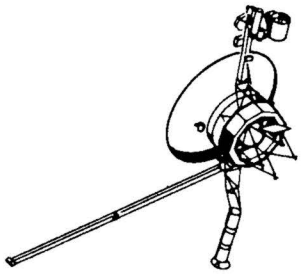

# MISSION STATUS BULLETIN

# VOYAGER

**MAY 4, 1978** **No.20**

## SUMMARY

Eight months after launch and eight months before beginning close Jupiter observations, Voyager 1 is nearly 555 million kilometers (348 million miles) from Earth, at a distance from the Sun of about 3.1 AU. Its velocity relative to the Sun is about 19.9 kilometers (12.4 miles) per second, and one-way communication time is 30 minutes 45 seconds.

On May 3, Voyager 2 successfully performed a mid-course correction maneuver to adjust its Jupiter-bound trajectory. The maneuver was included in a set of commands successfully relayed to the craft on April 26. Voyager 2 is nearly 535 million kilometers (332 million miles) from Earth, or about 3.0 AU from the Sun. Its velocity relative to the Sun is about 18.8 kilometers (11.7 miles) per second, and one-way communication time is 29 minutes 52 seconds. Voyager 2 began its journey about 8-1/2 months ago, and will begin Jupiter observations in about 11-1/2 months.

## UPDATE

VOYAGER 1

A plausible model for the Voyager 1 scan platform sticking has been developed and is now being tested. The possible explanation for the sticking involves a small piece of plastic from the scan actuator fill screw locking mechanism resting on one or two teeth of the actuator's final gear. Before the Voyager 1 platform is again moved into the region where it previously stuck, laboratory tests will be conducted to determine the effects of the modeled failure.

The Voyager 1 S-band solid state amplifier (SSA), operating in its high power mode, is beginning to exhibit degradation characteristics similar to those previously seen on Voyager 2. The switch to the S-band traveling wave tube (TWT) amplifier was accomplished on May 10.

VOYAGER 2

On April 26, a regular load of the Voyager 2 CCS computer was accomplished. This load contained the sequence to perform a trajectory correction maneuver on May 3. What made this load unique was that it was performed flawlessly, using new techniques developed to command the spacecraft in spite of its one remaining crippled receiver. These techniques involve predicting the rest frequency of the spacecraft's voltage controlled oscillator (VCO), and programming the ground-transmitted frequency to match it within about 50 Hz. It is fortunate that the 64-meter Deep Space Stations have the ability to program the uplink frequency, a capability not previously planned for Voyager operations; the same capability is now being planned for all stations.

TCM B2 on May 3 involved a 203-second burn with a .615 m/sec velocity change. Early indications show a nominal maneuver with no problems.

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