Surveyor Project Newsletter

LUNAR LANDMARKS

HUGHES AIRCRAFT COMPANY
SPACE SYSTEMS DIVISION

VOL. I February 5, 1965 NO. 3

PUBLISHED FOR MEMBERS OF THE SURVEYOR TEAM

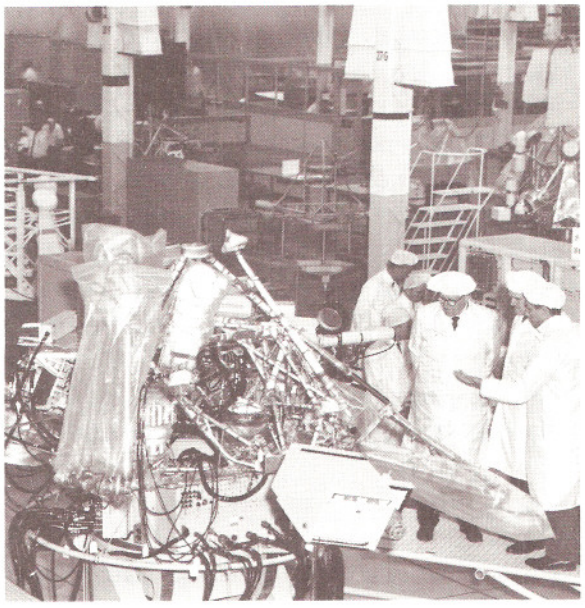
NOTING AND QUOTING

NASA Administrator James E. Webb, in the plant Tuesday for briefings and first-hand view of Surveyor and other HAC space programs:

> "Surveyor is of utmost importance in our space exploration program...the technical competence of...the Surveyor Team will get us on the moon this year."

Rep. George P. Miller (D-Calif.), chairman of the House Science and Astronautics Committee, accompanying Mr. Webb:

> "I join with Mr. Webb in his evaluation of the significance of the Surveyor Program ...it will help us establish a new plateau that is vital to the advancement of our work in space."



Rep. George P. Miller, left, James E. Webb, center, listen as Bob Roderick describes SC-1 during Bldg. 350 tour Tuesday.

SCANNING AND PLANNING

Trekking and checking

Don Haycock, Launch Operations' Mechanical and Propulsion Section, is at the Cape to direct setting up of Surveyor Battery Lab as part of Phase II (Surveyor Activation) at Air Force Eastern Test Range.

Phase III (final) ETR activation, in preparation for T-21 arrival, is scheduled for early March. Blockhouse Console for SD-1 Dynamic Model is installed at ETR Launch Pad 36-A and Sam Crutchfield, Launch Support Section, is there for check out and acceptance test of GD/A-installed console. Meanwhile, Harry Price, Surveyor Launch Support, is directing acceptance test of Mobile Temperature Control Unit. MTCU will provide thermal conditioning for Surveyor spacecraft after encapsulation in Centaur nose fairing.

SC-1 testing on time

System testing on SC-1 is ON SCHEDULE. While some group testing remains to be completed, the next phase (initial system check out) started ahead of the scheduled Feb. 5 start date with telecommunications integration tests.

Quality Assurance set for push

Don Brewer reports that Surveyor Quality Assurance operations, including those at Culver City, under Ed Howard, and El Segundo, under Ray Nieves, are geared for the Aug. 2 shipping date push. Bill Jacoby, Quality Assurance Field Operations, arrived at the Cape Jan. 22 just in time to help welcome arrival of SD-1, AS SCHEDULED. Bob Hale, same group, will be at the Cape in April. Dan Aikens will be in Canberra temporarily, and Jim Boles, likewise, in Johannesburg. Wilson Rogers' Supplier Quality Assurance people, including Dick Berry and Joe Krancz, are on vendor field duty. Staff members Ernie Ryavec, Fred Carreras, Tom Philpott, plus Con Maeding, Product Effectiveness, have been doing vendor-audit duties to assure quality components and hardware for Surveyor.

