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MPR-SAT-64-2
February 29, 1964

GEORGE C. MARSHALL SPACE FLIGHT CENTER

HUNTSVILLE, ALABAMA

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(January 16, 1964 - February 16, 1964)

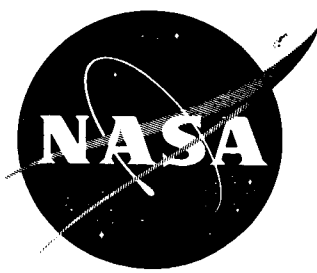
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GEORGE C. MARSHALL SPACE FLIGHT CENTER

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SATURN MONTHLY PROGRESS REPORT

(January 16, 1964 - February 16, 1964)

ABSTRACT

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The Saturn Monthly Progress Report describes progress from January 16, 1964 through February 16, 1964, in the Saturn I, IB, and V vehicle R&D programs. The asterisk (*) that appears throughout the report denotes continuation of an item cited in the last Monthly Report.

Saturn I Configuration: On January 29, 1964, SA-5, the first Saturn to carry a live second stage, was successfully launched from Cape Kennedy, following an unsuccessful launch attempt on January 27. At MSFC, S-I-6 checkout was completed on schedule. At Santa Monica during the report period, DAC completed S-IV-7 checkout, and the stage shipped to SACTO for static test operations. At SACTO on January 24, the S-IV All-Systems stage was destroyed and test stand damaged when the oxidizer tank ruptured as the result of overpressurization.

Saturn IB Configuration: At Santa Monica, DAC completed S-IVB/IB-1 common bulkhead aft dome except for the dollar weld. The S-IVB structural test stage LH₂ forward dome has been replaced by the dome fabricated for the dynamics test stage because of a questionable weld repair. At Santa Monica, DAC completed the All-Systems test stage common bulkhead.

Saturn V Configuration: On February 8, MSFC successfully completed hydrostatic testing of the S-IC test fuel tank. At the Seal Beach Assembly Facility, S&ID completed the first S-II all-welded bulkhead, with the welding of the dollar section in place.

Author

GEORGE C. MARSHALL SPACE FLIGHT CENTER

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SATURN MONTHLY PROGRESS REPORT

(January 16, 1964 - February 16, 1964)

by

INDUSTRIAL OPERATIONS

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GEORGE C. MARSHALL SPACE FLIGHT CENTER

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(January 16, 1964 - February 16, 1964)

SECTION I. SUMMARY

*On January 29, 1964, SA-5, the first Saturn to carry a live second stage, was successfully launched from Cape Kennedy, following an unsuccessful launch attempt on January 27. According to preliminary data reduction, vehicle performance was very close to predicted values. (Page 2 , Para. A.1.)

*At MSFC, S-I-6 checkout was completed on schedule, and the stage was shipped to KSC via barge on February 7. (Page 3 , Para. 2.a.)

*At Santa Monica during the report period, DAC completed S-IV-7 checkout and the stage was shipped to SACTO for static test operations, which are scheduled to begin during March. (Page 3 , Para. 3.b.)

*At MSFC, S-I-9 pre-static checkout was finished, following completion of replacement of critical tubing assemblies. (Page 4 , Para. 4.a.)

*At SACTO on January 24, the S-IV All-Systems Stage was destroyed and test stand damaged when the oxidizer tank ruptured as the result of overpressurization. (Page 5, Para. B.)

As the result of DAC S-IV cold helium sphere mounting tests, it was decided to discontinue backup design effort. (Page 5 , Para. C.)

CCSD fabrication of S-IB-1 components is scheduled to begin at Michoud during March. (Page 6 , Para. C.)

The asterisk (*), used throughout this report, denotes continuation of an item cited in the last Monthly Report.

*At Santa Monica, DAC completed S-IVB/IB-1 common bulkhead aft dome except for the dollar weld. The forward dome is in the LOX welder awaiting tee-ring installation. (Page 6 , Para. B.2.)

