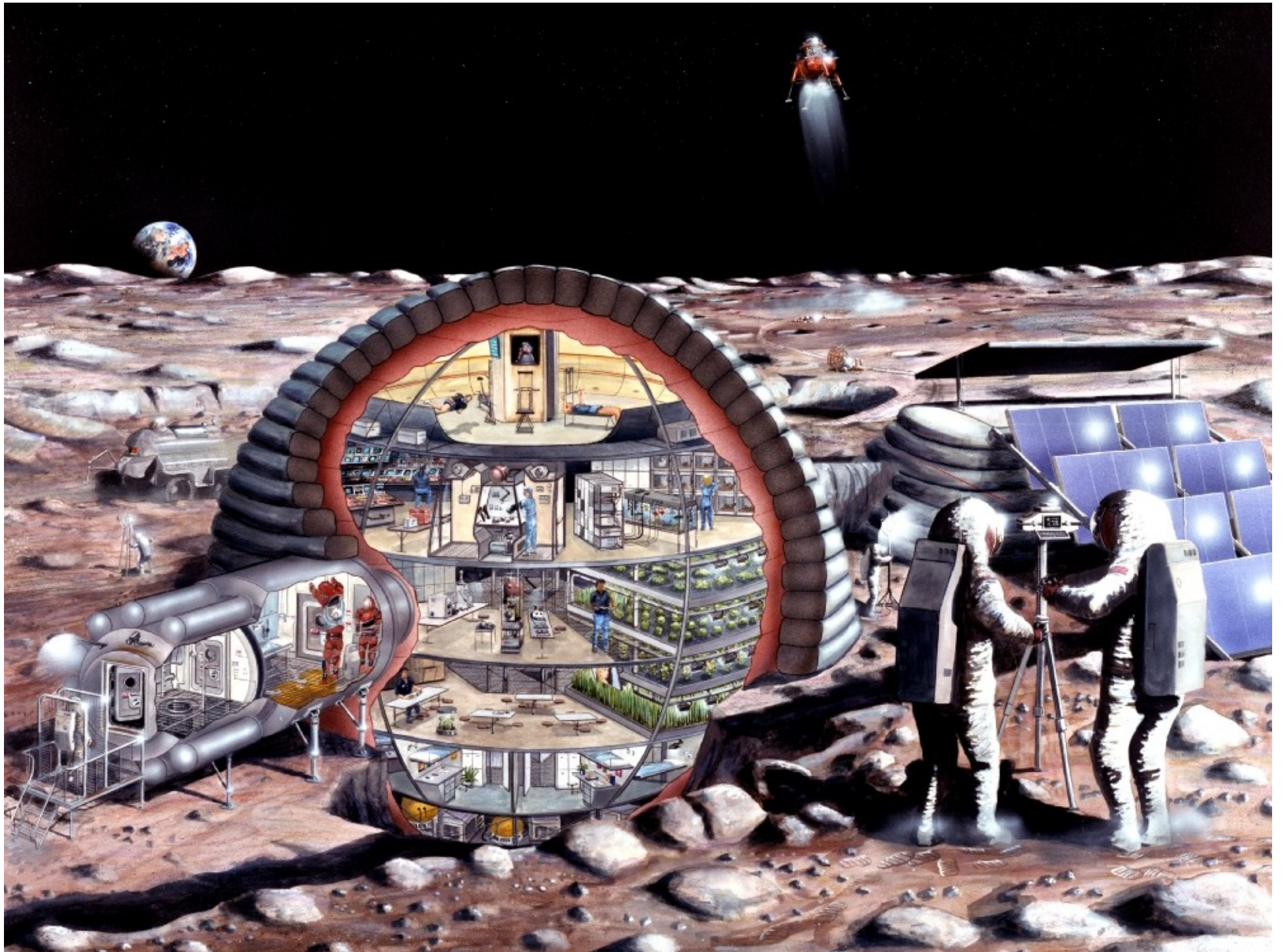








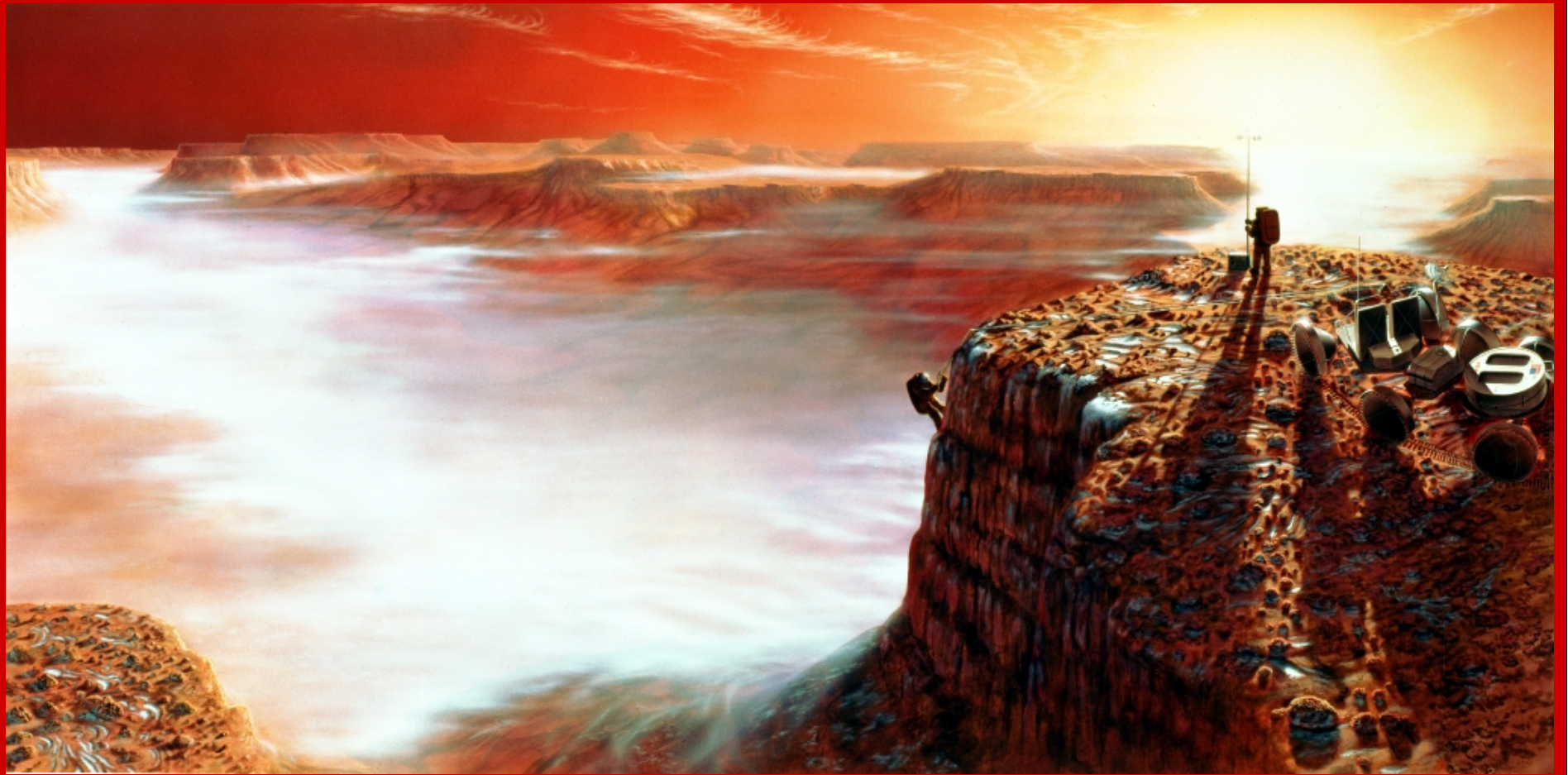


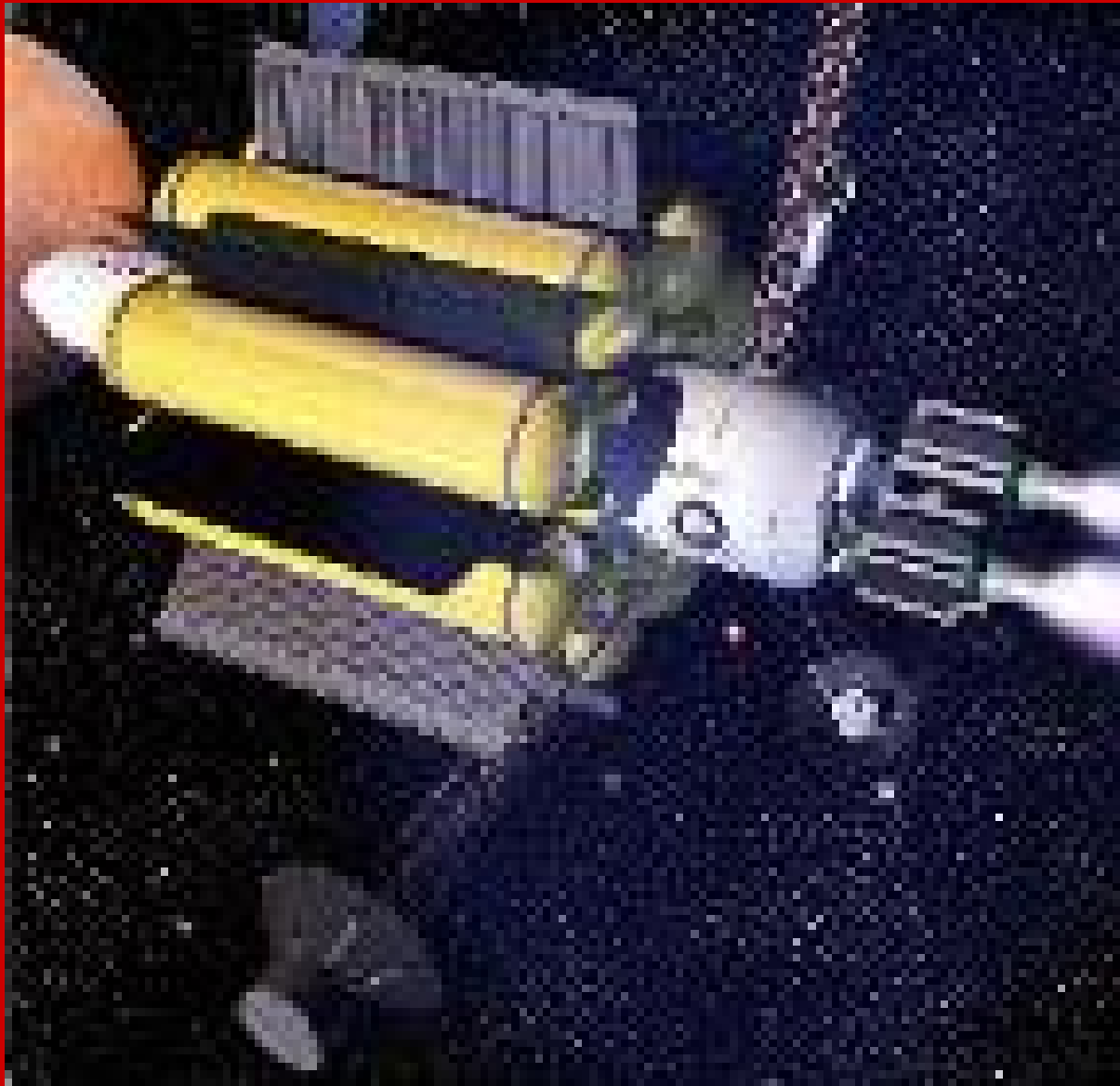




