Dare Mighty Things : A Short History of NASA's Jet Propulsion Laboratory

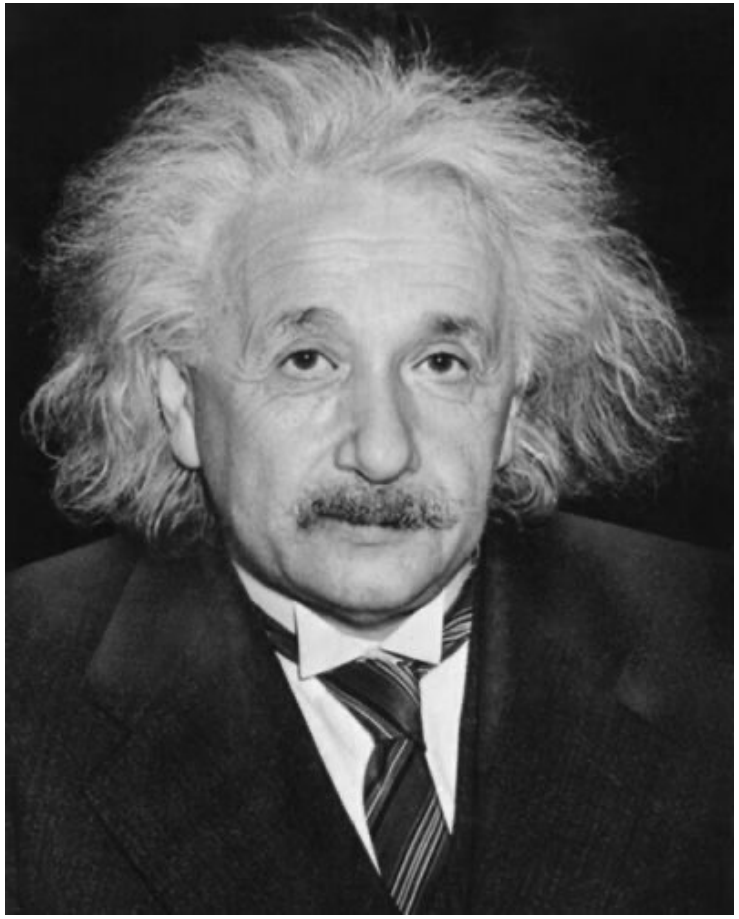
David H. Lehman
NASA / Jet Propulsion Laboratory,
Project Manager (Retired) and
Volunteer Solar System Ambassador

Reference: through out all these charts:
Eric Conway dated 20171109: Rockets to Spacecraft

Agenda

- Caltech
- JPL: The Early Days
- JPL: Shifting gears to Spacecraft
- JPL: The Modern Era and Beyond


CALIFORNIA INSTITUTE OF TECHNOLOGY
1891



JPL: The Early Days


WRIGHT

JPL: The Early Days

Reference: Erik Conway dated 20171109: Rockets to Spacecraft

October 31, 1936:
First Rocket Test by Founders of What Would Become the Jet Propulsion Laboratory

Left to right: Rudolph Schott, Apollo M. O. Smith, Frank Malina, Edward Forman, Jack Parsons.