*During the report period at SACTO, DAC continued installation of S-IVB Battleship exterior components and interior access kits. (Page 7 Para. D.1.)

*The S-IVB structural test stage LH₂ forward dome has been replaced by the dome fabricated for the dynamics test stage because of a questionable weld repair. (Page 7 , Para. D.2.)

*At Santa Monica, DAC completed the All-Systems Test Stage common bulkhead. (Page 7 , Para. D.4.)

*On February 8, MSFC successfully completed hydrostatic testing of the S-IC Test Fuel Tank. The tank is presently being mated with the aft adapter. (Page 8 , Para. A.1.)

*At the Seal Beach Assembly Facility, S&ID completed the first S-II all-welded bulkhead, with the welding of the dollar section in place. (Page 9 , Para. B.1.)

*At Edwards AFB, Rocketdyne performed 40 F-1 engine systems tests; the tests were generally successful, with most test objectives obtained. (Page 10, Para. C.1.b.)

On January 20, 1964, construction began on the MSFC Components Test Facility. (Page 12, Para. A.5.)

SECTION II. SATURN I CONFIGURATION

A. FLIGHT VEHICLE STATUS

1. SA-5 Vehicle

*a. The SA-5 simulated flight test was successfully conducted on January 22 with no major problems encountered. Later, on January 27, an attempt to launch SA-5 was halted when a blind flange used during testing operations was found to be blocking the LOX replenishment line. The launch was rescheduled and successfully conducted on January 29.

b. Seven of the eight on-board movie camera capsules were recovered from the SA-5 flight even though a no-go recovery condition existed.

c. On February 7, the SA-5 post launch review was held at MSFC. The overall performance of the SA-5 launch vehicle was very close to predicted values in all areas. Evaluation is continuing to determine if minor changes are required for the SA-6 launch vehicle.

2. SA-6 Vehicle

*a. At MSFC, S-I-6 checkout was completed on schedule, and the stage was shipped to KSC via barge on February 7. Arrival at the Cape is expected on February 18.

*b. At SACTO, during the report period, incorporation of MOOG actuators into S-IV-6 was completed, and final checkout is proceeding on schedule for a February 17 completion. The S-IV-6 turnover meeting is scheduled for February 17 with possible delivery via the Pregnant Guppy to KSC on February 22, four days earlier than the scheduled February 26 date.

c. A joint MSFC/DAC decision has been made to enter both S-IV-6 tanks at KSC; the LH₂ tank to check cold helium sphere strap tension, and the LOX tank to check for a leak in the common bulkhead using dye penetrant. Opening the tanks will delay mating approximately three days. The tank entry will be made in the hangar at KSC, and leak checks will be performed later on the pad.

*d. Checkout of S-IU-6 was completed at MSFC during the report period, and the unit was shipped with the booster, S-I-6, on February 7. Arrival at the Cape is expected on February 18.

e. MSFC is investigating the possibility of completely closed loop guidance on SA-6.

*3. SA-7 Vehicle

a. At MSFC, replacement of critical tubing assemblies on S-I-7 was completed on February 10. Post static checkout has been resumed, and completion is expected in April.

b. S-IV-7 checkout was completed at Santa Monica during the report period, and the stage was prepared and shipped to SACTO via the Pregnant Guppy on February 13. Special modification and repair operations will be performed prior to static test operations which are not scheduled to begin in March.

c. At MSFC, S-IU-7 began final checkout on February 12. Completion is expected in April.

4. SA-9 Vehicle

*a. At MSFC, replacement of critical tubing assemblies on S-I-9 was completed on January 27. Pre-static checkout was resumed during the report period and completed on February 11. The booster is scheduled to be moved to the static test stand on February 17 for the beginning of static test operations.

*b. At Santa Monica, assembly of S-IV-9 was completed during the report period, and checkout began on February 10. Completion of checkout is expected in April.

*c. The S-IU-9 structure was stored during the report period at MSFC. Assembly is scheduled to begin on March 2.

