

MARINER VENUS / MERCURY 1973

STATUS BULLETIN

MARINER 10 PASSES HALF-WAY MARK TO VENUS ENCOUNTER

Mariner 10 is flying toward the Sun at a solar orbit speed of 71,070 mph to encounter and study Venus and Mercury. Its distance from Earth is $14\frac{3}{4}$ million miles and Mariner 10 is now 13 million miles from Venus. On 5 February (26 days), the spacecraft will have successfully encountered Venus and then direct itself to the primary target Mercury.

In the last Status Bulletin Mission Status Summary the Project announced that on Thursday evening, 3 January, the High-Gain-Antenna feed system radio signal power problem anomaly had been resolved, apparently due to increased temperature on the HGA feed system.

At 21:33 PDT, 6 January, the HGA feed system failure reoccurred with a 3 dB loss in downlink signal, an 11 DN indicated low-gain antenna drive and an increase in S/X feed temperature. While possible causes of the anomaly are being examined, no commands will be sent in an effort to re-heal the HGA.

The antenna was pointed back to Earth (boresight) and the automatic profile re-enabled as there was no apparent benefit that could be realized by staying on the side lobe.

On 7 January the Scan Platform which holds the two TV cameras and the Ultraviolet Air-Glow Spectrometer were moved to simulate the platform's motions during Venus flyby on 5 February.

On 8 January, 07:39 PDT, an anomaly occurred in that the Mariner 10 unexpectedly switched automatically from its primary power processing system to the redundant backup system.

The switchover to the backup system caused a 7-minute loss of telemetry while it was being tracked by DSS-63 at Madrid. The analog tapes from DSS-63 are to arrive early Friday at JPL. These tapes contain all but approximately one second of Mariner's telemetry which occurred during the switchover and are vital to an analysis of the cause of the anomaly.

The DSS-63 personnel were commended by Project for their fast response in adjusting their equipment to process the Mariner telemetry.

On 9 January, over 100 commands were sent to the spacecraft Flight Data Subsystem to program its memory to permanent formats for processing engineering and science data sent to Earth.

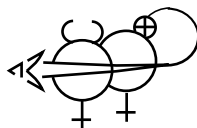
The Central Computer and Sequencer (CC&S) was also updated for scheduled engineering tests and to enable it to periodically and automatically repoint Mariner's directional radio antenna at Earth. The timing clock in the CC&S will be checked occasionally to see if it was involved in the power switchover.

On 10 January the scan platform was slewed so the Ultraviolet Air-Glow Spectrometer can begin a week's observations of the Comet Kohoutek. The comet's nucleus will pass through the instruments field-of-view next Wednesday. At that time the Mariner 10 TV cameras are also scheduled to take pictures of the fading comet.