Reference: Eric Conway dated 20171109: Rockets to Spacecraft

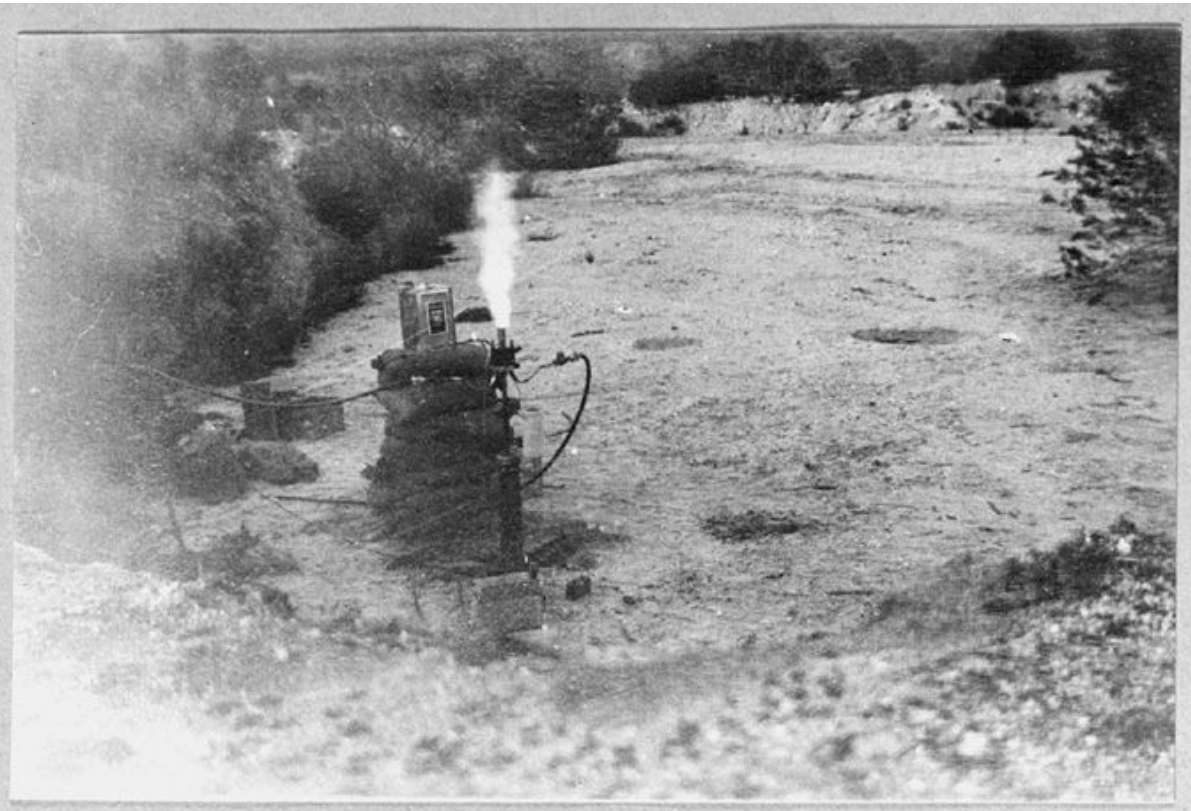


Photo 6

Motor with Fuel burning outside

Barby Canright

- JPL has been hiring brilliant women for significant scientific and engineering roles ever since Barby Canright in 1939, the first JPL female “human computer.”
- Ms. Canright was responsible for fundamental calculations related to rocket trajectory and determined thrust ratios that made planes airborne.

JET PROPULSION LABORATORY

GALCIT

CALIFORNIA INSTITUTE OF TECHNOLOGY

Pasadena, California

[redacted]

[redacted]

on

[redacted]

by Th. von Kármán

[redacted]

[redacted]

by H. S. Tsien and F. J. Malina

California Institute of Technology
November 20, 1943

A Douglas A-20 bomber testing JPL liquid-fueled Jet-Assisted Take Off motors in 1942. Credit: NASA/JPL-Caltech.

The photo is a V-2 being unloaded at JPL in June 1946.

More Human Computers at JPL

- Prior to the advent of electronic computers and digital computers, JPL relied on a group of female “human computer” to create essential calculations that supported experimentation. Prolific women such as ”Barby” Canright and Janez Lawson were included in this group.

- **JPL's Corporal E Round 31 launch at the U.S. Army's White Sands Proving Ground, on May 22, 1947.**
- **It had heritage to the 1943-era German V-2 rocket.**