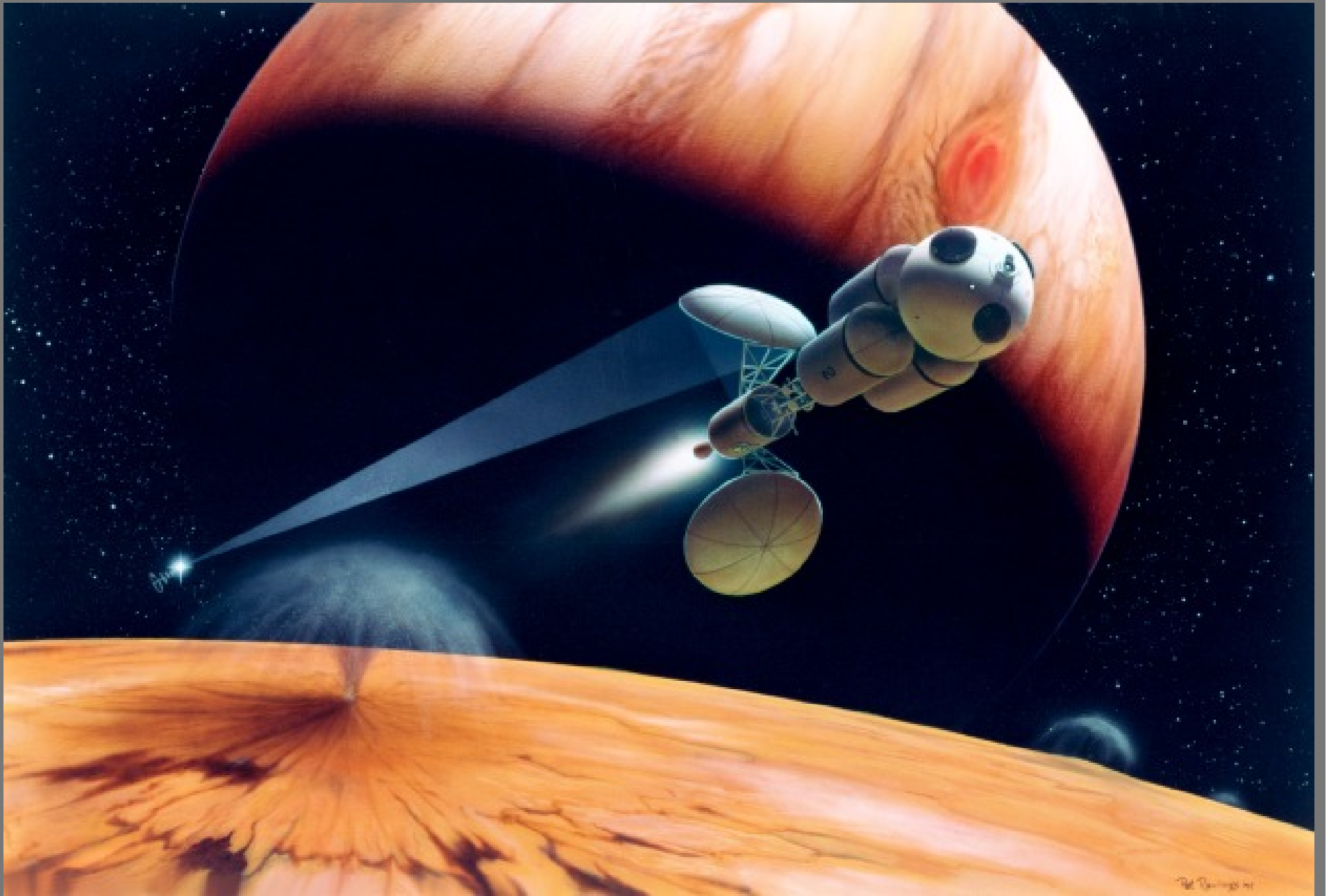


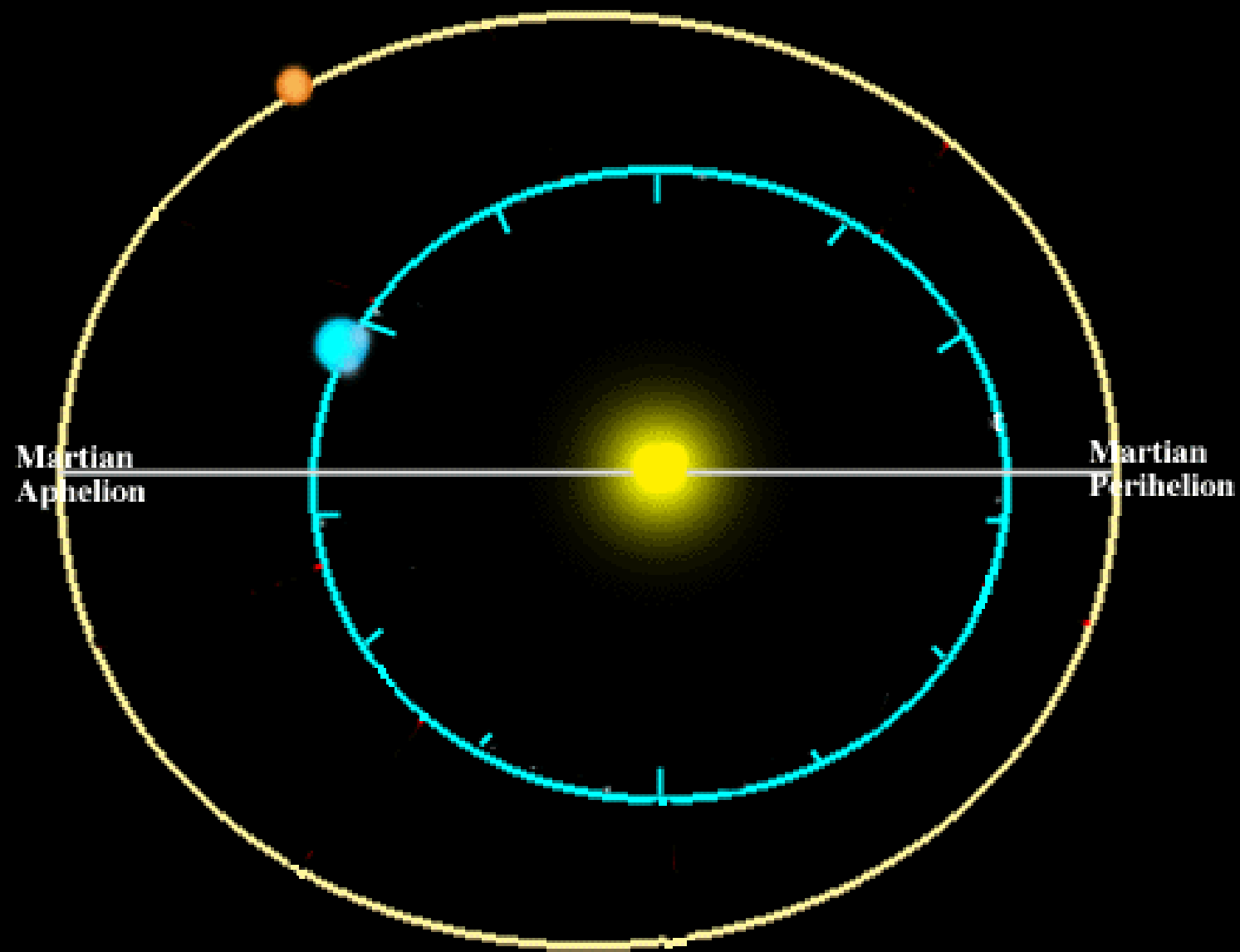










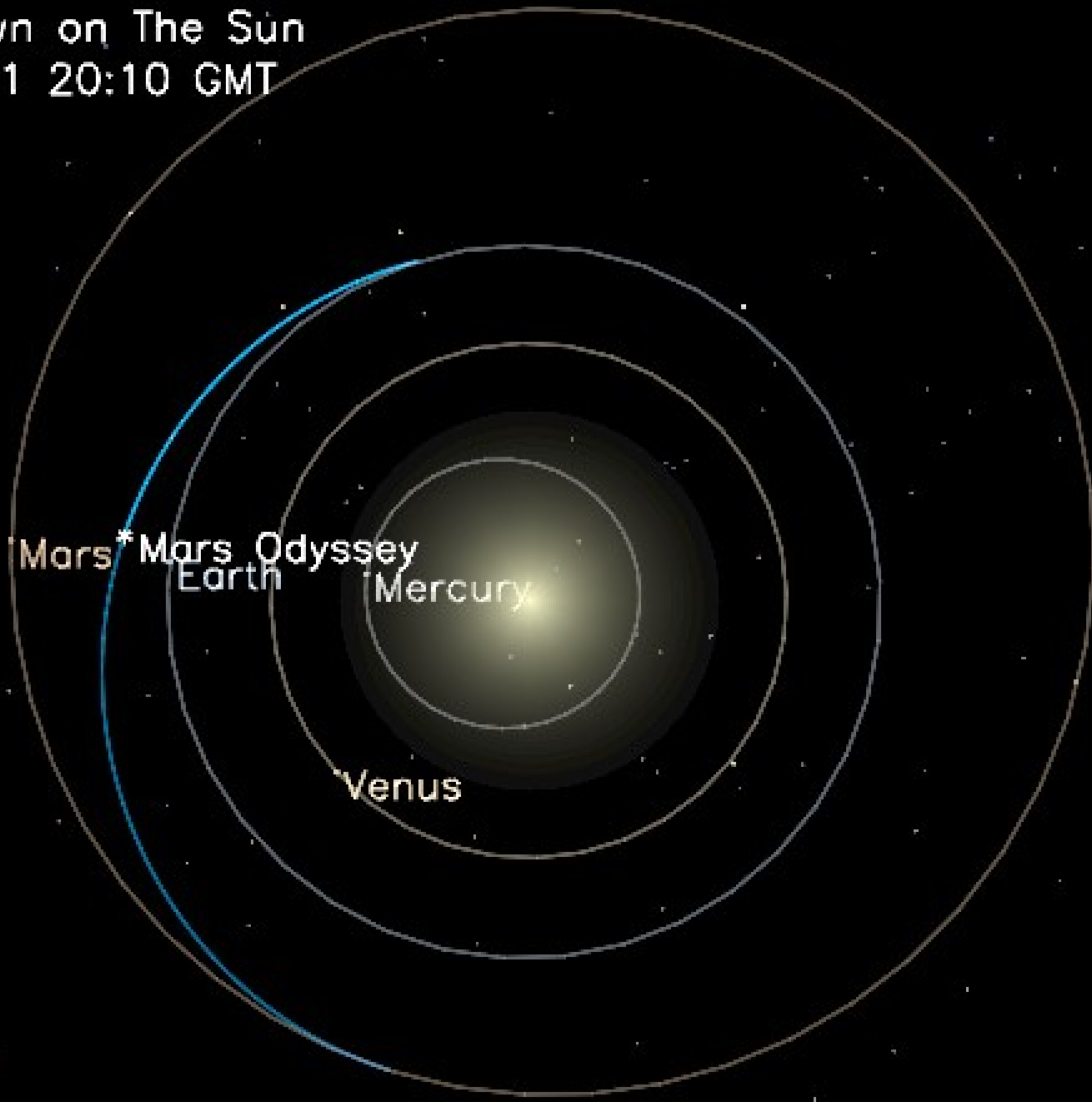