Structural testing of the S-IU-9 configuration was also completed during the report period at MSFC. This test unit is now scheduled for SA-9 dynamic testing at MSFC.

d. The first micrometeoroid flight item (Apollo Service Module BP-016) arrived at MSFC on January 14. Receiving inspection was successfully completed during the report period. The module will undergo modification at MSFC in preparation for the SA-9 vehicle micrometeoroid mission.

*5. SA-8 Vehicle

a. At Michoud, during the report period, critical tubing assemblies were replaced on S-I-8 concurrent with checkout operations. Following checkout, scheduled for completion in March, the booster will be prepared and shipped to MSFC for static testing.

b. At Santa Monica, S-IV-8 assembly continued. Forward and aft telemetry rack structural installation is presently in process. Completion of assembly and beginning of checkout is expected in April.

c. At MSFC, structural fabrication of S-IU-8 was completed on February 10. The unit will be stored until June when assembly is scheduled to begin.

*6. SA-10 Vehicle

a. CCSD continued S-I-10 assembly at Michoud throughout the report period. The fabrication of critical tubing assemblies for the stage is in process. Completion of assembly and start of checkout is expected in March.

b. At Santa Monica, installation of S-IV-10 into the hydrostatic tower for leak checks has been delayed due to parts shortages. Completion of S-IV-10 assembly is expected in June.

c. Fabrication of the S-IU-10 structure continued at MSFC throughout the report period. After completion of fabrication, the structure will be stored until the scheduled start of assembly in September.

d. A payload for SA-10 is still under study at MSFC.

*B. S-IV ALL SYSTEMS VEHICLE

At SACTO, on January 22, an attempt to static fire the All Systems vehicle was postponed due to a LOX umbilical leak. A second attempt, on January 23, was postponed when a Hadley fill and drain valve stuck in a partially open position. During a third attempt, on January 24, the stage oxidizer tank was overpressurized resulting in an explosion and complete loss of the vehicle plus damage to the test stand and ground support equipment. The cause and circumstances surrounding this incident are under investigation by both NASA and DAC committees.

MSFC has recommended disposition of the S-IV All Systems Program as follows:

1. Clean up area - remove all damaged gear.
2. Restore stand structure and paint.
3. Discontinue further activity on test stand 1.
4. Accomplish major All Systems objectives, where possible, during acceptance firings of S-IV-7 and subsequent stages on test stand 2B.
5. Perform additional firings, if necessary, to accomplish mandatory objectives.

Cleanup began on February 10 after the technical committee on-site investigation. Also previous test objectives are presently being evaluated for incorporation into acceptance firings.

C. S-IV STAGE GENERAL

Additional testing by DAC to further confirm reliability of cold helium sphere mounting for subsequent S-IV stages was successfully completed during the report period. After investigation of the test data, the following decisions were made:

1. Discontinue backup design.
2. Inspect hook and strap dimensions and alignment on S-IV-6 and subsequent.
3. Use tensiometer to check and adjust strap tension on S-IV-6 and subsequent.
4. Use uniball at hook attachment on S-IV-7 and subsequent.

SECTION III. SATURN IB CONFIGURATION

A. S-IB STAGE

1. Contracts

MSFC has negotiated the reliability modification to the CCSD contract. The modification was submitted to Headquarters for approval on February 3.

*2. S-IB-1

CCSD fabrication of components for the first Saturn IB booster, S-IB-1, other than those already available from S-I-111, is scheduled to begin at Michoud in March.

B. S-IVB/IB STAGE

1. Procurement Plan

MSFC has initiated action for preparation of a procurement plan for eight additional S-IVB/IB stages. At present, only four S-IVB/IB stages are under contract.

*2. S-IVB/IB-1

At Santa Monica, early stages of fabrication for the first Saturn IB second stage, S-IVB/IB-1, continued throughout the report period. Status is as follows:

- a. The common bulkhead aft dome is complete except for the dollar weld.
- b. The common bulkhead forward dome is in the LOX welder awaiting installation of the tee-ring.
- c. The LOX baffle is complete.

