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AIR RESEARCH AND DEVELOPMENT COMMAND
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117-L Reports

Assistant for Programming
WDPCR

9 March 1959

SUBJECT: Military Satellite Program Progress Report
Month of February 1959

TO: Director
Advanced Research Projects Agency
Washington 25, D. C.

1. GENERAL

The development plans for the reoriented DISCOVERER, SENTRY, and MIDAS programs were briefed to the Advanced Research Projects Agency (ARPA) and the Air Staff on 2 and 3 February. Amendment 1 to ARPA Order 48-59, dated 16 February, released total DISCOVERER program funding. Amendment 8 to ARPA Order 9-58, dated 16 February, released total SENTRY program funds. Additional incremental funding was released for the MIDAS program; however, the MIDAS program has not yet been approved.

2. DISCOVERER PROGRAM

a. Vehicle 1022 underwent a complete systems test at Vandenberg Air Force Base on 4 February and was then transported to the launch complex. A final system checkout was completed at the launch complex on 18 February. On 19 February, a pre-launch dress rehearsal was successfully conducted in preparation for the launch planned for 25 February.

b. An attempt was made to launch DISCOVERER 1-163-1022 on 25 February. The launch was postponed after approximately twelve hours of countdown due to difficulty with the liquid oxygen tank pressurization system of the THOR booster. The DISCOVERER portion of the countdown was accomplished without serious delay.

c. A second attempt took place on 28 February, resulting in a successful launch. The countdown proceeded with minor delays, and launch took place at 2149 hours. Liftoff, first-stage boost, and DISCOVERER separation were very smooth and took place as programmed. Telemetry transmitter tracking information was received at Vandenberg Air Force Base until T plus 536 seconds. Radar control was maintained by the Vandenberg Air Force Base and Point Mugu radars until T plus 506 and T plus 521 seconds,

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respectively. The first orbital pass was not confirmed; however, sporadic airborne beacon signals acquired on later passes confirmed that DISCOVERER went on orbit. Preliminary information indicates that the primary objectives of DISCOVERER I flight were attained. A detailed report of this flight will appear in the next report.

d. DISCOVERER I-160-1019 could not be repaired and checked out prior to the scheduled launch date for DISCOVERER I-163-1022. The vehicle was stored at the Lockheed Sunnyvale facility, and effort concentrated on preparation for launch of vehicle 1022. A decision was made to consider the vehicle 1019 abort as a flight test and to proceed with the planned flight schedule.

e. A successful hot firing of vehicle 1018 took place at the Sunnyvale Test Base on 21 February, and the vehicle was delivered to the Vandenberg Air Force Base launch site. This will be the first DISCOVERER with the biomedical recovery capsule payload. A successful fifty-hour biomedical capsule test was performed during this period, simulating an entire mission. Included were twenty-seven hours in a thermo-vacuum chamber at Sunnyvale, and eight hours of flotation simulating conditions in event of unsuccessful air pickup. Sensors and instrumentation were provided for compartment temperature and pressure, and the biomedical (mice) specimens. The mice survived with no apparent ill effects. Workability of the biomedical recovery capsule was satisfactorily demonstrated. The six medical vans at Vandenberg Air Force Base were also readied for the first biomedical payload operations.

f. The Hawaiian Control Center is now ready for recovery operations. Minor communications difficulties, uncovered in the January simulation exercises, were located in the control console circuitry and corrected.

g. Systems tests of vehicle 1020 were satisfactorily accomplished at the Palo Alto Modification and Checkout Center. The vehicle was then delivered to the Santa Cruz Test Base for a hot-system run.

h. DISCOVERER vehicles 1023, 1025, 1028, and 1029 are now at the Lockheed Missile Systems Division Modification and Checkout Center.

i. Construction bids for an addition to the SM-75-1 Missile Assembly (RIM) Building and a prefabricated type shop building, will be opened on 25 February. The construction completion date is 15 May 1959.

j. As requested by ARPA TWX 955243, following is the current list of program flights together with associated booster and vehicle numbers:

Program Flight		
1	THOR 160	Vehicle 1019
2	THOR 163	Vehicle 1022
3	THOR 170	Vehicle 1018
4	THOR 174	Vehicle 1020
5	THOR 179	Vehicle 1023
6	THOR 192	Vehicle 1029
7	THOR 200	Vehicle 1025
8	THOR 206	Vehicle 1028
9	THOR 212	Vehicle 1051
10	THOR 218	Vehicle 1050
11	THOR 223	Vehicle 1052
* 12		Vehicle 1054
* 13		Vehicle 1055
* 14		Vehicle 1053
* 15		Vehicle 1056

(* THOR Boosters for flights 12 through 15 have not yet been identified.)

3. SENTRY PROGRAM

a. Three additional flight tests of the prototype F-1 ferret equipment were made over the New York area in February. Results indicate steadily improved performance of the F-1 vehicle and ground data handling equipment. The improvement in performance is due to modifications resulting from the initial flight test program. The F-2 equipment is proceeding on schedule.

b. The breadboard of the 36 inch camera system was operated continuously for five days under typical operational cycles. Included were the vehicle camera, vehicle processor, vehicle electronics, coaxial cable (acting as a data link), ground reconstruction electronics, and primary record camera. Design was started on the service test model of the visual payload to ensure that reoriented program schedules are met.

c. A 70mm film package will be installed on several DISCOVERER flights to determine the affect of radiation on photographic emulsions. The National Institute of Health, Bethesda, Maryland, will assist in construction of nuclear radiation packages and subsequent data analysis.

d. The construction contract for the SENTRY/ATLAS Guided Missile Assembly Building at Vandenberg Air Force Base was awarded 12 February. Construction completion is scheduled for 19 October 1959.

e. A construction contract for the Data Acquisition and Processing Building was awarded 20 February. Contract completion is scheduled 15 December 1959. This is the final item to be placed under contract for the Vandenberg Air Force Base Tracking and Data Acquisition Station.

f. The design for the Tracking and Data Acquisition Station at New Boston, New Hampshire, is complete. Advertising for construction is being delayed pending release of funds.

g. Preparation of Construction Plans and Specifications for the Tracking and Data Acquisition Station at Ottumwa, Iowa, is currently being initiated.

h. The design of the Development Control Center at Sunnyvale, California, is complete. The construction contract is scheduled to be awarded during April 1959.

4. MIDAS PROGRAM

a. Preparation of the Atlantic Missile Range launch facility for the Phase 1 portion of the MIDAS program is proceeding.

b. Environmental testing of the infrared scanner thermal/mechanical equivalent is continuing in the Lockheed Missile Systems Division, Sunnyvale, thermal/altitude chamber. Preliminary test results are satisfactory. After completion of these tests the scanner will be tested and evaluated further in the modification and checkout area.

c. Technical discussions and contract negotiations were concluded with Infrared Industries, Inc., Boston, Massachusetts. This firm will develop detector cells to be used in infrared reconnaissance satellites. These cells are expected to have an increase in sensitivity by a factor of five over cells under development by other subcontractors.

d. Aerojet-General is engaged in improvement of their infrared reconnaissance scanner, initially developed for the satellite attack alarm application.

R. S. Curtin for

B. A. SCHRIEVER
Major General, USAF
Commander

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