



PLYMOUTH

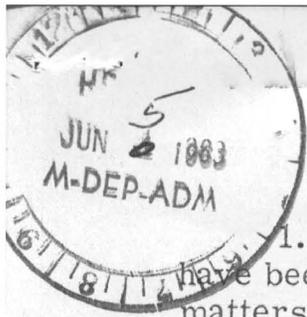
June 4, 1963

RECEIVED
GENERAL INVESTIGATION
DIVISION

JUN 11 1963



NOTES TO HOLMES - 6-4-63 - DEBUS



Boannon

1. LOC Council Meeting. JPL and Goddard representatives have been asked to participate in the Council on NASA institutional support matters at AMR and Gray (Goddard) did in the meeting for May 29.

2. LUT Erection Areas 1 and 2 and Barge Unloading Areas. Bids opened 28 May 1963. Apparent low bidder was R. E. Clarson in the amount of \$1, 810, 937. 90; Government estimate \$1, 704, 266. 53.

3. Third Addition to E&L Bldg. Beneficial occupancy began Monday, 27 May, and should be completed this week.

4. Temporary Potable Water, MILA. An interim plan for providing potable water in the Merritt Island Industrial Area, pending completion of the Cocoa Water Co. main, has been proposed by Jacksonville District and has been approved for execution. It involved placing shallow wells in the Industrial Area and purifying through the use of portable purification units which Jacksonville District is securing on loan from Third U. S. Army in Atlanta. Distribution will be accomplished through the main system now under construction.

5. G. E. Support. Discussions with G. E. are being held this week in preparation for issuing task orders for G. E. support in design of LC 39 instrumentation GSE.

6. The NASA-MILA Federal Credit Union. The NASA-MILA Federal Credit Union became a reality May 24, 1963 with the presentation of the official charter.

7. Daytona Beach Operations. Mike Cushman advised by telephone May 28, 1963 that the NASA circular which establishes NASA Daytona Beach Operations under LOC has not been signed by Mr. Webb; however, an estimated effective date is June 19, 1963.

8. 37B Wet Test Status: The first attempt to load Lox into the S-IV stage last week resulted in a cracked bellows in S-IV fill line. It was determined that this was a result of a pressure spike which occurs immediately after starting Lox pumps. Minor changes to the pump did not remedy this situation so it was decided to install a relief valve and vent lines upstream of the DAC Lox valve skid on the umbilical tower and also replace the DAC fill line with one rated for a higher pressure. These changes were made during the period May 30 - June 2 and a successful loading from the standpoint of Lox line pressure was conducted on June 3. Erratic operation of the S-IV Lox tank capacitance probe during this loading is currently being investigated.

DAC is in the process of inspecting the S-IV stage common bulkhead for cracked welds. This was requested by DAC, Santa Monica, as a result of cracked welds which occurred in the S-IV stage "All Systems" vehicle at SACTO during LH₂ loading tests.

MSFC has been advised that the completion of the wet test will be delayed from June 20 to June 28 as a result of the above. This will not impact on dynamics test or complex availability for SA-5.

9. Missions Control Operations Panel. At a meeting on May 28 with attendance of LOC, MSFC, MSC and NASA Headquarters, the subject of flight checkout responsibility was discussed as an item at the next Systems Review Meeting (June 21). This requires that data flow system and operating concepts be prepared. I plan to clarify the LOC issues prior to June 21.

10. OMSF Problem Reporting Procedure. A proposal to OMSF centers from Shea's office to add another failure reporting system was answered indicating that failure reporting systems now available are adequate. MSFC has sent a similar letter.

11. Reliability Testing of Saturn I GSE Components. On May 23, 1963, a cost-plus-fixed fee contract was awarded by LOC to Wyle Laboratories, El Segundo, California for the Reliability Testing of Saturn Ground Support Equipment Components; contract cost is \$192,210. All work under the contract is scheduled to be completed within one year. Nineteen items comprise the list of components for testing. All items are either priority one (failure would cause loss of vehicle or life) or priority two (failure would cause scrub or serious injury to personnel). Majority of this work will be conducted in the contractor's new laboratory in Huntsville, Alabama.

12. Fair Employment Practices. Gavin of NASA personnel and Feild of Patomic Institute visited LOC and discussed this area of endeavor with me and staff members. We plan to arrange consulting services with the Institute to maintain current experience. Both liked the actions we had taken so far in the employment of Negroes.

13. Webb-McNamara Agreement. General Davis and I have signed additional agreements implementing the Webb-McNamara Agreement of 17 January in the areas of Instrumentation Planning, Calibration Services, Chemical Analysis, Security, Facilities Management, Visitor Control, Photography, Public Information Activities, and Environmental Health.

Only major area remaining is Safety which we have reached agreement in principle; expect to sign this in a few days. Capt. Holcomb has copies of agreements signed to date.

Regarding the Holcomb-Kronauer Report, I understand informally that General Cooper wrote a fairly critical paper to Mr. Rubel implying that Holcomb and Kronauer had white-washed the situation and hadn't investigated whether "the spirit as well as the word" of the agreement was being implemented. He also stated that LOC should have worked jointly with AFMTC in evaluating the best method to obtain contractor services in the MILA. Jack Holcomb has further information on this if you should desire.



NOTES

6/3/63

CONSTAN

B 6/4

Negative Report

6-3-63
NOTES ~~JUNE 3, 1963~~ DAVIS

B6/4

Item 1.- Instrument Unit for Astrionics: Negotiations with IBM for instrument unit discontinued because the employee fringe benefit (guaranteed home sale plan, etc.) exceeds limitation imposed by NASA Headquarters. Initial contract amount estimated \$4.7 Million. Total buy estimated \$25 - 30 Million. MSC has same problem. Headquarters will take over to secure agency-wide agreement.