Tank shells completed

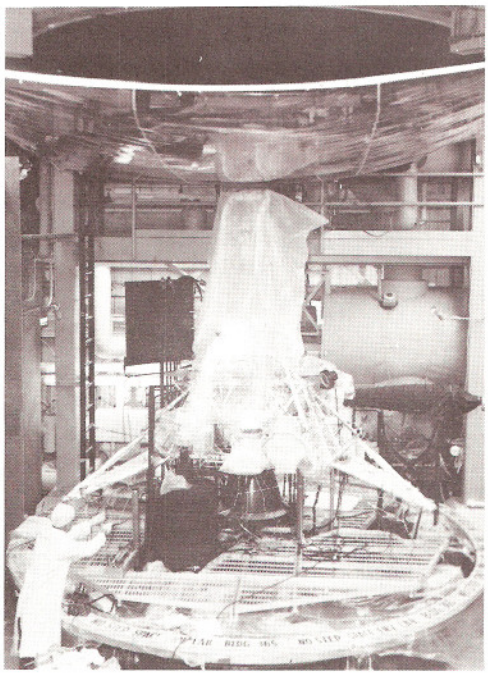
First order of propellant tank shells for the Vernier propulsion system has been completed and now is in the manufacturing cycle. First helium tank shell was delivered Jan. 25 and now is in assembly for SC-1. Fuel and oxidizer manifolds on SC-1 will be removed to eliminate propellant migration problem. S-6 and S-7 test programs are being revised to check effects of this change.

Vibration survey meets objectives

Harry Chandler and Lou Gammel, Space Systems Engineering Labs, completed modal vibration survey on S-2A vehicle ON THE AGREED DATE, meeting all objectives. Data will be useful in refining structural mathematical model, which will be used in interpreting, and extrapolating from, test data. Next major step with S-2A--drop testing scheduled to start Feb. 15. Tests will be the first to employ Space Environmental Lab drop test rig that will be used later for the T-21.

T-21 "sees space"

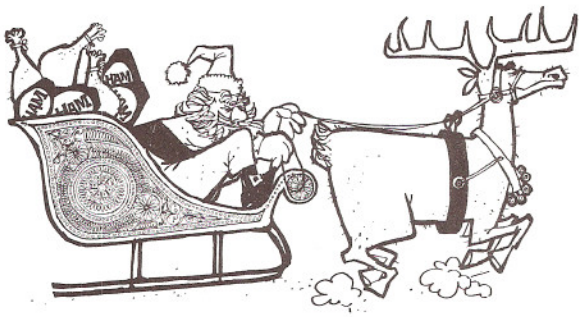
After several weeks of intensive preparation and dry runs, a complete Surveyor spacecraft "saw space" for the first time last week end. T-21 was elevated into th large chamber at the Space Environmental Lab and pumpdown started Friday night. Conditions simulated those the spacecraft will encounter during transit to the moon Pressure was down to less than 10^{-5} Torr; solar simulation was at 1 solar constant; the chamber walls were cooled to liquid nitrogen temperature. Flight control electronic unit problems forced shutdown Sunday morning, but test was expected to be resumed before today. Jay Tuchsher, T-21 thermal engineer, says thermal data was obtained from about 500 locations and that most of the temperatures were within predictions. Automatic data monitoring system developed by Connie Stensgaard permitted transmission of raw data to Culver City for processing and return to test location in near real time (3 to 10 minutes).



T-21 is shown on thermal vacuum chamber end-bell just before the pumpdown started on last Friday.

R&D Division comes through

R&D Division Surveyor crew rang the bell three times lately. Noise leak in the transmitter voltage-controlled crystal oscillator discovered in testing of Surveyor Dynamic Models SD-1 and SD-2 started one "panic" operation. Tim Young and John Memmen started design "fix" Jan. 9--Bill Olson already has supplied new hardware. Preliminary tests look good. Modified transmitters for SC-1 were delivered TWO DAYS AHEAD OF SCHEDULE for installation on the spacecraft. Hugh McNeela and Walt Lange did the upgrade product engineering. In another installation, these cameras will receive new JPL-designed shutters built at Hughes. Prototype shutters are built, were tested at 265,000 cycles of operation. Karl Bingemann and Webb Howe are doing the engineering for incorporating new shutters. Design was to be released today and a push is on to deliver flight hardware on March 1. Don Griffin gets credit for a "great performance" in making hardware deliveries on both camera problems.



He's got 'til Christmas.
We've only got to Aug. 2.

Sensor tests on time

Timely delivery of SC-1 flight control programmer and electronics unit by Fred Kennedy and Paul Traylor permitted flight control sensor group tests to start ON SCHEDULE. Effort was noteworthy because of modification of units required by changes in sun acquisition techniques. Shoji Kubo and his test team are maintaining test schedule via two-shift operation.

AND, JUST IN CASE YOU FORGOT, AUG. 2 IS THE SHIPPING DATE FOR SC-1...

124 WORKING DAYS AWAY.