Reference: Erik Conway dated 20171109: Rockets to Spacecraft

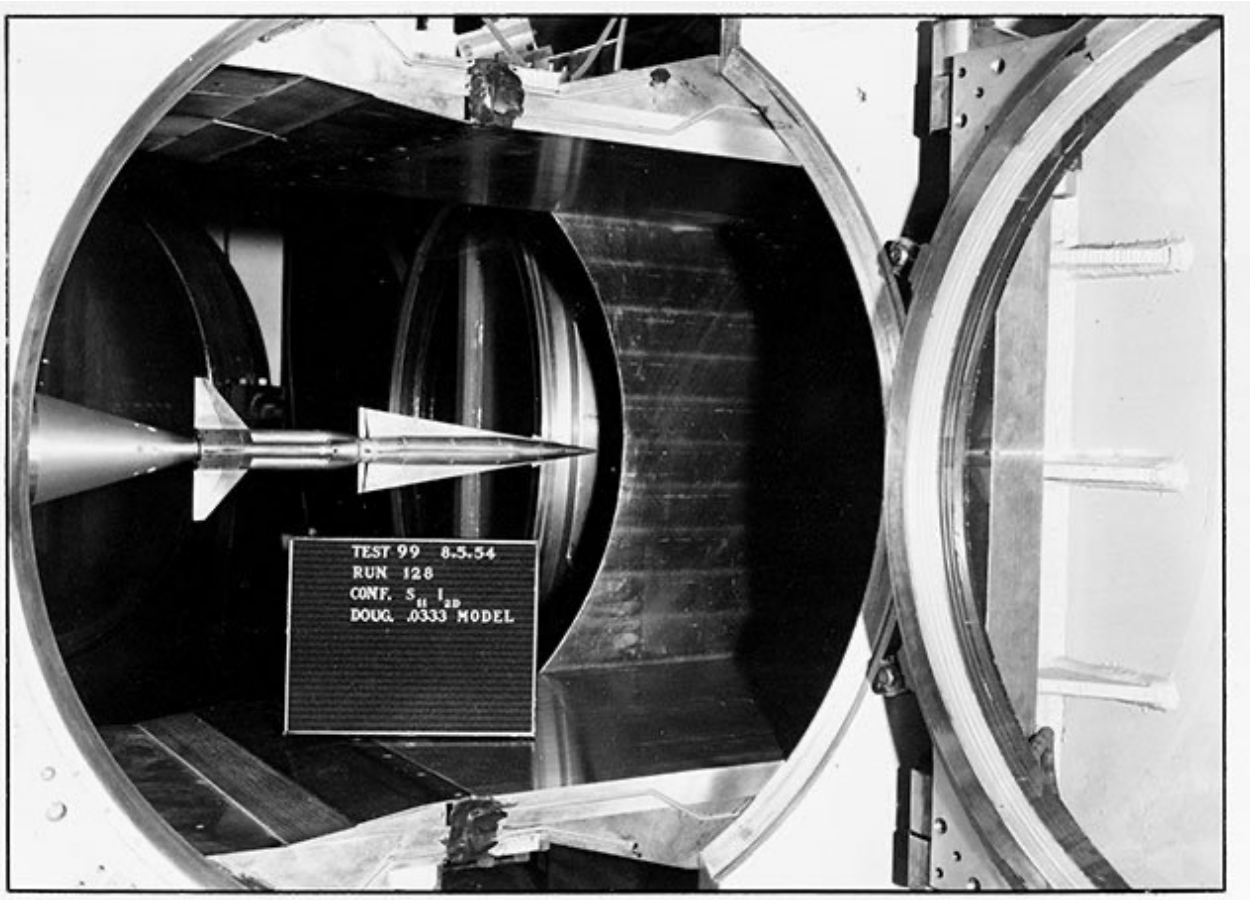


FIGURE 7. MISSILE - BOOSTER CONFIGURATION S_{II} I_{2D} INSTALLED IN THE WIND TUNNEL

CAPTION: Re-Entry Test Vehicle program's "Missile 27" on launcher, September 17, 1956.

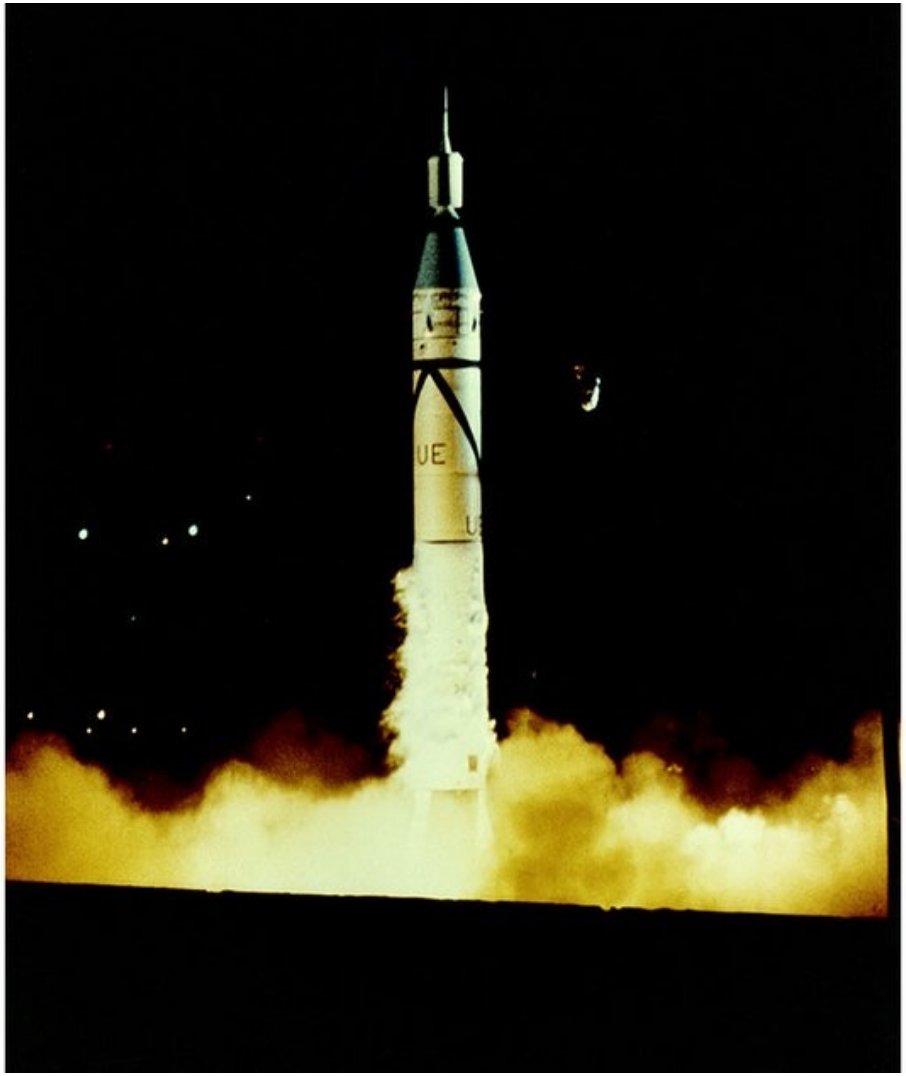
Credit: NASA/JPL-Caltech

CAPTION: U.S. President Dwight Eisenhower displaying the surviving 3rd Re-Entry Test Vehicle program mock warhead during a televised speech on November 7, 1957.

Credit: National Air and Space Museum, Smithsonian Institution

JPL: Shifting gears to Spacecraft

Launch of Explorer 1 on January 31, 1958.