BD
Has about
MSF's insistence
that we first
submit a
PDP for entire
10-buy? B

Item 2.- Telemetry for SATURN V: During early April, Douglas Aircraft and North American Aviation, S&ID, refused to accept instructions from the Director, SATURN Systems Office, on method of subcontracting telemetry for SATURN V. The companies contended, and properly so, that the instructions were in violation of the contract terms and conditions. Thereupon, the Contracting Officer arranged for a solution that was acceptable to the contractors, SATURN Systems Office, Astrionics, and P&C, all based upon Class I documentation being finished by HOBERG before December 1963. According to SSO, there is significant duplication of MSFC effort by the contractors and the Class I documentation by HOBERG may be delayed until 1965. Correction could involve a sizeable termination of the Contractors' responsibility for definition, design, and development of telemetry airborne and associated ground support equipment. Additional data is needed from SATURN Systems Office and Astrionics to enable preparation of procurement plan for submission to Headquarters, since it appears that the total value of the transaction involved may exceed \$5 Million.

Eberhard R

Suggest you call a meeting with Lange, Davis, Hausserman + Hoberg to hammer out an acceptable solution. This is a sticky problem indeed. (I'm unable to do it prior to our West Coast and my ensuing Paris trip, but I think the matter is urgent).

B

NOTES 6-3-63- FORTUNE

B6/4

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Jm / 1. GE Negotiations: Negotiations with GE have been postponed until June 10, 1963. The delay is for GE to rework their proposal and for MSFC to get NASA Headquarters approval on some subcontracting clauses. ✓

2. Visit to Cape Canaveral: Messrs. Kent, Jones and myself met Mr. Cal Towne at Cape Canaveral on May 29, to take a look at LOC's community relations program. While at the Cape, we had a chance to participate in a Regional Planning Council meeting. The trip was very fruitful and we picked up some ideas that may possibly be good for the MTF area. ✓

*1. Headquarters Request for Computer Uses: Mr. Morrison, OTDA, requested a compilation of computer uses for Engineering Flight Evaluation. The material will be used (along with others) for a Congressional Hearing. ✓

2. Short Duration Wind Tunnel Testing: A discussion concerning short duration wind tunnel testing techniques was held at Cornell Aeronautical Laboratory between Aeroballistics Division, Propulsion & Vehicle Engineering Division, and Pratt & Whitney Company of West Palm Beach, Fla. on May 22, 1963. Both M-P&VE and Pratt & Whitney were quite impressed with the work being done in Aeroballistics Division using the short duration techniques and both were interested in its' potential application to advanced propulsion work. Some additional discussions were held with M-P&VE on May 23, 1963 in which ground rules were discussed for a cooperative effort between our division and M-P&VE in this area. Some programs under consideration are: (a) Testing of Various Plug Nozzle Configurations, (b) Testing of Air-Augmented Propulsion Systems, (c) Testing of Fluid Injection for Thrust Vector Control. ✓

3. Apollo Mission Control: The first formal Mission Control Panel meeting (cochairmen: Speer and Hodge) was held in Huntsville on May 28. Turnock and Schwartz (OMSF) attended. Dr. Speer explained the MSFC/LOC position concerning operations support. Our concept was well received. The remaining problems appear to be a matter of degree rather than principle. Mr. Hodge requested urgently a group of four MSFC (and LOC) personnel to start work in Houston by August this year. These people would be rotated (two in Huntsville, two in Houston) not to lose contact with their design groups. Contractor personnel is acceptable to MSC. However, at this early stage this does not appear to be attractive from our viewpoint. This liaison crew shall be increased to twelve by Dec. 65. It is recommended that ASTR and P&VE nominate two suitable persons each. Hodge also pressed for more MSFC participation on remote site flight control (six instead of two) at a later time.

4. Priority of Dynamic Tests: Tests Division is currently building a cryogenic slosh test facility in part of the dynamic test tower. This facility will be equipped to test slosh of LOX by June 15 and liquid hydrogen by December. The current plan is to operate this facility after normal working hours; however, it is generally understood by Test Division that interference will occur since the dynamic program to which we are committed requires a large amount of overtime work. This schedule compression is caused by various other test requirements for the dynamic stages: For example, the propellant fill test currently being performed at Cape Canaveral. It is unfortunate that these two test facilities are adjacent. Under the circumstances, a clean cut establishment of priority is essential. Although slosh testing is of great value, obtaining data required to design the Block 11 control systems must not be impaired. Recent testing of the SA-D5 second stage vehicle disclosed a much stronger influence of engine resonance on the over-all bending mode than had been anticipated. First bending was predicted to occur at 14.1 cps but occurred at 9.9 cps. → E.G. is this considered critical?