C. INSTRUMENT UNIT

ST-124M Platform. The flight ST-124M platforms for S-IU-201 and S-IU-202 were placed under contract with Bendix on February 5.

D. TEST VEHICLE STATUS

1. S-IVB Battleship Test Stage

During the report period, at SACTO, installation of exterior components and interior access kits continued on the S-IVB Battleship test stage. The stage is located in the test stand. Cold flow testing is scheduled for late April; however, the engine delivery date for the stage is in jeopardy due to late hardware deliveries.

*2. S-IVB Structural Test Stage

Early in the report period, installation of the structural test stage LH₂ forward dome into the Huntington Beach assembly tower was interrupted because of a questionable weld repair in the dome. The decision was made by MSFC and DAC to use the LH₂ forward dome built for the S-IVB dynamics test stage, since it would provide the designed structural information and integrity. This dome was installed in the assembly tower for fitting operations, and by the end of the report period, it had been tack welded internally to the LH₂ cylinder. Schedule recovery is anticipated.

3. S-IVB Dynamics Test Stage

The former Structural Test Stage LH₂ forward dome is in rejected status at Huntington Beach. DAC eliminated a crack in the questionable weld repair area by grinding out the weld to a skin thickness of .082 inches. Tensile tests on specimens simulating the weld repair area were in process at the end of the report period. If results of the tests indicate the strength of materials at .082 inches can withstand design requirements, the dome will be used "as is" on the S-IVB Dynamics test stage. However, if the tests fail, then an acceptable repair procedure will be agreed upon by MSFC and DAC.

*4. All Systems Test Stage

At Santa Monica, during the report period, the common bulkhead for the All Systems test stage was completed. At the end of the report period, the aft LOX dome was being checked for fitting ovalness.

SECTION IV. SATURN V CONFIGURATION

A. S-IC STAGE

*1. Test Fuel Tank

At MSFC during the report period, S-IC test fuel tank activities continued satisfactorily. Rewelding of the LOX tunnel into the tank was completed on January 19, 1964. Following cleaning operations and installation of hydrostatic test strain gages, the tank was placed in the Hydrostatic Test Tower and the testing performed. Following successful completion of the test on February 8, the tank was re-cleaned and mated with the aft adapter in the vertical assembly tower. Load proof testing of the tank is scheduled to begin during the next report period.

*2. S-IC-T

a. At MSFC during the report period, work continued on the S-IC-T LOX tank. Six LOX suction fittings have been welded into the lower bulkhead gore segments. One gore segment was unsatisfactory because of thin areas around the fitting joint; however, a satisfactory replacement is available. Altogether, five of eight apex and base gore segments for the lower bulkhead have been welded together and are ready for bulkhead assembly. All necessary material for the upper bulkhead is available at MSFC; bulkhead manufacture will start as soon as the lower bulkhead is assembled.

b. MSFC completed the first upper fuel tank bulkhead to Y-ring weld on January 8; however, the weld was rejected because of excess porosity. While the Y-ring was being prepared for reweld, the centerpiece was satisfactorily welded to the bulkhead. The bulkhead Y-ring reweld was performed on February 2. Following necessary weld repairs, the assembly was accepted by mid-February. The cylindrical skin assemblies for the fuel tank are complete. Upper bulkhead to cylindrical skin assembly welding is scheduled for mid-February.

c. All four S-IC-T thrust structure thrust posts have been received from Boeing by MSFC. By mid-February, the posts had been located on the assembly fixture and necessary drilling completed. Fitting installation on the thrust structure intermediate rings for the holddown post tie-in has been delayed by the lack of drilling tooling.

3. A joint MSFC-Contractor effort has narrowed the cause of the S-IC tank chemical milling problem to two areas: variation in primary processing of the material and differences in the chemical mill solutions. Contractor efforts with the chemical mill solution have resulted in tank parts that have a uniform etch rate except for slight sloping transition at the fillet.

