

MISSION STATUS BULLETIN

VOYAGER

April 7, 1978



No. 18

SUMMARY

Voyager 1's scan platform has been moved in several directions at several speeds during the past week. The craft is now over 472 million kilometers (293 million miles) from Earth, travelling at a velocity of about 21 kilometers (13 miles) per second relative to the Sun. One-way communication time is now slightly more than 26 minutes.

First indications are that Voyager 2's main radio receiver fuses have blown and that a tracking loop capacitor in the backup unit may be faulty. At a velocity of 19.9 kilometers (12.4 miles) per second relative to the Sun, Voyager 2 is about 456 million kilometers (283 million miles) from Earth. One-way light time is 25 minutes 11 seconds.

UPDATE

VOYAGER 1

Scan Platform

Voyager 1's scan platform has been roving the area of the "science-preferred position", executing ground-commanded slew sequences which exercised various directions, magnitudes, and rates of motion. The science-preferred position, at 235 degrees azimuth and 115 degrees elevation, is the most favorable position for the platform at Jupiter encounter should it fail at a later date to respond to commands, as it did on February 23.

The area in which the initial stall occurred has been avoided in the recent tests, and there is some concern that a problem may still exist in that area (45 degrees azimuth and 193 degrees elevation). Several of the spacecraft sequences already completed for Jupiter encounter require passing through the questionable area.

In an effort to pinpoint the cause of the February 23 stall, tests on April 4 provided data on platform performance during a cooling trend by turning off the scan coil heater for

24 hours. A test is being planned to exercise the platform as the scan coil heater warms the actuator.

VOYAGER 2

Communications

Voyager 2's main radio receiver appears to have failed, and the backup receiver may have a faulty tracking loop capacitor which might make communications with the beleaguered ship extremely sensitive.

On April 5, the computer command subsystem entered a protection sequence which switched the craft from the primary receiver to the secondary receiver since no command had been received in seven days. Attempts to attain two-way lock on the secondary receiver failed and diagnostic tests executed after the switch to this unit indicated a problem with its tracking loop capacitor. The protection sequence is programmed to switch back to the primary receiver if the secondary unit receives no commands in the following twelve hours. Since attempts to attain two-way lock on the secondary receiver failed, the program switched back to the main receiver.

After this switch, operations appeared normal and several commands were transmitted through the main receiver, thus causing a reset of the seven-day timer. However, about 30 minutes after the switch, an unknown failure in the receiver caused excessive current which appears to have blown the receiver fuses.

The spacecraft remains configured on the main receiver and unable to receive commands from Earth. However, the seven-day timer will automatically switch to the secondary receiver on April 13, at which time attempts will be made to command the spacecraft in spite of the failed capacitor.

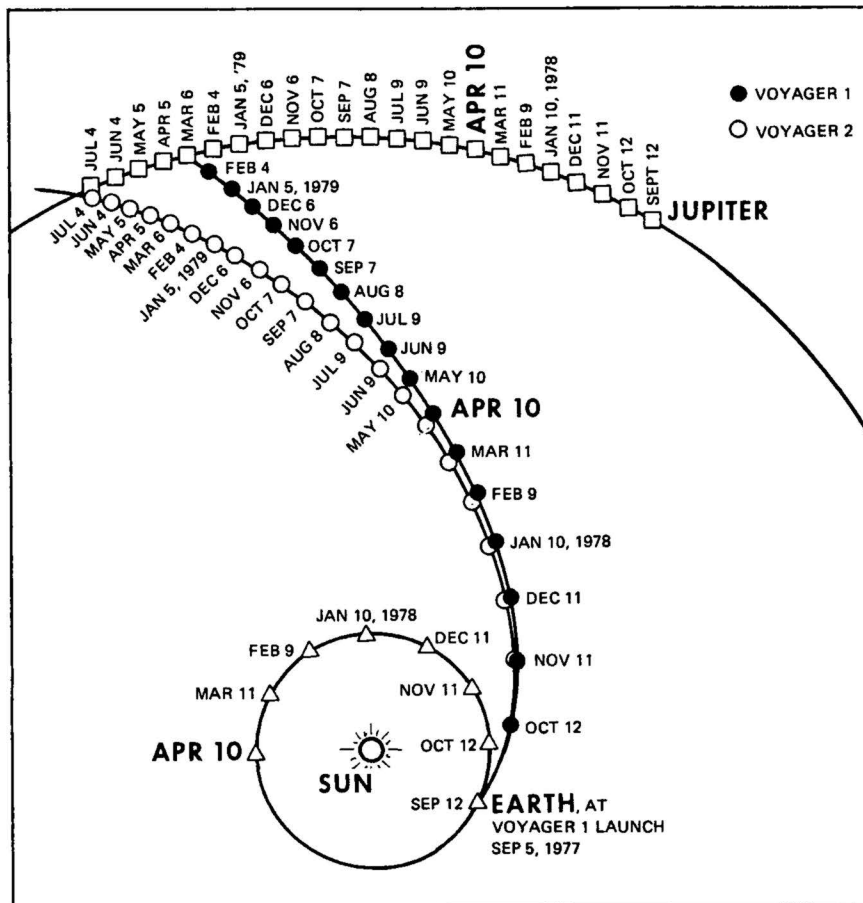
Normal navigation has depended on two-way Doppler, but the receiver failures will probably necessitate use of alternate navigation techniques.

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HALFWAY THERE. Both spacecraft are now closer to Jupiter than to Earth. As of April 10, Voyager 1 will be nearly 482 million kilometers (299 million miles) from Earth and 343 million kilometers (213 million miles) from Jupiter, targeted for closest approach on March 5, 1979. Voyager 2 will be 465 million kilometers (289 million miles) from Earth and 360 million kilometers (223 million miles) from Jupiter on April 10, headed for a July 9, 1979 rendezvous.