E.F.
 Aug ←
 suggestions
 B
 2

Karl
 Heinburg
 Please
 look
 into
 this
 B

B

1. SA-5 INSTRUMENT UNIT CHECKOUT: The Simulated Flight Test will be performed on May 29. Several outstanding problems will be corrected after the Simulated Flight Test and retested during the S-I/IU compatibility test. ✓

*2. S-I-5 CHECKOUT: The checkout of the S-I-5 stage is progressing on ^{fm} schedule in Bldg. 4708. No major discrepancies are outstanding at this time. ✓

*3. S-IV-5 CHECKOUT AT SACRAMENTO: The vehicle has been placed in the test stand and the remainder of the assembly work is being accomplished. Four actuators have been removed from the stage and have been modified. Dye checking of the welded areas of the engine thrust chamber is being performed. Three engines have been checked thus far with no evidence of trouble. Ultrasonic testing of the hydrogen tank insulation is being performed. ✓

4. S-I-6 ENGINE #8 INSPECTION: The investigation of Engine H-2009, position #8, reveals that the cause for prolonged burning during short static firing was galling of the main lox valve piston shaft. All S-I-6 main lox valves will be investigated for this deficiency. ✓

5. S-I-7 PRE-STATIC CHECKOUT: Transfer of the S-I-7 stage to Quality Assurance Division was accomplished on Saturday, May 25, 1963. The stage was moved into the pressure cell in Bldg. 4705, where status determination will be made prior to start of pressure and functional testing. ✓

6. DYE PENETRANT INSPECTION FACILITY: In regard to your comment to NOTES 5-20-63 CONSTAN (attachment 1), the following information is presented. In a meeting on 5-29-63, attended by representatives of Boeing, Michoud Operations, Propulsion and Vehicle Engineering Division, Manufacturing Engineering Division, Saturn Systems Office, and Quality Assurance Division, it was decided that approval of the dye penetrant facility at Michoud for large vehicle components should be given. ✓

7. QUALITY ASSURANCE OFFICE AT LOC: With the establishment of the Quality Assurance Office in LOC, the problem of finding a suitable applicant for the top position arose. I am glad to report that LOC followed the recommendation of this Division and selected Mr. Russell Gramer, who has been working in the Quality Assurance Division for the past two years and prior to that in close contact with us on the Redstone, Jupiter, and Pershing projects. Although this Division loses a valuable member, I welcome this move from the standpoint of good relations to the quality assurance organization of LOC. ✓

1 Enc:

Attachment 1 (NOTES 5-20-63 CONSTAN)

*1. QUARTERLY REVIEW

gan

The fourth in a series of quarterly reviews of Chrysler-Michoud activities was held May 14 and 15. Chrysler operations are proceeding smoothly and the SA-8 assembly activities are slightly ahead of schedule. ✓

2. BOEING OPERATIONS

a. CONTRACT STATUS - Negotiations to incorporate Plan V into Boeing Contract NAS8-5608 were recessed this past week (May 13 - 17) for evaluation. It is planned to present the government's offer on May 20 and 21, after which negotiations will resume. ✓

b. INSPECTION PROCEDURES - The dye penetrate inspection requirements are still unresolved in reference to the S-IC program. In view of the slow progress being made in the development of new inspection methods, a decision should be reached very soon as to the exact procedure to be followed for this type inspection to meet the requirements of large vehicle components to be manufactured and assembled at Michoud. We highly recommend that capability for the large dye penetrate requirements be approved and installed at Michoud as soon as possible.

D. Gau

Please
settle
this

B

c. MANUFACTURING DOCUMENTATION - In view of the S-IC contractor's policies relative to procedures and operational techniques, we recommend that the contractor be authorized to place processed specifications on their drawings. If this is approved, it will avoid duplicate paperwork and the individual worker in the plant would be well informed as to the manufacturing specifications and requirements.

K. Hrazek

A.Y. i.
B*3. ADDITIONAL OFFICE SPACE

gan

We are preparing a project approval request for the construction of approximately 70,000 sq. ft. of temporary office space to fill the gap until the new office building is completed. We propose to use the mezzanine at the back of the plant for this and later will convert it to enclosed laboratories. ✓

B6/4

NOTES 6-3-63 GRUENE

Wet Test VLF-37B:

Minor problems with the S-IV-5D stage and the facility lox loading system has caused a delay in the combined lox filling test of SA-D5 and S-IV-5D. Manual lox loading of the S-IV-5D is in progress this date, and the combined SA-D5 and S-IV-5D lox loadings are scheduled for June 4, 1963. ✓

Dr. Gruene:

Dr. Debus' weekly TWX to Holmes is read by the staff here but is not passed on to Dr. von Braun. We expect you to include any pertinent items on your NOTES. Pinc-3 ✓

B6-4

NOTES-6/3/63-HAEUSSERMANN

W.H.
Will
participate
B
Yes
B

1. SATURN IU PRESENTATION: At the direction of Dr. Rees, ASTR will present a description of the Saturn IU and the IU Management Plan to Captain Freitag, 2:00 p.m., Thursday, 6/6, in the Astrionics Division Executive Conference Room (over new lobby). This presentation is being coordinated with the Saturn Systems Office to insure completeness and to cover those few areas that may be presented by Saturn Systems Office and P&VE Division personnel. It is proposed to hold a discussion of the proposed presentation with you before 6/6 to insure that your desires are reflected in the presentation. Would you like a dry run? Copy of proposed agenda/presentation outline is attached.