*Comparisons of Mars and Earth orbits*



Looking down on The Sun  
14 Jun 2001 20:10 GMT

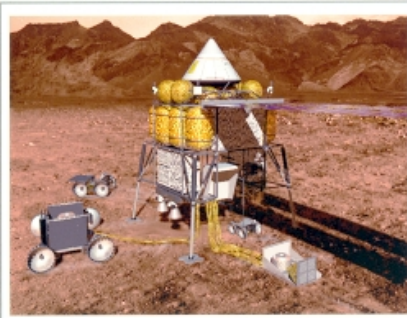
03e01



Solar System Simulator



1 Ascent Vehicle and Cargo Arrival



2 Ascent Propellant Production



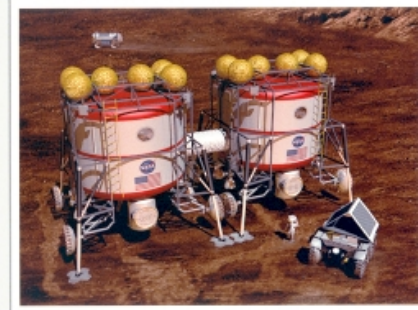
3 Arrival of Surface Habitat



4 Backup Ascent Vehicle and Exploration Systems



5 Crew Positions Habitation System



6 Outpost Overview