*4. During the report period, MSFC completed installation of the control pressure system in the S-IC forward and intertank mockups. The fuel vent system has been installed in the intertank mockup.

B. S-II STAGE

*1. During the report period, S&ID continued fabrication and assembly of S-II stage ground test stages. At the Seal Beach Assembly Facility, the first S-II all-welded bulkhead (aft common bulkhead for the structural static test stage) was completed with the welding of the dollar section in place. During mid-January, S&ID received, at Seal Beach, the first complete set of liquid hydrogen No. 3 cylinder panels and forward liquid hydrogen bulkhead gores. By January 18, S&ID successfully completed, at the Santa Susana Test Facility, the S-II Battleship LOX tank chill tests.

2. On February 12 and 13, MSFC and S&ID held a successful S-II Stage Quarterly Review. During the review, March 17 was set as the deadline for definition of all proposed S-II stage weight reduction items. The definitions will include probable and possible weight reductions, required decision dates, and hardware affected.

3. During the report period, MSFC and KSC decided, at a joint meeting, to install the S-II/S-IC interstage at the Merritt Island Launch Area rather than at MTF as proposed by KSC. Acceptance of the latter was precluded by numerous technical, facility, and GSE problems.

4. During January, S&ID completed fabricating the S-II/S-IVB master mating interface tool and shipped the item to the Douglas Santa Monica plant for S-IVB fabrication and assembly work.

5. Early in February at Downey, S&ID received the computer group GSE for the S-II Stage Electromechanical Mockup. Installation of the equipment in the Mockup Control Room is presently being accomplished.

C. ENGINES

1. F-1 Engine

*a. During the report period, MSFC conducted seven F-1 engine tests in Static Test Tower West for a cumulative firing time of about 278 seconds. Five of the seven tests lasted for the scheduled duration and engine performance was satisfactory. Engine damage from these tests basically consisted of minor cracks in thrust chamber tubing and the exhaustorator. The first of the two tests that failed to obtain full duration was terminated prior to ignition because of test stand equipment malfunction. The second test was cut off after

approximately 122 seconds because of an increase in LOX temperature. The engine thrust chamber and exhausterator are being leak checked and repaired in preparation for the next static firing.

*b. At Edwards AFB throughout the report period, Rocketdyne, F-1 Engine contractor, continued engine systems and injector testing. A total of 40 engine systems tests were performed; the tests were generally successful, with most test objectives obtained. In the majority of tests that did not obtain scheduled firing duration, the early termination was due to test facility malfunction or engine failure in the thrust chamber area. Thirty-seven injector tests were conducted with generally successful results. In a majority of the tests where instability was introduced by bombing, stable operation was satisfactorily regained.

c. Rocketdyne delivery of production engine F-1002 to MSFC has been rescheduled to latter March 1964, allowing time for thrust chamber tubes cracked during acceptance testing at Edwards AFB.

*2. J-2 Engine

During the report period, the J-2 engine contractor, Rocketdyne, continued engine static firing tests at the Santa Susana Test Area. The tests were performed in three test stands: Delta-2A, Delta-2B, and Vertical Test Stand-2; reactivation of Vertical Test Stand-3 is being delayed by lack of engine hardware. Three tests were conducted on Delta-2A. Two of the tests were engine checkout tests, following engine repair necessitated from damage caused by a slow closing gas generator LCK valve, on January 22. The generally successful tests performed on Delta-2B were conducted to evaluate engine performance during the cutoff sequence and obtain engine heat transfer data for stage recirculation systems design. About 20 tests were conducted on Vertical Test Stand-2 to evaluate engine start characteristics at simulated stage inlet pressures and various start tank pressures. The tests were generally successful.

D. INSTRUMENT UNIT

*1. On January 20, MSFC received from IBM the program plan outlining detailed plans for Saturn V Instrument Unit procurement, integration, and checkout. The plan is presently under review by MSFC.