2. 450 VA STATIC INVERTER: Two problem areas are being investigated:

a. Frequency Standards: We have found that frequency standards delivered from the vendors were marginal under vibration tests to the MSFC IU specifications of 20 g for 4 seconds and 10 g for 180 seconds. The principal vibration sensitive item (crystal) has been encapsulated in GE-LTV-602 potting compound and the inverter has now satisfactorily performed under random vibration of 70 g's for 4 seconds and 20 g's for 180 seconds. The maximum level the unit can withstand was not determined due to the inability of the vibration table to reach higher levels of vibration without damaging the vibration equipment. Higher level testing is planned using a larger vibration table. ✓

b. Shift register: It was noted in the checkout of SA-5 in M-QUAL that a problem existed at high temperatures. The problem resulted from two causes that compounded their effects: (1) The average storage time of the 2N718A transistor in the shift register was found to be five times higher than that indicated on existing data sheets, and (2) the trigger capacitor was found to decrease in value by 56% when heated to 85° C. The following changes have been instituted to solve this problem: (1) The 2N718A is being selected (for desired storage time characteristic) or replaced by a 2N2222 transistor which has a much shorter storage time; and (2) a new trigger capacitor is being used which decreases in value only 15% when heated to 150° C. ✓

3. COMPONENT PACKAGING AND MOUNTING FOR SATURN V: (Reference your comment to item 2, Notes of 5/20, copy attached.) The cooling plate area needed for cold plates is approximately six times the mounting area of the directly cooled components. ✓

4. BENEFICIAL DISPOSITION OF OBSOLETE SMALL ITEMS: (Reference your comments to item 4, Notes of 5/20, copy attached.) This program was coordinated through Support Services Branch of Management Services Office, Legal Office, Government Services Administration, and The Alabama State Board of Education, with approval from all agencies. This will be a pilot test program for evaluation and if proven to be useful, will be expanded to include other divisions and units of MSFC and other educational institutions as recipients. ✓

2 Enc:

- 1. Notes of 5/20/63
- 2. Proposed agenda/outline for IU Presentation (Provided only for M-DIR copies)

1. S-1-6:

Full duration firing scheduled for Thursday, 6/6. Disassembly and modifications of all lox valves prior to this run were made to determine status of hardware and avoid possible repetition of engine damage incurred on last firing where galled actuator piston caused delayed valve closing and subsequent engine damage. ✓

2. S-IV, DAC/SACTO:"All-Systems"

Tankage will have bulkhead repair verified by filling on test stand 1. ✓

S-IV-5

Assembly of stage and facility continues. DAC still shooting for checkout by 6/17, and firing by 6/28. ✓

3. SATURN V, STATIC TEST FACILITY (S-1C, WEST AREA):

Due to adverse weather and a short strike by the iron workers, scheduled completion date of 6/15 for concrete work on the West Area S-1C stand will not be met. New date has not been established. ✓

4. SECOND ADDITION TO ENGINEERING BUILDING:

Ground broken today for new addition with completion scheduled in approximately 1 year. ✓

* 5. MTF:

gem
Seven General Electric personnel reported for duty to the MTF Working Group today. ✓

Mac

All of a sudden, - no problem!! How come?
Remembers your concern about Univac?
Research Institute going B

B 6-4

NOTES 6-3-63 HOELZER

→

1. INSTALLATION OF NEW SMALL COMPUTER: The ADPS Branch installed this week a Remington Rand Univac 1004. This is a small computer which replaces some IBM electrical accounting machine equipment. It is the first non-IBM equipment in the ADPS area. ✓

* 2. SLIDELL ANALOG COMPUTER INSTALLATION: The analog computer installation at Slidell, consisting of 4 consoles, has been completed and ready for use the past two months. Utilization by Boeing is running less than 25% of their original projections and use by Chrysler is limited at this time but definitely increasing. Some of the overload work from Huntsville is being sent to Slidell and such will continue as long as facilities are available there. The contract with Telecomputing Services, Inc. has been amended to cover the maintenance of the analog computers at Slidell. This move is tuned to the theme of making TSI the complete operating contractor for the computer center. ✓

H.H.
You should!
B

3. PILOT CONTROL OF SATURN C-V: Research Projects Division has reported that Ames Research Center has submitted an FY-64 request to OART for a research task titled "On-Board Manual Pilot Control of Saturn C-V During Launch". Their budget calls for \$25,000 in-house, \$75,000 for equipment procurement, two professional man-years, and six total man-years. Research Projects Division has been notified that the Flight Simulation Branch would be interested in participating in this project if it is approved; they are attempting to obtain more information on its status. ✓

- * Jan 1. LUNAR PAYLOADS: The following summarizes the status of activities in the Lunar Payload area as of the week of May 20:
- a. Systems - Continued effort is being made to update development testing needs including facility requirements. Currently a report prepared by Corps of Engineers for OMSF on A Facility Review is being reviewed by this office, along with Mr. Heimberg's group. Comments are to be forwarded to Mr. Taylor by June 20, 1963. ✓
 - b. Lunar Roving Vehicle - Work is being done in the preparation of preliminary work statements and specifications for a lunar roving vehicle. As time progresses, these will be revised. Computer calculations are being made for extended propellant storage for both vented and non-vented conditions. Additional planned activities including updating of computations for average and peak torque requirements for the lunar roving vehicle and updating analysis of vehicle dynamics are being made. ✓
 - c. Shelter - Concept work is being performed to investigate capabilities of using a shelter only or a rover and shelter combination. A good percentage of the effort is being devoted to developing unloading concepts. ✓
 - d. Vehicle Integration - This area of work is devoted to understanding the LEM truck design and preparing layouts with the different possible payloads. This effort is in close coordination with the group on the lunar roving vehicle and shelter. Future effort by this group will not only continue to follow the LEM development but will start work on mock-ups. A preliminary review for the preparation of mock-ups in the ME Division has been made with Mr. Wuencher. ✓
 - e. Life Support Equipment - A trip has been made to Houston by representatives of RPD and SPA office; however, not much progress was made in obtaining information from Houston. *HH*
need help ? B
 - f. Power Supplies and Communications - A review of information continues in the subsystems area of power supplies and communications. ✓
 - g. Scientific Equipment - Effort is being made to obtain a coordinated position on scientific experiments to be performed. It is anticipated that a group will be formulated to perform this task and that Dr. Stuhlinger will be made chairman. ✓