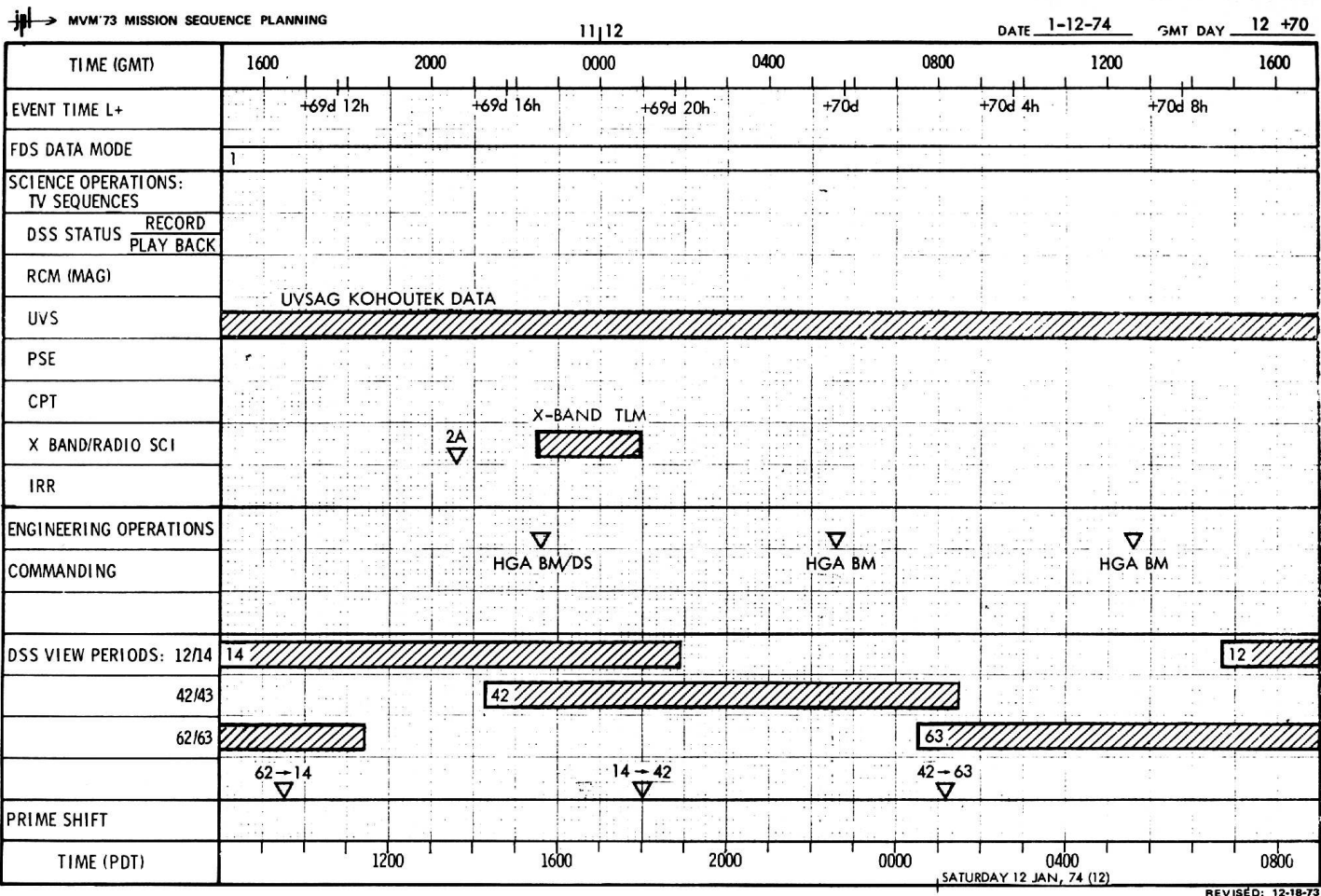
Mission Control personnel are revising activity schedules which were changed by the power system switchover on Tuesday and special teams are investigating the cause and developing possible fixes to the anomalies.

MARINER VENUS/MERCURY 1973 PROJECT OFFICE

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BULLETIN NO. 12



Mission Sequence Planning Schedule

The schedule above is typical of those contained in the MVM'73 calendar and bar chart mission sequence reports. The schedules are used by the Project Staff and Mission Control personnel in establishing activities for Mariner 10. The acronyms used in these schedules are listed below.

A/C	Attitude Control Subsystem	DSS	Deep Space Station	RCM	Roll Calibration Maneuver
ACE 1	Assistant Chief of Mission Operations	DTCH	Data Chief	RFS	Radio Frequency Subsystem
ACMO	Assistant Chief of Mission Operations	FDS	Flight Data Subsystem Analyst	RNG	Range
AFC	Automatic Frequency Control	HGA	High-Gain-Antenna	SEA	Scanning Electrostatic Analyzer
AOS	Acquisition of (Spacecraft) Signal	IRR	Infrared Radiometer	S	Science
APS	Articulation Pointing Subsystem	LRC	Low Rate Channel	STK	Stack
BM	High-Gain-Antenna Boom	MAG	Magnetometer	TCM	Trajectory Correction Maneuver
BUSS	Spacecraft Team Chief	MCCC	Mission Computing and Control Center	TEL	Telecommunication
CAL	Calibration	MDS	Modulation/Demodulation subsystem	T/L	Talk/Listen
CC&S	Central Computer and Sequencer	MSWG	Mission Sequence Working Group	TRKCH	Track Chief
CCW 1	Counterclockwise Incremental	MTC	Mission and Test Computer	TVS	TV System
CFG	Configuration	OPCH	Operations Chief	TWT	Traveling Wave Tube
CMD	Command Operator	OPCN	MCCC Operations Chief	UVS	Ultra-Violet Spectrometer
CPT	Charged Particle Telescope	ORT	Operational Readiness Test	U	Update
CW 1	Clockwise Incremental	OWLT	One Way Light Time	UVSAG	Ultra-Violet Spectrometer - Air Glow
DM	Data Mode	PRDX	Predicts	2A	CC&S Issued Command (Radio Cyclic)
DS	High-Gain-Antenna Dish	PSE	Plasma Science Experiment	2F	
DSN	Deep Space Network	PWR	Power Subsystem	4G	