

OUTLINE

SUBJECT: Saturn I/IB Quarterly Film Report No. 24, covering progress during the period April, May, June, 1965.

Section 1. Launch of SA-8.

- A. Boilerplate No. 26 shipped from Marshall to the Cape by Guppy April 10th.
- B. Final checkout of Pegasus B at Hagerstown.
- C. Shipment of Pegasus B to General Electric for vibrations tests April 13th.
- D. Shipment of Pegasus B to Cape April 15th.
- E. Systems checks of Pegasus B in Hanger D at the Cape in mid-April.
- F. Pegasus B mated with Boilerplate No 26, service module adapter, and service module April 27th.
- G. Spacecraft erected April 28th.
- H. Pre-launch checkout of SA-8.
 1. Successful countdown demonstration test on May 21st.
 2. Countdown activities begun May 23rd.
- I. Flight of SA-8.
 1. Liftoff-May 25th, 2:35 a.m. EST.
 2. Ninth successful flight of S-I booster.
 - a. SA-8 first Chrysler built booster.
 - b. Stage burned for 148 seconds.
 - c. Good separation.

3. Fourth successful flight of Douglas' S-IV stage.
 - a. Stage burned about 474 seconds - obtained programmed cut-off velocity.
 - b. Stage flight satisfactory.
4. Apollo Command and Service Modules jettisoned from second stage - leaving Pegasus B wings to unfold freely.
 - a. Pegasus B roll rate reduced to 6.6 degrees per second, compared to Pegasus A roll rate of 9.8 degrees per second.
 - b. Accomplished by exchanging the LH2 and LOX continuous vents. (S-IV stage).
 - c. Pegasus B is obtaining information concerning quantity, size and velocity of meteroids in the near earth atmosphere.
 - d. SA-10 will also launch a Pegasus satellite.
- J. Objectives of flight of SA-8.
 1. Provide and evaluate meteroid data in near-earth orbit.
 2. Demonstrate launch vehicle interactive guidance mode and evaluate system accuracy..
 3. Testing of a closed loop guidance system for the third time.

Section 2. Status of SA-10.

- A. S-I-10 preparation for shipment during April and May.
- B. Shipment of S-I-10 from Michoud to Cape Kennedy May 26th through May 31st.
- C. S-IV-10 removed from storage at SACTO, shipped to Cape by Guppy, arrived May 8th and was off-loaded May 10th.
- D. S-IU-10 status.
 1. Checkout completed in early April.
 2. Preparation for shipment for about two weeks, completed April 16th.

3. Unit placed in storage awaiting shipment.
 4. Shipment of S-IU-10 to the Cape June 1st, via Guppy.
- E. Erection of SA-10 stages.
1. S-1 stage - June 2nd.
 2. S-IV stage - evening of June 8th.
 3. S-IU - evening of June 9th.
- F. Pre-launch checkout of stages and components underway.

Section 3. Status of Boilerplate No. 9.

- A. Modification completed at MSFC.
- B. Shipped to the Cape separately.
 1. Service module and adapter shipped June 21st.
 2. Command module and Launch Escape System shipped June 29th.

Section 4. Status of Pegasus C.

- A. Electrical canister and thermal vacuum test completed May 26th.
- B. Shipped to Hagerstown for final assembly and functional checkout.
- C. Pegasus C shipped to KSC June ____th.

Section 5. Status of H-I Engine.

- A. 200 K H-I Engine qualification completed April 30th.
- B. Engine qualification included testing of:
 1. DOX valve.
 2. Turbo-pump.
 3. Thrust Chamber.

Section 6. Saturn IB Dynamic Testing.

- A. Complete vehicle configuration testing.
- B. Testing ran through April and completed May 27th, no major problems

- C. Changeover to upper stage configuration
- D. Dynamic testing to resume next quarter.
- E. Planned shipment of S-IB-D/F to Michoud merely for storage until needed for Saturn IB/Centaur Dynamic testing.

Section 7. S-IB Structural Testing at Michoud.

- A. Spider beam failure during stage structural testing in April.
- B. MSFC and Chrysler have resolved the problem and modified spider beam.
- C. Structural testing continuing.

Section 8. Status of S-IB-1.