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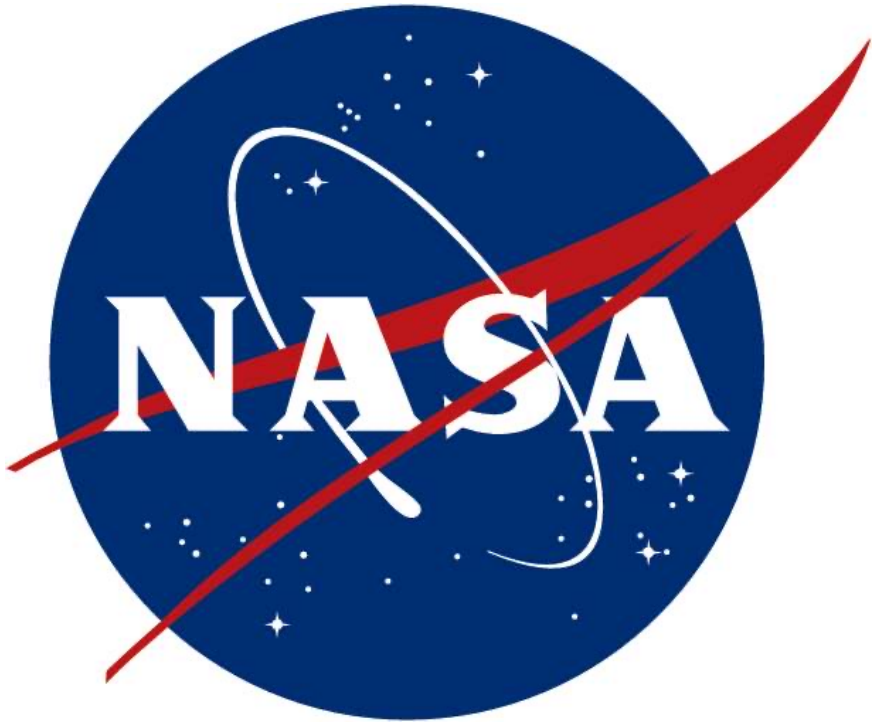
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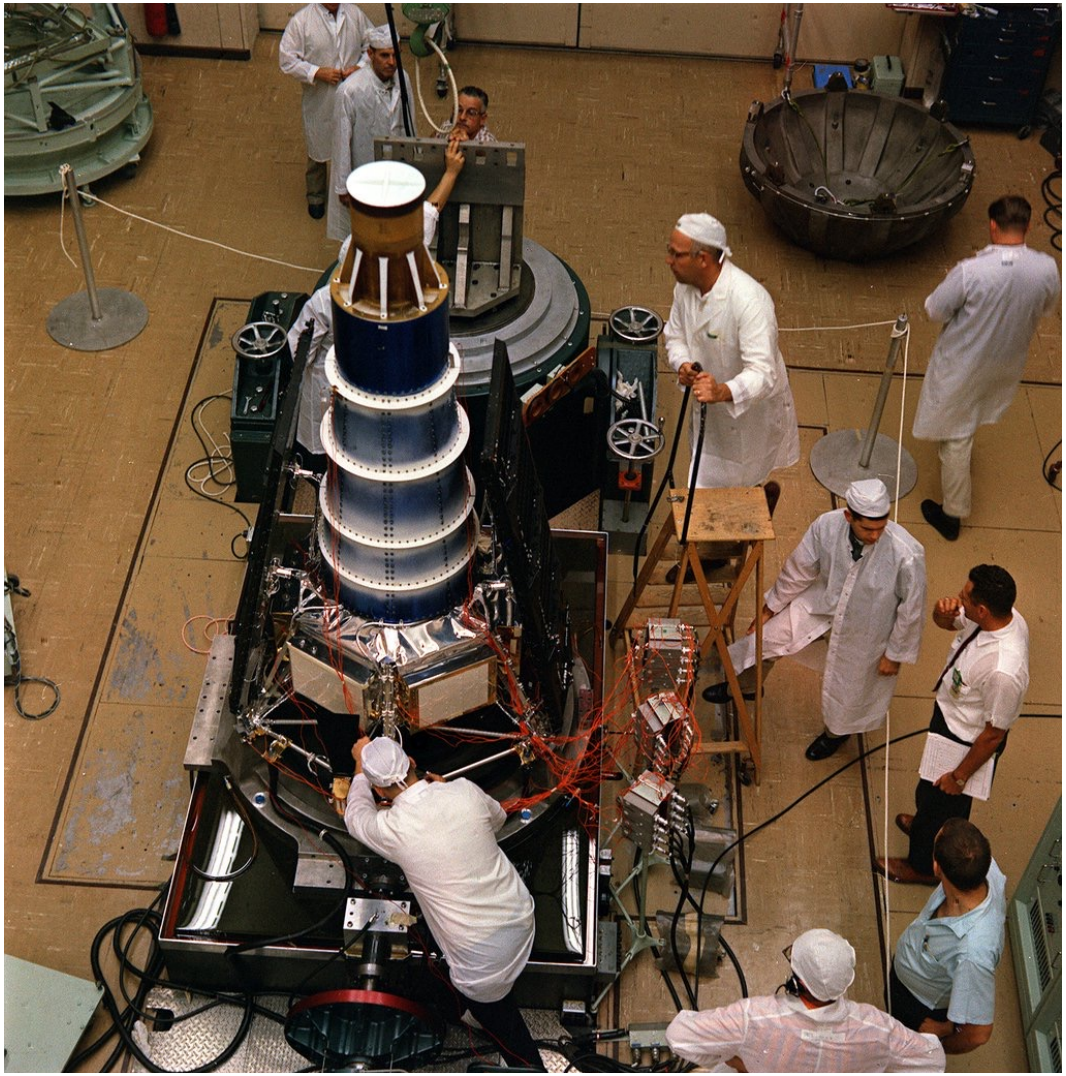


CAPTION: Ranger 6 under construction, September 24, 1963.

Credit: NASA/JPL-Caltech

Mariner 4

- JPL's Mariner 4 was the first successful mission to Mars, returning a handful of shocking images after a short 1965 flyby showing a cratered, Moon-like surface.
- In 1971, Mariner 9 became the first spacecraft to orbit another planet, imaging almost the entire surface of Mars.

