
VOYAGER 2
LAUNCHED AUGUST 20 1977
DISTANCES
EARTH 2,736,460,250 MI
NEPTUNE 5,916,184 MI
SPEED TO NEPTUNE 37,546 MPH
POSITIONS AUG 18
MAGELLAN
LAUNCHED MAY 4 1989
DISTANCES
EARTH 21,176,214 MI
VENUS 107,652,003 MI
SPEED REL SUN 75,229 MPH
GALILEO LAUNCH -55 DAYS
VOYAGER 1
SATURN
URANUS
1 24 86
TUNE
89


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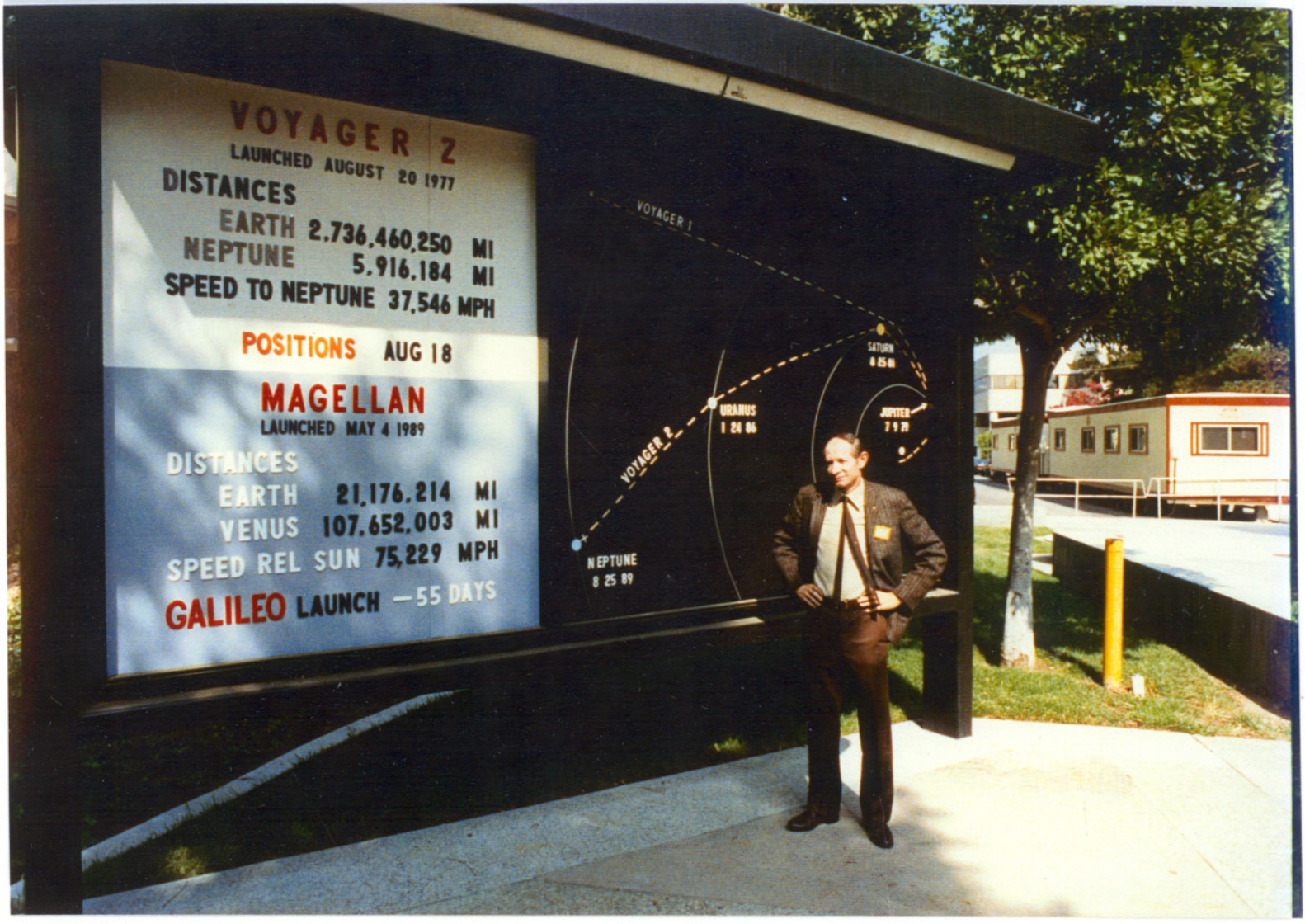
1 24 86
JUPITER
7 9 79
VOYAGER 2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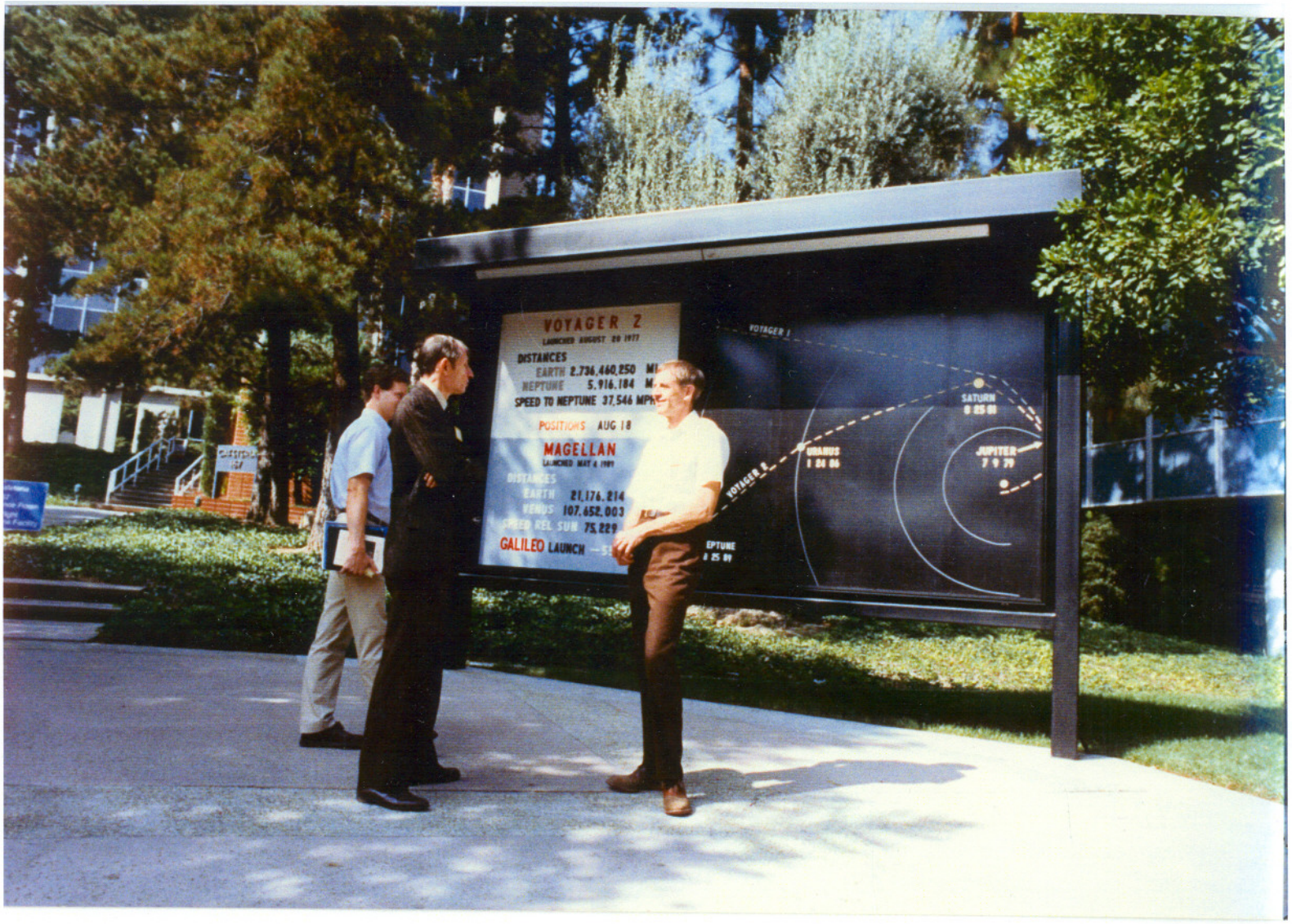
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Pictures of Minovitch being congratulated at JPL for the Voyager 2 gravity-assist mission by Charles Kohlhase trajectory manager for the Voyager 2 mission. Pictures taken on August 26, 1989 during the Voyager 2 flyby of Neptune. Kohlhase was one of about 50 JPL engineers who attended the February 4, 1963 seminar Minovitch gave to JPL's Systems Analysis Section describing his invention of gravity propelled interplanetary space travel.

