



## MISSION STATUS BULLETIN

# VOYAGER

September 1, 1977



No. 6

### CURRENT STATUS

#### VGR77-2 (Voyager 1)

Final preparations are proceeding for the launch of VGR77-2 (Voyager 1) on Labor Day, September 5. VGR77-2 was re-encapsulated in the Centaur standard shroud on August 29 and moved to launch complex 41 August 31 for mating with the Centaur. A practice countdown will be held September 2.

The launch window opens at 5:56 a.m., PDT, on Labor Day. Voyager 1, as did Voyager 2, will reach a low altitude earth parking orbit before the propulsion module gives it its final boost out of the earth's gravity on a trajectory for Jupiter.

Voyager 1 will fly a faster trajectory than Voyager 2, arriving at Jupiter four months in advance of its sister ship. Voyager 1's Jupiter observatory activities will begin about December 15, 1978, more than 16 months after launch. Closest approach to Jupiter will be about March 5, 1979, at a distance of 286,000 kilometers (178,000 miles) from the visible surface of the planet.

On its outbound leg, Voyager 1 will study five of Jupiter's 13 or 14 known satellites — Amalthea, Io, Ganymede, Europa, and Callisto. Voyager 1 will also pass through the Io flux tube — a region of high magnetic and plasma interaction between Jupiter and Io. At Jupiter, Voyager 1 will be 4.6 astronomical units (AU) (1 AU = 150,000,000 kilometers or 93,000,000 miles) from earth; radio signals between earth and the craft will take 38 minutes each way.

At Saturn, Voyager 1 will pass within 4,000 kilometers (2,500 miles) of Titan, a Saturnian satellite of immense interest. Saturn observations will begin in August 1980, with closest approach to the planet about November 13, 1980. Voyager 1 will pass about 138,000 kilometers (85,800 miles) from Saturn's south pole, and its radio signals will trickle through the rings, giving clues as to their composition. At a distance of 10.2 AU, one-way communication time with the spacecraft will be 85 minutes. Voyager 1 will also study the

### LAUNCH DAY ACTIVITIES

*All JPL employees, contractors, and their families are invited to participate in the Voyager launch activities Labor Day, Monday, September 5. Launch is scheduled for 5:56 a.m., PDT, and the Laboratory facilities will open at 5:00 a.m.*

*Launch activities will be presented via live audio from Cape Canaveral, Florida. There will be two seating areas available: von Karman Auditorium (Bldg. 186) and the 180-101 conference room. Parking will be available in the visitor and adjacent parking lots. The main cafeteria will be serving from 4:00 a.m. to 1:30 p.m.*

*Launch events commentary from Kennedy Space Center will be broadcast from approximately 5:30 a.m. to 7:00 a.m., PDT. Spacecraft events will be televised from JPL from approximately 7:00 a.m. to 10:00 a.m., PDT.*

satellites Mimas, Dione, Enceladus, Tethys, and Rhea, in addition to the close Titan pass. After Saturn, Voyager 1 will cruise out of the solar system.

#### Voyager 2

Voyager 2 is in interplanetary cruise, and on September 2, will be "put to bed" to allow flight controllers to concentrate on the second launch. The computer program to be transmitted to the craft on September 2 is a "housekeeping" sequence designed to automate the ship until about launch plus 30 days, around September 20. Various measurements will be taken during this period, and tape recorded for later playback at earth.

All but one of the science instruments have been turned on. A brief status report on each science instrument subsystem follows:

**Cosmic Ray Subsystem (CRS).** On and operating well. Temperatures near perihelion day (closest approach to the sun, August 29) were slightly above flight acceptance test limits (20°C), but the instrument is capable of operating well above this limit and there is no concern.

**Imaging Science Subsystem (ISS).** On to perform selected sequences and operating well. The wide-angle cameras have returned images of the spacecraft calibration plate and star fields to aid in more accurately determining the science boom alignment. Wide-angle images of the earth and moon are planned for September 2, but will be tape recorded for later playback.

**Infrared Interferometer Spectrometer (IRIS).** The dust cover has been deployed and the instrument is working well. The instrument does not normally gather data during the cruise mode; the only activity planned is a deep space calibration as the instrument is thermally stabilized.

**Low-Energy Charged Particles (LECP).** On and operating well. The stepper motor appears to have slipped one position, but this should cause no long-term problems in operation of the experiment.

**Magnetometer (MAG).** On and operating well. The two low-field magnetometers spaced at the tip and mid-way point on the magnetometer boom are aligned within about 2 degrees.

**Photopolarimeter Subsystem (PPS).** On and operating normally except for a slight irregularity in analyzer wheel stepping. Tests to analyze the stepping will be conducted during the housekeeping period in September and will be tape recorded for later playback at earth.

**Planetary Radio Astronomy (PRA).** On and operating well. In the first days of the flight, plasma subsystem measurements gave the first indication that the science boom was nearly fully deployed.

**Plasma Subsystem (PLS).** On and operating well.

**Plasma Wave Subsystem (PWS).** On and operating normally. The spacecraft noise is as quiet or quieter than expected at the lower frequencies monitored by the instrument.

**Radio Science Subsystem (RSS).** The S-band radio transmitter is on and working well; the X-band transmitter has not been turned on yet.

**Ultraviolet Spectrometer (UVS).** The ultraviolet spectrometer will be turned on September 2.

VOYAGER SELECTED TRAJECTORY INFORMATION (TYPICAL)

Events	Time	Surface Range		Altitude	
	(hr:min:sec)	(kilometers)	(nautical miles)	(kilometers)	(nautical miles)
Launch - Solid Rocket Motors (SRMs) Ignition	00:00:00	0	0	0	0
SRMs Burnout and Core Stage I Ignition	00:01:51	43	23	41	22
SRMs Jettison	00:02:02	57	31	46	25
Core Stage I Shutdown & Separation; Core Stage II Ignition	00:04:15	396	214	113	61
Jettison Shroud	00:04:26	437	236	119	64
Core Stage II Shutdown	00:07:44	1,446	781	167	90
Core Stage II Separation	00:07:50	1,541	832	167	90
Centaur Main Engine Start (MES) 1 *	00:08:01	1,552	838	169	91
Centaur Main Engine Cutoff (MECO) 1	00:09:44	2,189	1,182	169	91
Centaur MES 2	00:52:45	19,315	10,429	157	85
Centaur MECO 2	00:58:22	15,918	8,595	335	181
Centaur Separation	01:01:12	14,225	7,681	911	492
Voyager Propulsion Module Ignition	01:01:27	14,075	7,600	980	529
Voyager Propulsion Module Burnout	01:02:12	13,610	7,349	1,219	658
Propulsion Module Separation	01:13:29	9,493	5,126	7,414	4,003

\* Injection into parking orbit.  
NOTE: These times and distances may vary, depending on the exact launch day, launch time, and spacecraft weight.