7 Crew Departs Mars



8 Rendezvous with Earth Return Vehicle



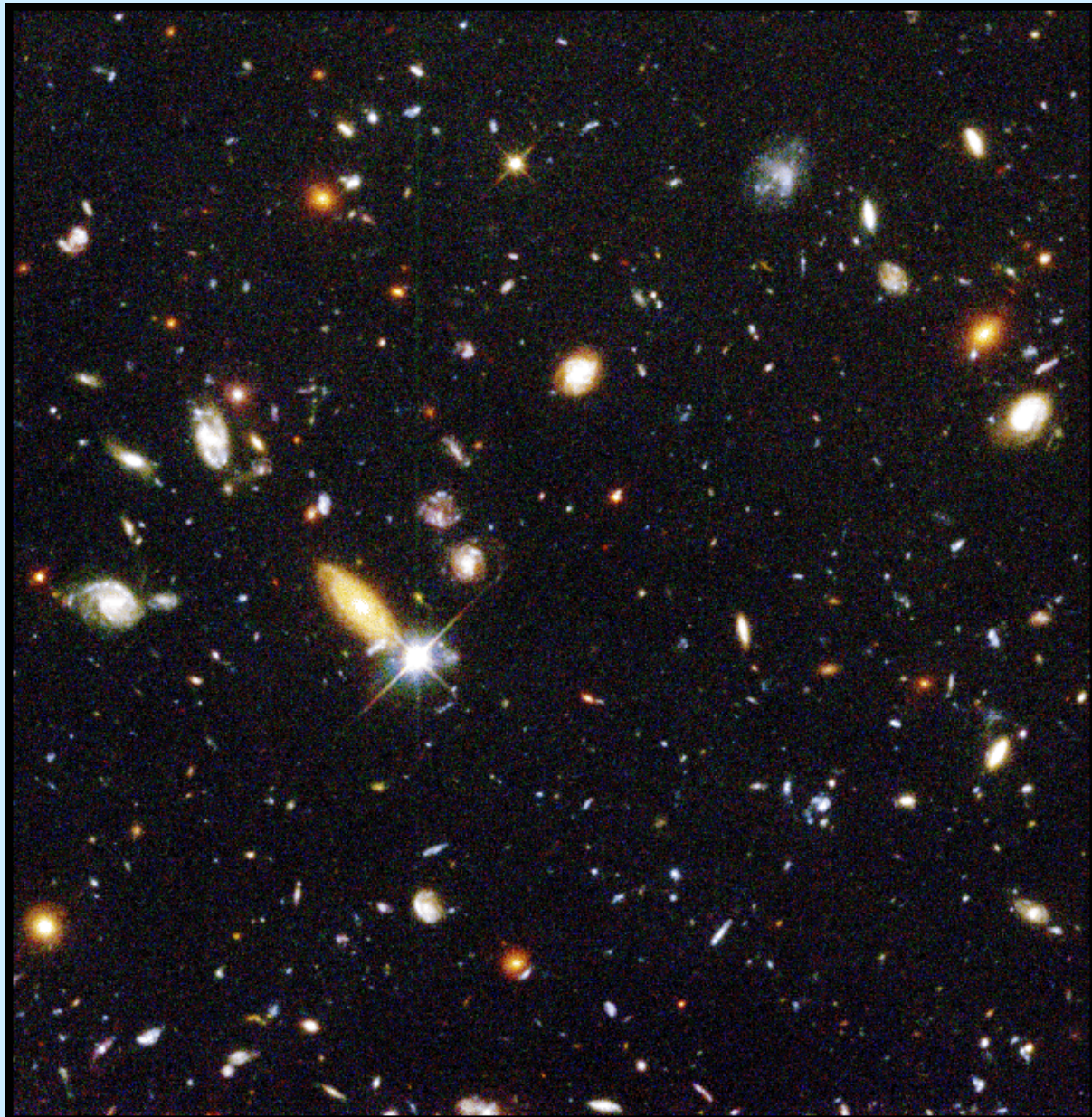
## Mars Mission Storyboard

AN EXPLORATION MISSION CONCEPT









**Hubble Deep Field**

**HST · WFPC2**

PRC96-01a · ST Scl OPO · January 15, 1996 · R. Williams (ST Scl), NASA