Langley

JET PROPULSION LABORATORY INTEROFFICE MEMORANDUM

February 5, 1963

NOTICE

Section 312 Seminar

Mike Minovich will continue his discussion of "Multiple Planet Trajectories" today

TIME: 3:15 PM

PLACE: 202-243 (Large Conference Room)

JL:msb

Reproduction of the original notice that JPL's Systems Analysis Section (312) passed out to their technical staff on February 5, 1963 announcing the second seminar that Minovitch presented describing how his invention of gravity propelled space travel made it not only possible but easy to explore the entire solar system. Very few engineers understood the theory or recognized the significance of the invention at that time. 26 years later after Minovitch gave those seminars at JPL in 1963 the Voyager 2 Earth – Jupiter – Saturn – Uranus – Neptune gravity-assist mission was approaching Neptune on one of many gravity-assist missions that made it possible to explore the entire solar system with instrumented spacecraft.


JULY
AUGUST

Picture of Minovitch at JPL with a few of JPL's technical staff celebrating the Voyager 2 flyby of Neptune on August 26, 1989. At the time this picture was taken Voyager 2 was transmitting fantastic high-resolution pictures of some of Neptune's satellites to JPL via JPL's Deep-Space communications network. The person pointing to TV monitor is William Kosmann and the person to his left is Rex Ridenoure.

Pictures of Minovitch at JPL with a few of JPL's technical staff (Rex Ridenoure and William Kosmann) celebrating the Voyager 2 flyby of Neptune on August 26, 1989. At the time these pictures were taken Voyager 2 was transmitting fantastic high-resolution pictures of some of Neptune's satellites and rings to JPL for processing via JPL's Deep-Space communications network.