- A. Short-duration static firing (35 seconds) on April 1st.
- B. Long duration static firing successfully completed at MSFC April 13th.
- C. Stage was shipped from MSFC to Michoud April 24th.
- D. Post-static modifications completed.
- E. Post-static checkout began June 11th.

Section 9. Status of S-IB-2

- A. Pre-static checkout completed April 22nd; installation of retrofitted engine then began.
- B. Stage was shipped to Marshall, departing Michoud June 12th, arriving June ____ .
- C. Static testing scheduled for June ____ .

Section 10. Status of S-IB-3.

- A. Fabrication and assembly of stage completed June 16th.
- B. Engine installation is complete.
- C. Pre-static checkout started June 16th and continued throughout June.

Section 11. Status of S-IB-4.

- A. Structural test spider beam failure caused temporary delay in tank clustering.
- B. Tank clustering began April 5th, to continue through August.

Section 12. Status of S-IB-5.

- A. Tail section assembly began March 23rd.
- B. Overall fabrication continued through the quarter.
- C. Second stage adapter assembly began May 12th.
- D. Tank clustering is scheduled to begin July 12th.

Section 13. Status of S-IB-6

- A. Fabrication of stage began March 29th, two week ahead of schedule, with barrel assembly completed June 28th.
- B. The lower thrust ring was completed on May 14th.
- C. The thrust support outrigger installation began May 13th and is on schedule.
- D. Fabrication to continue next quarter.

Section 14. Status of S-IV-B Battleship Stage.

- A. S-IVB Battleship Test program continued through May 14th in Beta Stand No. 1 at SACTO.
- B. The final Saturn IB S-IVB Battleship firing occurred May 4th, with a successful full-gimbal, full-duration firing.

- C. Successful environmental temperature conditioning tests conducted on May 14th concluded the Saturn IB Battleship program.
- D. Conversion to the Saturn V configuration began immediately.

Section 15. Status of S-IVB Facilities Checkout Stage.

- A. Underwent successful propellant loading tests at Douglas' Beta Test Stand No. 3.
- B. Automatic loading successfully accomplished May 1st.
- C. Stage removed from stand and moved to inspection site.
- D. No discrepancies were revealed during post-test inspections of the propellant tanks, LH² tank insulation and dye checks of all exposed welds.
- E. Stage departed Courtland Dock (at SACTO) for KSC on June 10th.
- F. Stage will be used in checkout of VLF-34.

Section 16. Vertical checkout Laboratory at SACTO.

- A. Construction of facility well underway. Erection of structural steel is complete.
- B. Purpose-post-static checkout of S-IVB stages after acceptance firing

Section 17. Aereseach Test Facility, Phoenix, Arizona.

- A. Qualification testing of the fuel feed duct for S-IVB Stage.
- B. Aereseach - sub contractor of DAC.

Section 18. Status of Vertical Stand 3-A.

- A. Stand modifications started last quarter were completed in early June.
- B. Initial static firing occurred in mid-April.

Section 19. Status of J-2 Engine Static Test Stand at MSFC.

- A. The first engine delivered to MSFC by Rocketdyne was installed in the J-2 Static Test Stand in April.
- B. To be used for familiarization of Marshall personnel.
- C. The second engine was delivered in June to MSFC to activate the stand.

Section 20. Status of J-2 Engine Program.

- A. J-2 Engine Liquid Oxygen turbopumps will continue to be assembled at Neosho, Missouri.
- B. Calibration of operational balancing machine.
- C. Scientific balancing of J-2 Engine LOX impeller.
- D. Last of five J-2 Engines delivered to SACTO for various phases of the S-IVB Battleship Test Programs
- E. Six successful malfunction tests were performed at Santa Susanna.
 - 1. Required as part of J-2 FRT program.
 - 2. Malfunctions phase in an engine to determine effect on performance.
 - 3. To determine if a safe shut-down can be accomplished.
- F. Engine No. 2002 was acceptance-tested in May.
- G. FRT on Engine No. 2002 was completed June 30th.
- H. Engine No. 2003 finished the altitudedtesting portion of FRT June 6th. Additional testing continued through June.

Section 21. Status of S-IVB/IB-1.