2. SATURN 1B/CENTAUR STUDY: A draft of STL's Proposal for the Saturn 1B/Centaur Study was reviewed at MSFC on May 28. The proposal, with changes incorporated, is to be submitted by STL on Tuesday, June 4, with negotiation of the proposal scheduled for June 6 or 7. ✓

NOTES 6-3-63 Koelle

B 6-4

No NOTES this week --- just returned from TDY and there wasn't time to submit NOTES, due to lots of mail to read. ✓

1. Saturn V, S-IC Stage: (a) Porosity of bulkhead to Y-ring weld has not been repaired yet. Establishment of repair technique is complete so that the actual repair can be accomplished in the next few days. (b) Joining cylindrical skin panels to a cylindrical section has not been accomplished either. Proof testing of technique and modification of fixture has been completed now and the first weld is scheduled for the beginning of this week. (c) The vertical tower is on schedule. Limited joint occupancy will start next week with the installation of the turntable tooling which has already been delivered by Boeing. Erection of the tooling for horizontal girth welding will also be done by Boeing. Completion of installation of hydrostatic test and cleaning equipment by the contractor is scheduled for the first part of August. (d) It might appear that the progress in building the first fuel test container is slow. We are now approximately 6 weeks in delay on the schedule for this article. As you know from my weekly reports many factors contributed to this delay. We do not try to rush our work now but rather proceed with the utmost care, reviewing each step to be taken thoroughly, in order to avoid producing marginal hardware which is not within the specified standards. (e) Fabrication of tooling for the thrust structure is now under way with some of the sub-assembly fixtures being erected at Michoud. The final assembly fixture for the thrust structure, to be installed in 4705, is also in fabrication at Wichita. The final documentation has not been released yet. It is the consensus of Boeing and ME Division that the thrust structure is presently approximately 8 to 10 weeks in delay. The first structure is needed for the T-vehicle. ✓

WK. Has time come to show delays on our level 2 schedule charts? B

2. Saturn V, S-II Stage: (a) Explosive forming of apex gore segments has produced a number of acceptable parts. Four parts, however, were ruined by subsequent chemical milling by Automation Industry. The contract with this company was cancelled on our recommendation and a new contract for chemical milling awarded to Chemical Contour Company who has already chemical milled successfully the first apex segment of the common bulkhead. (b) The base gore segments with the heavy waffle pattern for the lower face of the common bulkhead are first mechanically milled and then explosively formed requiring the use of a filler material for the forming process. After several unsuccessful tries S&ID has now also produced satisfactory parts of this type by replacing the epoxy filler by Cerro-Bend material (on our advice). (c) The unsatisfactory parts are presently being used for try-out of welding fixtures. ✓

3. Saturn I, S-I Stage: (a) Clustering of SA-9 has been started in Building 4705 two weeks ahead of schedule. (b) Modification of the payload adapter for SA-5 is well on schedule. Removal of metallic ballast weights and installation of sand ballast tank, manufactured by Chance Vought, has been completed. ✓

B 6-4

1. SATURN I/IB: CCSD Contract - Negotiations on modification to the contract for S-IB redesign and production are proceeding satisfactorily. ✓

S-IV - Consideration is being given to use the S-IV-9 stage on which insulation has been installed for stratification and additional insulation testing, after installation of special instrumentation. Upon completion, the stage would be completely assembled and used as a follow-on all systems vehicle. ✓

* 2. SATURN V: S-IVB - DAC Assembly/Checkout Tower Complex - A presentation was made 5-31-63 to Brainerd Holmes and Bill Lilly. They agreed to classify the tooling complex as a tool and to use R&D funds. OMSF is preparing necessary documents to assure appropriate notification of NASA Headquarters and subsequently, Congress. DAC is proceeding with construction. ✓

Hope Ullmer and Seaman's go along!

3. APOLLO: General Electric has made an interesting "Man-Rating Study" for us (including EDS) of X-15, MERCURY/ATLAS, GEMINI/TITAN II, and DYNA-SOAR/TITAN III. We are preparing a condensed presentation of GE for you. ✓

Revised APOLLO Coordination Charter is under review by all three Centers. ✓

Acoustic measurement problem for spacecraft on SA-6 is being resolved, according to Instrumentation Panel meeting of 5-28-63. ✓

Agreement between MSC and MSFC outlines management responsibility for Service Modules housing the Meteoroid Capsules. ✓

Fact Sheet is being prepared for your review on impact of GEMINI on APOLLO in terms of operational procedures and Crew Safety. ✓



DH

Mr. Gorman

B6/5

NOTES 6-3-63 MAUS

DRAFT ISSUANCE ON PLANNING AND MANAGING OSS PROGRAMS

The proposed draft from OSS on Planning and Managing OSS Programs appears to give the Center much more of the desired role than was reflected in the recently published GMI 4-1-1, "Planning and Implementation of NASA Projects." We are consolidating comments and will prepare a reply to OSS. ✓

- 2. FY-64 FINANCIAL OPERATING PLAN - The Financial Operating Plan for FY 64 will specify requirements for the first three months of the year (the probable time of operation under a continuing resolution) and a total for the year. Part II will give detailed plans for the year but will not be prepared until after enactment of the appropriation bill. ✓

Have read it
B

The OMSF guidelines for the Preliminary FY 64 Financial Operating Plan (Part I) and timetable for its development have been delivered to divisions and offices. An "in-preparation" review of the plan with Capt. Freitag will be held here on June 6. Part I is due in OMSF on June 14. ✓