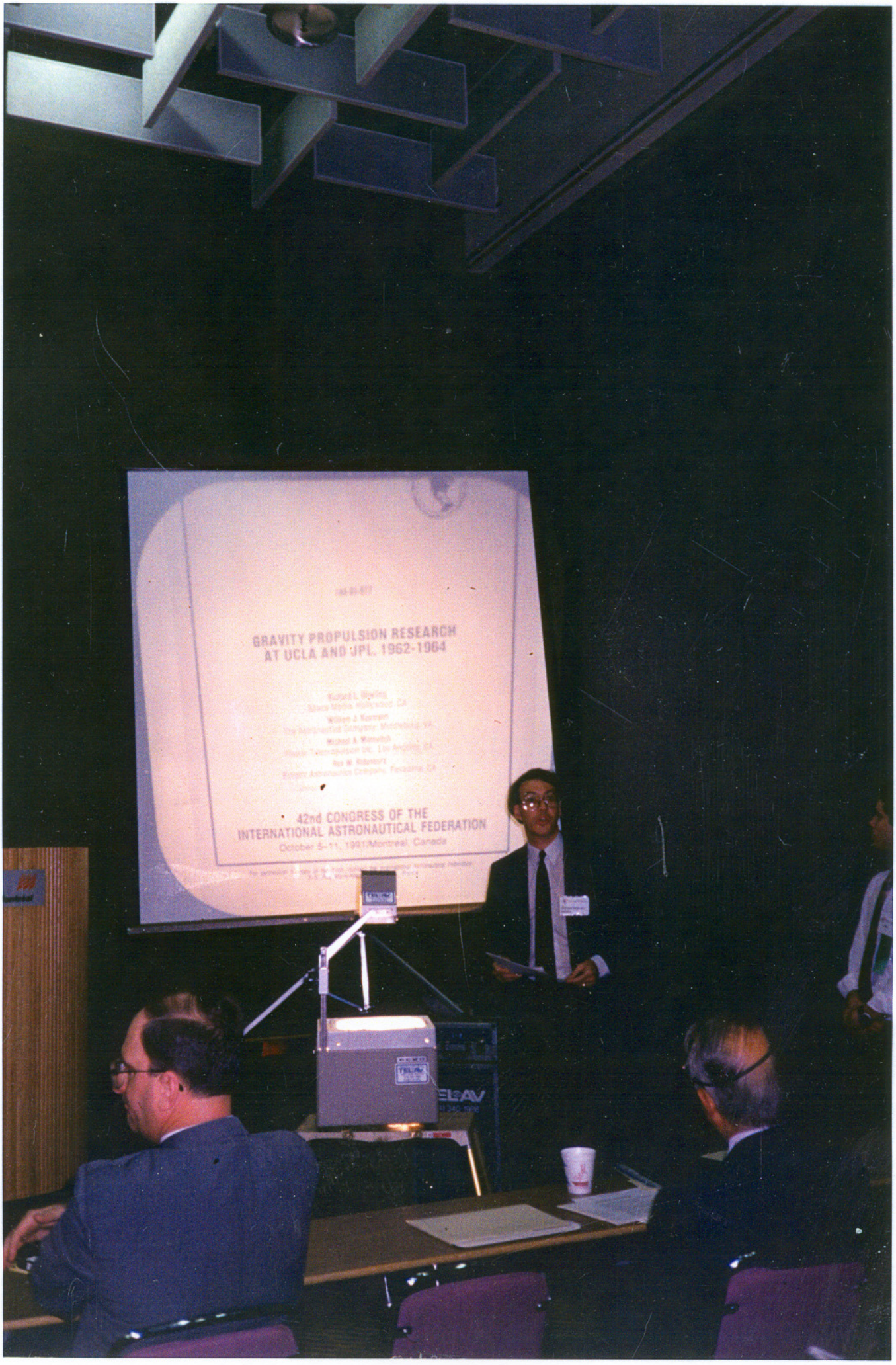
Some of the systems at JPL used to receive and process the real-time images and scientific date that the Voyager 2 spacecraft was sending back to Earth during its Neptune flyby on August 26, 1989.


Florida


NABA
Florida

Picture of Richard Dowling with Michael Minovitch during the summer of 1990 in his study in Los Angeles. Dowling, along with Ridenoure, Kosmann, and Minovitch began the IAF project in 1990 to document the history of Minovitch's invention of gravity propelled interplanetary space travel for the International Astronautical Federation.

Picture of Richard Dowling with Minovitch's mother and sister outside his home in Los Angeles during the summer of 1990.


GRAVITY PROPULSION RESEARCH
AT UCLA AND JPL 1962-1964
42nd CONGRESS OF THE
INTERNATIONAL ASTRONAUTICAL FEDERATION
October 5–11, 1991/Montreal, Canada

Picture of Richard Dowling presenting the second IAF paper on the invention of gravity propelled space travel to the International Astronautical Federation in Montreal Canada in October 1991. (Dowling also presented the first paper in 1990 in Dresden Germany with Minovitch presenting the third paper in Amsterdam in 1999.)