CAPTION: JPL Director William Pickering with a model of the Mariner 4 spacecraft, circa 1965. Credit: NASA/JPL-Caltech

CAPTION:
Viking Lander integration.

Credit:
NASA/JPL-Caltech


HONK if you love the Sierra Madre Rotary Club!

CAPTION: A Voyager awaiting encapsulation at Kennedy Space Center, August 4, 1977.

Credit: NASA/JPL-Caltech

CAPTION: The 64-meter "Mars" antenna at the Goldstone Deep Space Network station in California in 1970. It was later expanded to a 70-meter diameter. It also has radar capabilities.

Credit: NASA/JPL-Caltech

CAPTION: Galileo deployment from space shuttle Atlantis, October 1989.

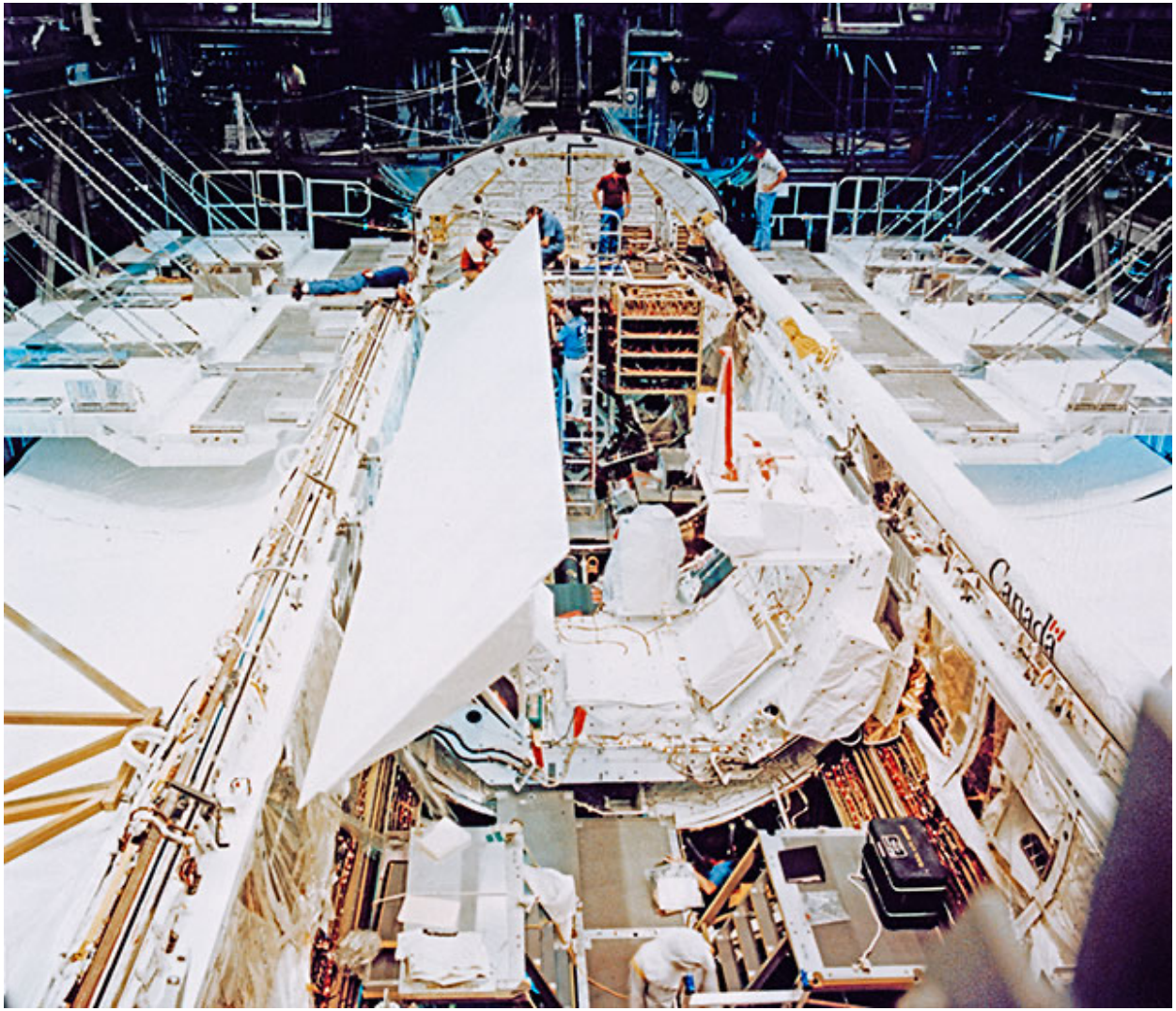
Credit: NASA/JPL-Caltech

CAPTION: JPL's Wide Field and Planetary Camera being replaced during Servicing Mission 1, December 1993.

Credit: NASA/JPL-Caltech

CAPTION: JPL's synthetic aperture radar, SIR-A, being installed in space shuttle Shuttle Columbia in August 1981.