Project fund requirements in excess of that allowed by the distribution of guideline funding, provided by OMSF (total \$1.2919 Billion RD&O, direct), will be separately listed as unfunded requirements. ✓

HM

Do they want
include the
Baton Rouge
possibility, or
did they buy
our line?
B

- 3. MTO LH2 PROPELLANT PLANT - The procurement plan for the MTO LH2 plant was signed by Dr. Seamans on May 27 and is in Wilbur Davis' office. (Headquarters approval required two months, the plan was submitted by MSFC to headquarters March 26.) In addition to the conditions of approval which I related in 5-27-63 NOTES, headquarters also requires the RFQ to be forwarded for review and approval before issue to prospective contractors. The RFQ is in preparation. ✓

- 4. PROCUREMENT AND CONTRACTS OFFICE ORGANIZATION - Management Analysis Office has completed the study of the reorganization of Procurement and Contracts Office, and the resultant proposal has been approved by Mr. Gorman for implementation. ✓

B6/5

* Jan

1. H-1 ENGINE: In an effort to eliminate one possible cause of damaged H-1 engine turbopump bearings, an investigation was made of Rocketdyne's cleaning and contamination control procedures used at Neosho, Missouri, during assembly of the turbopump gearcase. The major discrepancy found was the extremely dirty condition of the clean-room facility where the turbopumps are assembled, and recommendations were made to improve and enforce "housekeeping" procedures for this facility. ✓

The cause of the SA-6 cutoff fire has been determined. The steel piston rod gouged the aluminum valve housing of the main LOX valve; this was caused by improper chamfer on the rod end. Also noted were insufficient lubrication on the O-ring, a slightly bent valve spring, and looseness of the nut which bolts the piston to the rod. The seven remaining LOX valves on the SA-6 will be pulled for inspection. ✓

The second furnace-brazed stainless steel thrust chamber has been subjected to 20 engine tests for a total of 3200 seconds. Testing has been terminated because the turbopump utilized on this engine has exceeded its rated life and will be removed for rebuild. ✓

An improved Mark 3-H turbopump has been assembled and tested at the Neosho Plant. This unit contains the latest design features to eliminate bearing temperature humps, and contains the Kel-F LOX pump inducer tunnel liner. ✓

* Jan

2. F-1 ENGINE: Work at the new F-1 engine test stands was resumed on 5-25-63. All workers are on the job at this time with the exception of the Boilermakers Union members. The repairs of Test Stand 2A are progressing satisfactorily at this time. It should be noted that the jurisdictional dispute has not been settled and the strike could erupt again at any time.



3. J-2 ENGINE: Five engine system tests were conducted this reporting period including three engine calibration tests and two tests to evaluate the engine operation and performance at extended run duration. These five tests had a total run time of 1090 seconds, including four 250-second tests. The last test was terminated because the helium supply pressure decayed below red-line.

H.W.

Is Paul Styles in on this, or does the Corps handle it direct? (He may be helpful!!)

B

B 6/5

NOTES 6-3-63 Stuhlinger

X
JCM

1. METEOROID MEASUREMENT PROJECT: The Meteoroid Measurement Project is on schedule. There are no major problem areas which should result in slippage. The dynamics problem during ascent has been thoroughly discussed with specialists and a workable solution has been found. It will involve increasing capsule weight by about 165-180 pounds. ✓

Mr. Faulkner of the Meteoroid Measurement Project Office is working closely with the Saturn Systems Office to control both weight and performance requirements. Discussions with Mr. Fikes of SSO indicate that a special working group for capsule weight control probably is not desirable. If he can complete his plan for overall vehicle configuration, weight and performance control, and get it implemented promptly, it will more than serve our needs. ✓

X
JCM

A new financial requirements estimate has been completed. It appears now that Fairchild will overrun their original estimate by about 50% to \$9.7M. In-house costs are now estimated at \$800K. The project total is \$10.5M. Mr. Wood in OART has been given this information along with a pessimistic estimate (\$10.2M for Fairchild and \$2M in-house for a \$12.2M total). ✓

2. HUNTSVILLE CENTER ADMISSION PROCEDURES: To help maintain order and avoid disruption of academic work during registration days (June 10 and 11) for the forthcoming summer quarter, the University of Alabama Huntsville Center has arranged to issue passes to everyone known to have a valid reason for entering the Center on those days. In this way, curiosity seekers, potential troublemakers and others not having valid Center business will probably be restricted. ✓

3. TECHNOLOGY UTILIZATION PROGRAM: During a Technology Utilization Program Review in Washington on May 10, Mr. Webb stated that Russia has now started a technology utilization program along the lines of NASA's program. ✓

B 6/5

underline, please

NOTES 6-3-63 SHEPHERD

1. S-IVB: A briefing was given to Mr. Holmes on May 31, on the S-IVB Tooling Tower problem at Huntington Beach. It was pointed out that the original Douglas proposal had the towers as separate structures and that during engineering reviews Douglas had unilaterally decided to group them into one single structure. The size of the structure (126' X 117' X 140') gives the complex an appearance of a facility which will be extremely difficult to explain several years hence if proper modifications are not made now. It was recommended to Mr. Holmes that Congress be notified as a matter of courtesy informing Congress that R&D funds are being utilized for this complex. Douglas will be permitted to proceed on schedule. Mr. Holmes agreed with the actions to be taken. Approximately 50% additional construction funds are estimated to be required in order to meet the Douglas schedule (premium time and shift work). Facilities Engineering Office personnel will be assigned to the Huntington Beach site and the A-E, Holmes and Narver during the life of this project. ✓