- A. Stage checkout was terminated late last quarter then underwent LH tank modifications and parts shortages, installation, painting and weighing.

- B. Shipped to SACTO April 30th, and arrived May 6th. (Delayed en route due to bad weather)
- C. The stage was installed on Beta Test Stand No. 3, May 7th.
- D. Out-of-position manufacturing and modifications underway.
- E. Checkout was resumed May 29th and continued through June.
- F. Static firing is scheduled for early next quarter, marking the firing of first flight S-IVB stage.

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Section 22. Status of S-IVB/IB-2.

- A. Stage fabrication and assembly completed April 30th.
- B. Engine was hung April 28th.
- C. Checkout started April 30th and continued through this quarter.
- D. Following checkout the stage will be shipped to SACTO for static firing tests.

Section 23. Status of S-IVB/IB-3.

- A. Clip bonding underway at beginning of quarter.
- B. LOX and LH₂ tank installations, along with forward and aft skirt and thrust structure installations.
- C. Stage checkout scheduled for next quarter.

Section 24. Status of S-IVB/IB-4.

- A. Insulating LH₂ tank, started last quarter, completed in early May.
- B. Installation of helium spheres in the LH₂ tank completed by late May.

Section 25. Status of S-IVB/IB-5.

- A. Fabrication, assembly, and structural testing of LOX tank completed early May.
- B. The LOX tank and LH₂ segments were shipped to Huntington Beach in early May and installed in Tower No. 1.

- C. LH₂ tank and LOX tanks joined in mid-May.
The stage was in rolled at Dry Dock 2000.
- D. Forward dome joining completed in early June.
Completed at Marshall's P&VE Laboratory.
- E. LH₂ insulation scheduled for next quarter.
Contract was awarded May 29th.

Section 26. Status of S-IVB/IB-6.

- A. Assembly of aft common bulkheads started May 4th.
- B. Joining of aft and forward common bulkheads.
Status of S-IVB IB-6.

Section 27. Status of S-IU-200V.

- A. Vibration testing started last quarter continued through April and May.
- B. Tests revealed deficiencies in the mounting of components to the IU skin.
- C. As a result of these vibration tests, an engineering change was made: all component mounting pads will be bolted to the skin in addition to being bonded.
- D. Another series of vibration tests is underway to qualify the mechanically-fastened mounting pads.

Section 28. Status of S-IU-200/500S.

- A. Structural testing began May 27th at Marshall's P&VE Laboratory.
- B. Testing revealed necessity of changes in the IU access door, which have been made.
- C. Structural testing is scheduled for completion early next quarter.

Section 29. Status of S-IU-201.

- A. Component installation, begun last quarter, continues.
- B. Installation of inserts to allow bolting of all mounting boxes to the structure was completed May 27th. (This is a change, necessary due to results of vibration tests).
- C. Component assembly is to be completed next quarter.
- D. Checkout of IU is scheduled for next quarter.

Section 30. Status of S-IU-202.

- A. Structural assembly started April 1st.
- B. Component assembly is underway.

Section 31. Status of Instrument Unit Checkout Station.

- A. GE ESE continues to be pacing item.
- B. GE ESE delivery occurred June ____.
- C. Activation of IU Checkout station is being evaluated.

Section 32. GSE System Development Facility at MSFC.

- A. Installation of black boxes on IU simulator cold plates is underway.
- B. GSE Breadboard Facility equipment build-up well underway.
- C. SDF in use by RCA and IBM in preparing computer programs.

Section 33. Status of Checkout Station No. 1 (Michoud).

- A. Conversion of Checkout Station No. 1 from S-I to S-IB configuration was completed in June.
- B. Preparation for checkout of S-IB vehicles is underway.

Section 34. Status of S-IU-500F.

- A. Completed in mid-June.
- B. Shipped from MSFC to Cape Kennedy June 19th.
- C. To be used in VLF-34 checkout.

Section 35. Status of S-IU-200S/500S-II.

- A. Structural Test Unit common to both the Saturn IB and V programs.
- B. Structural testing atop an S-IVB Forward Skirt completed May _____.
- C. Verifies structural segments manufactured by NAA to be flown on SA-203 and subsequent vehicles.