Credit: NASA/JPL-Caltech



David's Background

- I worked for 40-years at NASAs Jet Propulsion Laboratory of the California Institute of Technology (Caltech)
- Projects included Mars Pathfinder Avionics Technical Manager
    - First Planetary Rover (July 4, 1997)*

Reference* https://www.jpl.nasa.gov/timeline/

Donna Shirley
Manager of the Jet Propulsion Laboratory's Mars Exploration Program
with DANELLE MORTON
Managing Martians
The extraordinary story of a woman's lifelong quest to "get to Mars"—and of the team behind the space robot that has captured the imagination of the world
"An engaging story. . . . Anyone who wants an insider's look at America's space program or a glimpse of its strengths and weaknesses will enjoy Managing Martians."
—Discover


Marvina the Martian

* Reference: From page 11 of a presentation by JPLer Brian Muirhead entitled "*Take Risk Don't Fail* - Challenges and Power of Exploration from Space" on March 18, 2023.

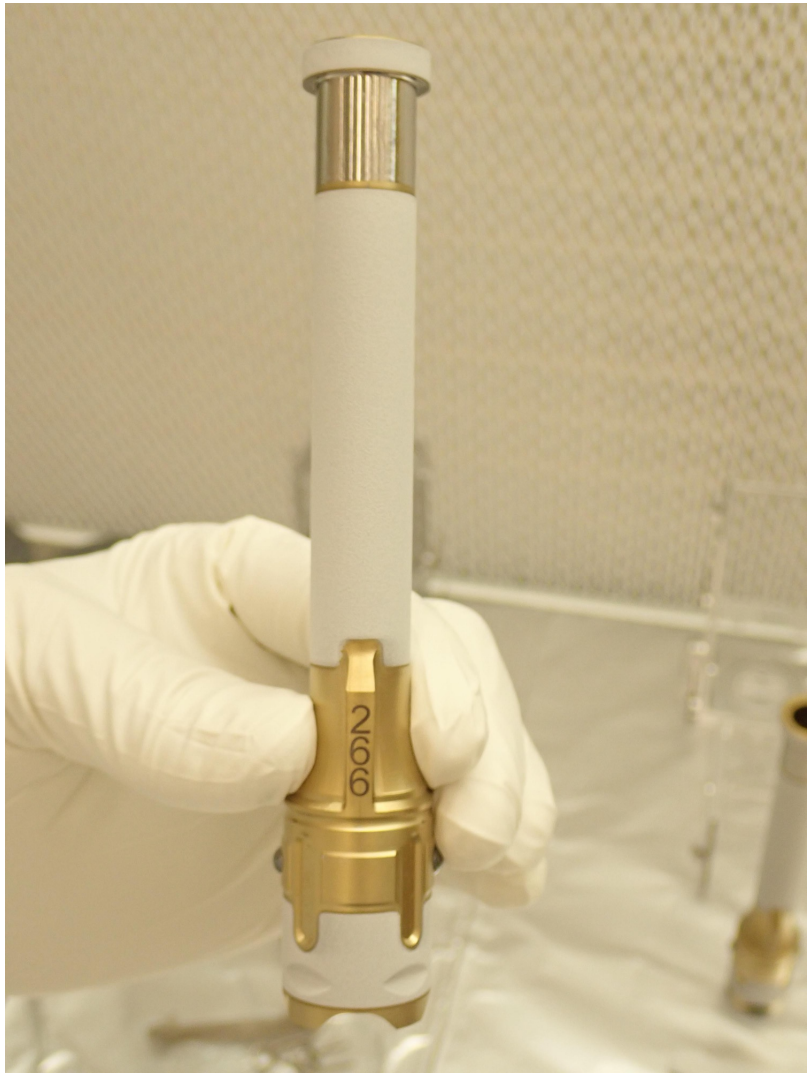
JPL: The Modern Era and Beyond

NASA’s JPL Director Dr. Laurie Leshin.