JS
Has about Ulmer and Seaman's?
B

*
2. Hydrostatic Test Facility: The Mechanical Engineering Division will take partial occupancy of this facility on June 5 to begin installation of welding equipment. This partial or joint occupancy is similar in nature to that at the S-II facility at Seal Beach. The construction contract was awarded to Sullivan, Long and Hagerty on October 8, 1962. The complete facility should be available by August 15, 1963, for hydrostatic testing. The success of completing this facility on schedule can be attributed to several things; excellent contractor performance, good design, "PERT" construction network, and the formation of a Working Group composed of Facilities Engineering Office, Procurement and Contracts Office, Mechanical Engineering Division and Quality Division to insure proper coordination. ✓

Let's keep doing that
B

*
3. F-I: The work force at Edwards Air Force Base is approximately at the pre-strike level as of today. It is estimated that approximately 5 days have been lost on the over-all construction work and approximately 10 days have been lost on the LOX tanks. The fabrication of the LOX tanks at the site was the cause of the strike. Present plans of the Corps is not to expedite the LOX tanks fabrication by premium time, as this would probably cause a slow down of the other trades which were not directly involved in the strike. There is a good possibility that some of the lost time can be recovered with the expenditure of excessive funds. ✓
* [No over-all F-I Engine program schedule slip is anticipated at this time. ✓

JS

Can we give him some kind of honor award?
(Word may get around!)

B

NOTES 6/3/63 Rudolph

B 6/5

No Notes

B 6/5

NOTES 6-3-63 MRAZEK

*
Jan

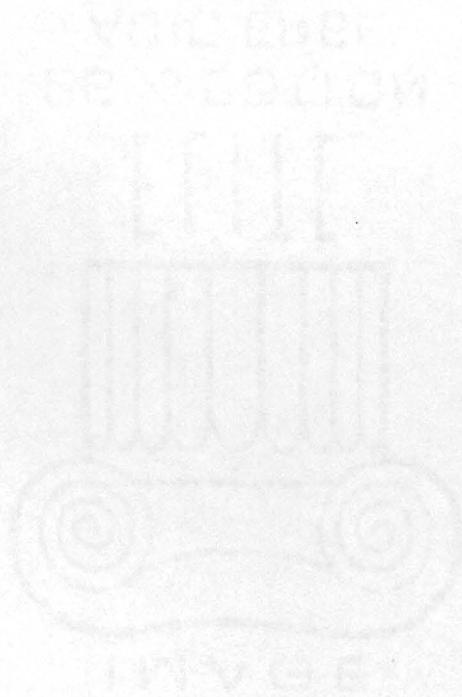
1. S-II STAGE: Thermal conductivity of the LH₂ tank sidewall insulation is twice the allowable amount. A development program for an insulation with acceptable thermal properties has been submitted to S&ID (Space and Information Division, North American Aviation, Inc.). Because of the seriousness of this problem and the previous lack of interest by S&ID, an in-house backup program has been started to insure a solution of the problem by 10-63 as required by the design schedule. ✓

*
Jan

2. S-IC ENGINE GIMBAL SYSTEM: Specifications approved by the Propulsion and Mechanics Branch, this Division, have been revised by the Boeing Company without notification, concurrence, or further approval. We are investigating. ✓

3. SEAMANS' RIFT ACTION ITEMS: Latest status forwarded under separate cover. ✓ for it ✓

June 10, 1963



Talk to
Sheep

Notes

BE/17

NOTES 6-10-63 KUERS

1. Saturn V, S-IC Stage:

a. Reference: Your question to my notes, 6-3-63(copy attached): The major milestones affected by the reported delays are "Design Release (S-ICT)" and Fabrication (S-ICT), both shown on level 3 charts No. 111-3-9. I would recommend to wait with the official report of a program delay until the S-IC program review meeting on June 20 has taken place where Boeing will openly state the status of the program. o.k. ✓

b. Development of Electron Beam Welding Process for Y-Ring: Delivery of equipment from Sciaky Brothers is now scheduled for first part of July. The arcing problem between electrode and gun housing, due to high power levels required, has not been completely solved yet and programming of welding parameters (Voltage, Current, Focus Length, Tilt Angle and Speed) require improvement and refinement. We plan now to continue this development in-house with support from Sciaky. ✓

* 2. Saturn V, S-II Stage:

fm

Dave Newby } Note! B
Jim Shepherd }

a. Problems of forming and chemical milling of gore segments are now cleaning up. Welding developments is presently hampered by bad environmental conditions at Seal Beach resulting in high porosity of welds due to dust and drafts. Delays in completion of this facility is now affecting bulkhead fabrication.

b. The major problem in fabrication of the common bulkhead is in our opinion the sizing of the domes for bonding. The fit-up tolerance for bonding is still + .010". The 54" Aluminum Mandrel is in fabrication. But results from this sub-scale test will only be available in approximately 2 months from now. I would still like to see a more vigorous program for the back-up design including a hardware program.

So would I.
Oswald Lange

↑
What can we do to get more steam behind this back-up program?
B

Samson
DH for AHG

NOTES TO HOLMES 6-11-63 DEBUS

1. Complex 37B Wet Test. The investigation for cracks on the LH₂ side of the common bulkhead was completed. No cracks were found; however, DAC requested another investigation utilizing a somewhat different method. This investigation is underway at this time.