*2. On February 11, MSFC and IBM began contract negotiations for Saturn V prototype and breadboard guidance computers and data adapters. Late in January, the letter contracts for these items were extended until April 22, 1964.

E. GROUND SUPPORT EQUIPMENT

1. Boeing submittal of Phase III GSE documentation to MSFC is scheduled for late February. Following submittal, Boeing will release documentation to start manufacturing of S-IC test and checkout station equipment.

2. As a result of MSFC, RCA, and Boeing efforts, delivery dates for the RCA 110A computer, which will be used for S-IC test and checkout, have been improved and the threatened four-month delay of stage checkout has been removed.

3. During the report period, MSFC received and approved the contractor's welding procedures for the S-IC transporter. However, the contractor is still about two months behind the present transporter delivery schedule of April 15, 1964 for the first unit.

*4. On January 31, 1964, MSFC completed mechanical, hydraulic, and electrical assembly of the S-IC transporter being manufactured by Marshall. Electrical and hydraulic systems are presently being checked out; the electrical power system checkout has been completed satisfactorily. Final checkout of the control system will be delayed because of defective cables. Modification of the first M-26A1 prime mover for the transporter has been completed, and transporter checkout with the S-IC stage simulator is scheduled for March 1964.

5. During the report period, MSFC continued a test series evaluating LC-39 fuel transfer system components. Tests have been completed on the system pump, motor, motor starter, and specific valves, with satisfactory results. On February 11, tests were begun on filters for the system.

6. Early in February, S&ID accomplished the initial design release on the S-II automatic checkout equipment. The final Phase I control drawings for this equipment has been submitted to MSFC for review and approval.

SECTION V. FACILITIES

A. MARSHALL SPACE FLIGHT CENTER

*1. Work continued throughout the report period on the MSFC S-IC Static Test Stand. During February the completed flame deflector was positioned underneath the stand and is being attached to the supporting base; deflector and associated manifold painting is about 40 percent complete. All major welding of the stand's load platform is complete, and minor welding and decking placement is underway. Site work

around the test stand and support building is continuing with about 60 percent of the concrete sections poured. Technical systems installation is proceeding satisfactorily. Facility completion is presently scheduled for May 1964.

*2. By February 12, 1964, the MSFC F-1 Engine Test Stand steel superstructure erection had been completed. Deflector work is complete except for minor welding and painting. Work presently underway includes load platform welding and installation of the firex system, elevator tower siding, technical system, and utilities. The Preparation Building has been completed and is occupied by MSFC personnel. Facility completion is scheduled for May 1964.

*3. During the report period, the construction contractor continued work on the MSFC Saturn V Ground Support Equipment Test Facility. By mid-February the blockhouse walls had been poured to or above ground level. Assembly Building footings are being poured and one test position is ready for concrete pouring. The responsible contractor has completed design of the hydraulic power package for the facility. Work is continuing on the model test program.

*4. Construction of the Saturn V Dynamic Test Stand at MSFC progressed on schedule throughout the report period. Erection of the superstructure steel obtained the 264-foot level, and excavation for Tunnel B was completed. Work on Tunnel A and the Termination Building is continuing.

5. On January 20, 1964, construction began on the MSFC Components Test Facility. Presently the contractor is excavating for the Control and Service Center foundation and clearing the area around an existing test stand. The technical systems contractor continues designing, fabricating, and procuring technical systems equipment for the facility. Design of the facility addition is proceeding on schedule, with the 90 percent design review conference successfully held on January 21, 1964. The design effort is scheduled for completion on February 17, 1964. The technical systems preliminary design is proceeding on schedule.

B. MISSISSIPPI TEST OPERATIONS

1. The one land tract within the Mississippi Test Facility fee area remaining to be acquired by NASA is now scheduled to be obtained during April 1964. Options have been obtained or condemnation actions have been filed on 15,302 acres of a total of 128,156 acres within the Facility fee area and buffer zone.

2. On January 31, 1964 negotiations were completed to extend General Electric's Plant and Technical Support, and Facility Activation contract for MTO through June 30, 1964.