NASA JPL’s Deputy Director Leslie Livesay


NASA
JPL
EUROPA CLIPPER


NASA’s Perseverance Mars rover
landed on Mars on February 18, 2021.
It took this selfie over a rock
nicknamed “Rochette,” on
September10, 2021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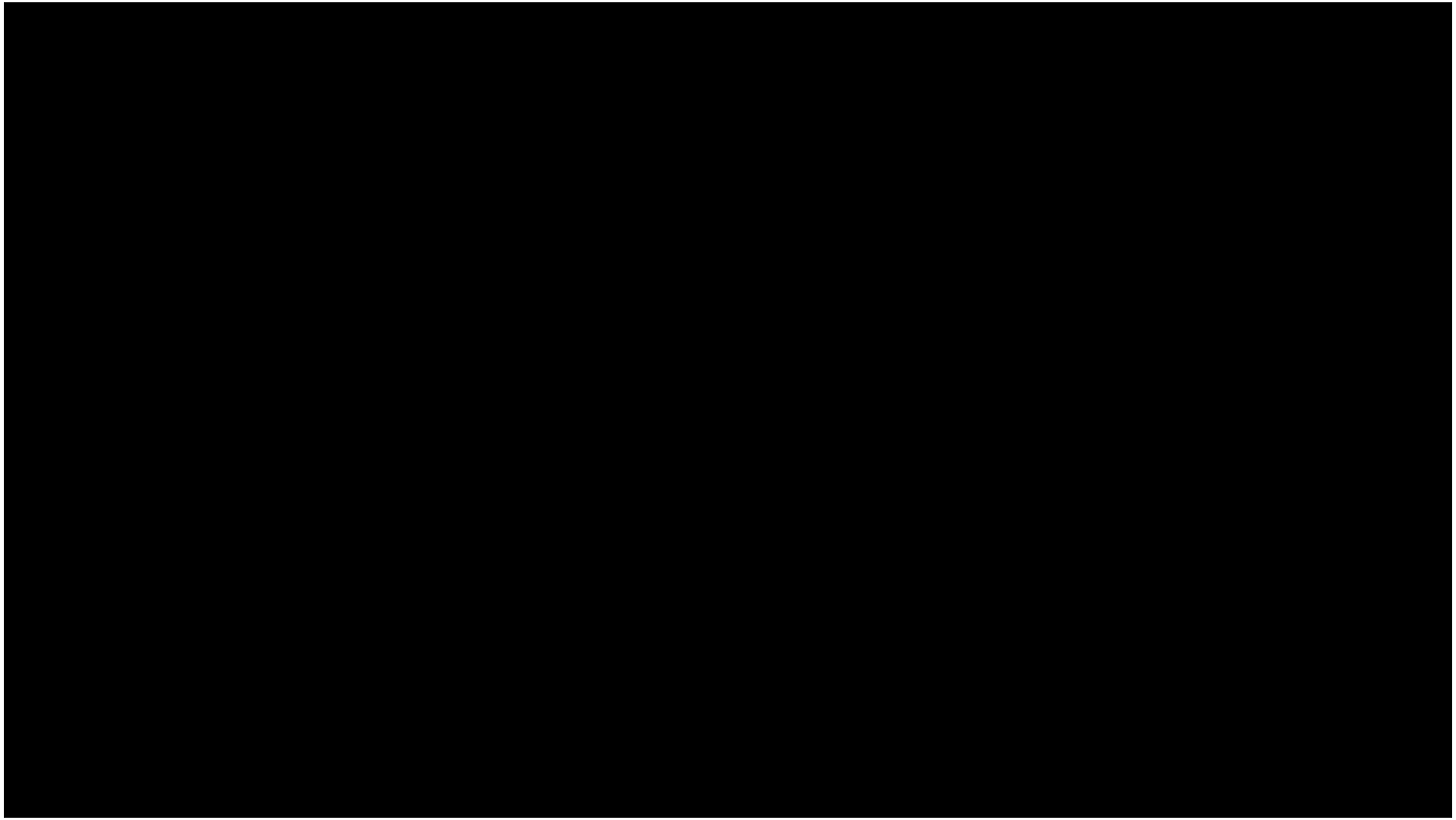


National Aeronautics and
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THE EVOLUTION OF A MARTIAN
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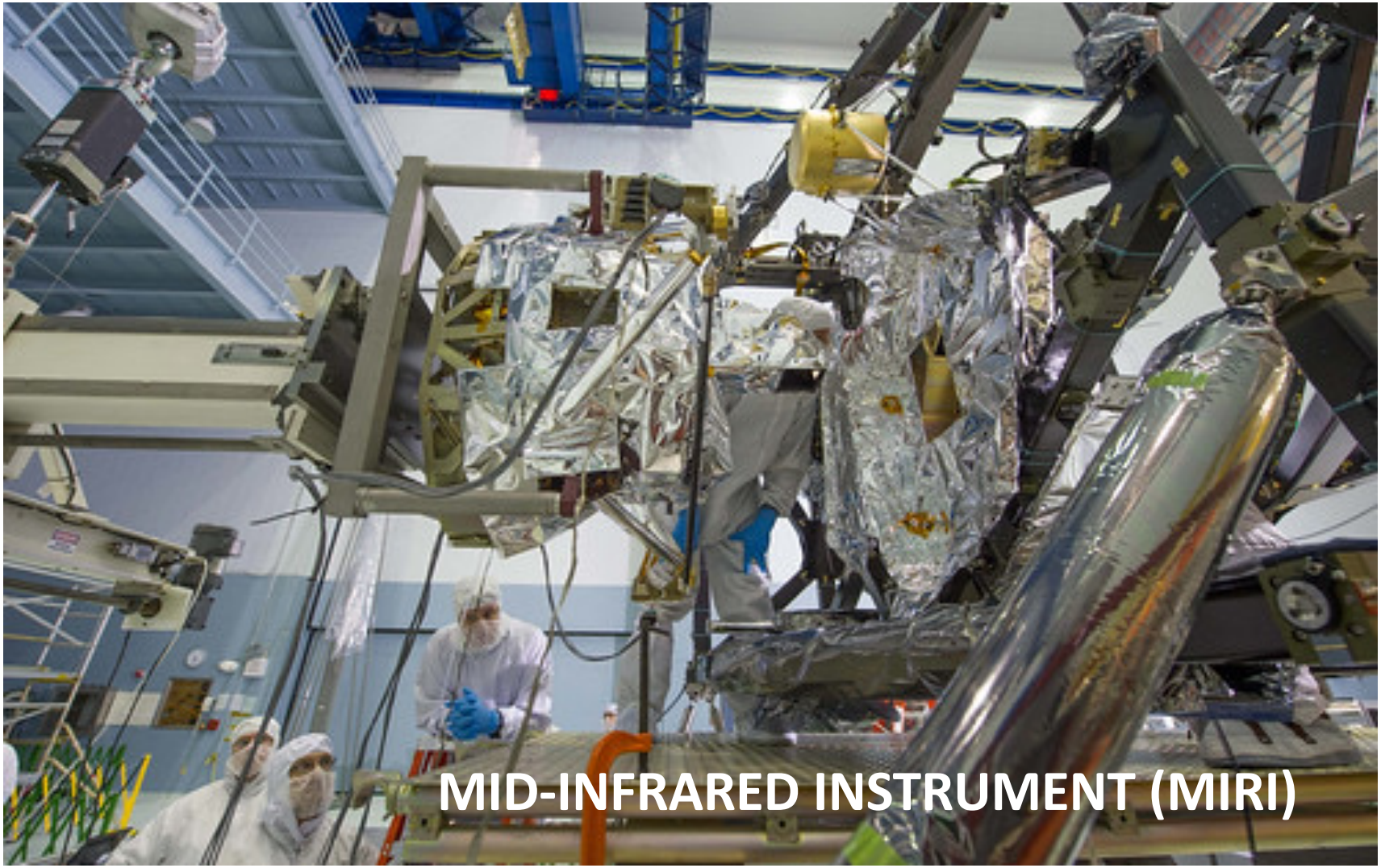
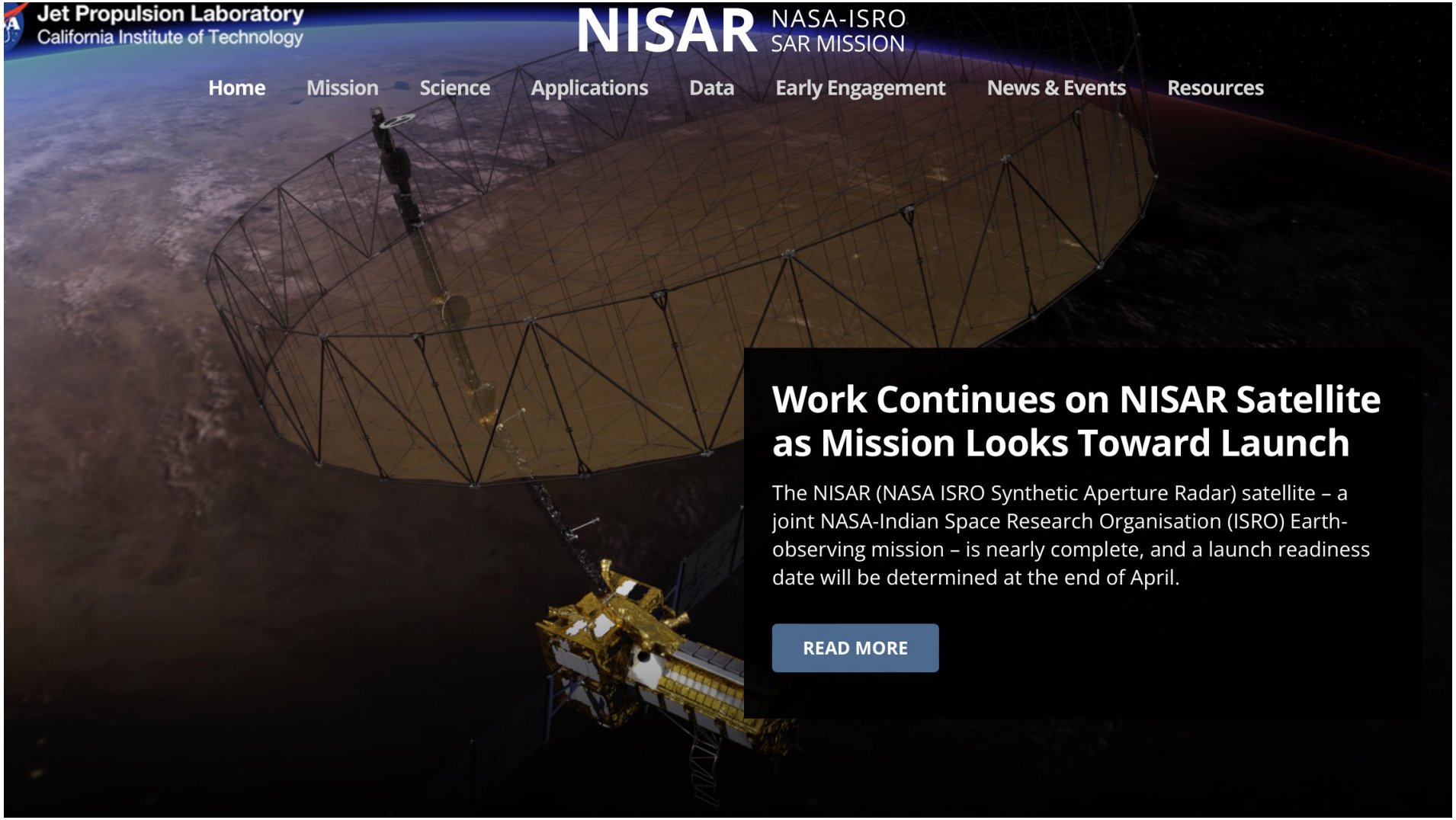
Should future Mars missions have all-female crews?

Artist's depiction of a female astronaut on the surface of Mars. (Image credit: janiecbros/Getty Images)


Thank You for being here.

Back Up


MID-INFRARED INSTRUMENT (MIRI)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SAR MISSION
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Work Continues on NISAR Satellite as Mission Looks Toward Launch
The NISAR (NASA ISRO Synthetic Aperture Radar) satellite – a joint NASA-Indian Space Research Organisation (ISRO) Earth-observing mission – is nearly complete, and a launch readiness date will be determined at the end of April.
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