3. In mid-January 1964, a contractor was chosen for negotiations on the MTF Liquid Hydrogen Plant. Negotiations are presently underway and contract award is expected during the next report period.

4. Two contracts for MTO studies and criteria formulation were awarded during the report period. The first was awarded on January 27, 1964 and extends an existing contract to November 30, 1964. The second, awarded on February 3, 1964, is a new contract for advanced criteria studies on the Components Service Facility at MTF. In addition, negotiations for extending a third contract to November 30, 1964 were completed on January 27, 1964.

5. During the report period, a contract was awarded for dredging the East Pearl River from MTO to the Gulf Intracoastal Waterway. Work under the contract, which calls for deepening, widening, and straightening the river channel plus dredging a canal from the harbor area to the Facility lock, will begin in the near future and is scheduled for completion during October 1964.

6. Site preparation for MTF S-II Stage Test Stand A-2 has been completed and placement of foundation piling started. The stand is scheduled to begin operation in August 1965.

7. During the report period, the Mobile District Corps of Engineers requested bids on a high pressure water and heating facility for MTF. Bids for the facility, which will provide water for cooling test stand flame deflectors and heating and air conditioning for the Saturn V complex, are scheduled for opening on March 10, 1964. A design and construction contract for the high pressure pumps to be installed in this facility was awarded in January.

C. MICHLOUD OPERATIONS

Boeing preparation of the Michoud plant for S-IC stage manufacture and related testing is progressing satisfactorily. Construction projects remaining to be completed are test and checkout building and the horizontal assembly, major painting and shipping, engine build-up, and high pressure test facilities. This construction is scheduled to be complete by the end of 1964.

D. CONTRACTOR FACILITIES

1. Throughout the report period, construction at the Beta Test Complex of Douglas's SACTO Test area continued satisfactorily. The facility shop, water storage reservoir, sewage system, pump house, gaseous helium trailers, and the electrical distribution system were turned over to Douglas. Final checkout was completed on the Beta Test Stand 1 water supply and distribution lines, instrumentation tunnel, exhaust

deflector, substructure and terminal room, and test stand shop. These facilities will be officially turned over to Douglas on February 17, 1964. Installation data acquisition instrumentation installation continued on the test stand Beta 1. Checkout of the high pressure storage and distribution system and the cryogenics storage and transfer system is in progress. At Beta Test Stand 3 the structural steel, miscellaneous steel, handrails, grating, and weigh bridge have been installed.

2. Construction of Complex Gamma at SACTO, which will be used to static test S-IVB auxiliary propulsion modules, is approximately 75 percent complete. Wall partitions, air conditioning, ducting, and blast door frames are being installed in the instrumentation control center. The cable tray installation between the test control and instrumentation control centers is complete. The entire complex, with the exception of the oxidizer and propellant piping in the test cells will be completed on March 20. Late delivery of valves will result in a slippage of the completion of the oxidizer and propellant piping in the test cells to May 1, 1964.

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February 29, 1964

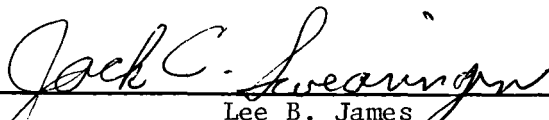
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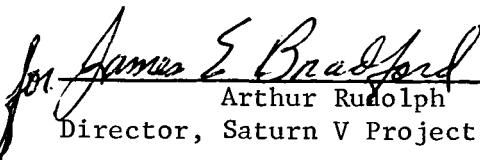
(January 16, 1964 - February 16, 1964)

by INDUSTRIAL OPERATIONS

The information in this report has been reviewed for security classification. Review of any information concerning Department of Defense or Atomic Energy Commission programs has been made by the MSFC Security Classification Officer. This report has been determined to be UNCLASSIFIED.



for Lee B. James
SATURN I/IB Project Director, I-I/IB-DIR



for Arthur Rudolph
Director, Saturn V Project Office

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