A vent was installed in the LOX line upstream of the DAC LOX skid to relieve the high line pressures previously experienced. LOX was manually loaded into the S-IV with satisfactory facility operation; the S-IV capacitance probe did not give correct information during fast fill and the tanking was completed using the replenish system. The trouble shooting of the capacitance probe revealed no apparent cause for the malfunction of the capacitance PU system. On Wednesday, another LOX tanking was attempted, but was terminated during the pre-cool period because the LOX overflow activated and terminated the sequence. The capacitance probe malfunctioned at the same time but did not restore itself as before. The tank was entered and a small piece of wire was found on the probe which was causing a short. A new probe was installed and a LOX loading test was satisfactorily completed on Saturday. Several discrepancies still exist. We suspect some ground facilities problems which are being looked into. Possible schedule impact is being evaluated.

At the present time, we plan to schedule the LH₂ tanking test Saturday, 15 June.

2. Tank Cleaning Problem. Based on findings of minute parts, pieces, and debris contaminating the S-IV stage tank which were large enough to cause problems with our wet test, I have undertaken a study in LOC to determine what steps are necessary a) to assure absolute cleanliness of tanks, or b) to consider design criteria for all tank system components which may be affected by small (uncleanable) particles which remain in the tanks after normal cleaning practices. I became concerned as to the possible problem when considering weightlessness of these particles when the S-IV is in orbit. Will let you know of our findings.

3. Program Review. The FY 64 Program Review was presented to representatives from NASA Headquarters, headed by Mr. Smolensky, on June 5, 1963. Highlights of the presentation were as follows:



a. Proposed LOC budget policy changes, the foremost of which were:

(1) Consolidation of all R&D funds for instrumentation under one budget line item.

(2) The recommendation that all project oriented funds for launch operations be allotted directly to LOC as opposed to the past procedure of coming through Marshall to us.

b. The apparent 8-1/2 million dollar shortage for the funding of the C-1B Program.

c. A new request for \$10,410,000 from R&D funds in support of systems integration, checkout, and reliability.

The Review appears to have been well received and Mr. Smolensky indicated understanding of the nature of all recommendations.

4. Reclama of Proposed Congressional Cuts FY 64 CofF Program. Information to reclama these proposed cuts was datafaxed to Mr. Diaz, and copies were handed to Capt. Holcomb on June 5. We recommended that in lieu of deleting the projects (1) Calibrations and Standards Laboratory and the Optical and Electronic Service Facility be deleted, (2) Equipment in the amount of five million dollars for the Central Instrumentation Facility could be deferred until FY 65 (a revised estimate indicating how this deferral could be made was furnished), (3) if further cuts are to be made they should be made in the cost estimate for LC 39 so that individual projects considered essential to the orderly build-up of MILA may be retained. The cuts in question called for the deferring of five million dollars of the total cost of the Central Instrumentation Facility and deleting the Range Engineering and Administration Building, Launch Equipment shop, Advanced SATURN Support Facilities and the Vehicle Maintenance and Service Facility.

5. Saturn I Schedule. An agreement has been reached with MSFC that the S-I stage will be returned to LOC on November 12, 1963 for Complex 34 wet test operations provided a release date of July 1 can be met for the S-I stage presently being utilized on Complex 37.

6. West Coast Trip. Members of my staff and I will join Dr. von Braun and members of his staff in California this week for technical

review of (1) the S-IV stage at DAC, (2) the F-1, J-2 programs at Rocketdyne, and (3) the S-II stage at NA. We plan to depart Tuesday and return Friday night. My office has my itinerary in case you wish to contact me. I will be back for the LH₂ tanking test.

7. Vibration Tests of Umbilical Housing Assembly. Vibration tests have been conducted on the LOC designed umbilical housing assembly of Swing Arm No. 2 for S-IV stage of Saturn SA-5 vehicle. These tests were made by personnel of Douglas Aircraft Company at the Wyle Laboratories, El Segundo, California. Purpose of the tests was to establish the capability of this umbilical housing assembly to operate satisfactorily while being subjected to the vibration environment that will exist during launch, just prior to umbilical separation. All the vibration tests were successfully completed and no problems were encountered. No design changes were necessary as a result of the tests.

8. Arrangements for the MILA Area Florida East Coast Railway Easement were settled on June 4 between the Chief Counsel LOC and counsel for FEC. The easement should be ready early next week for final sign off.

9. The Cocoa-Titusville Airport Authority met with LOC for the purpose of ascertaining NASA's position concerning the development of Cocoa-Titusville Airport for commercial service. In addition to a NE-SW runway proposal originally prepared by the Authority for submission to the FAA, an alternate (and, from NASA's standpoint, a better) proposal has been prepared based upon a N-S runway. The initial proposal (NE-SW) will meet FAA objections because of restricted approach problems over Merritt Island, especially the VAB Building. A N-S runway will be most costly for the Authority since certain existing facilities at the airport will have to be moved, but in the long haul this arrangement will provide a more logical basis for expansion of air service in the area. The relationships with the community and with FAA are sensitive. FAA wants the definite backing of NASA before it will commit any Federal matching funds; LOC wants to find a way to do this without building a community expectation that NASA itself will contribute facilities money. Our tactics are being fully coordinated with Mr. McCollom, the Headquarters transportation specialist. A meeting with FAA in Atlanta is being held today, June 11. At the proper time I will probably need to write a public letter endorsing Cocoa-Titusville as the most

convenient and useful support for NASA operations, but hope to do so without alienating supporters of the Melbourne airport or advocates of an entirely new central Florida regional jet airport at some as yet unidentified spot.

10. Communications Contract - MILA. Southern Bell on June 4 submitted a counter-proposal for operating MILA communications as a public utility. In effect, they propose to do the whole job except for NASA ownership of the basic distribution trunks within MILA, NASA provision of telephone switchboard operators, and arrangements for the phone company to inter-connect NASA-owned data systems which need to talk to other data points within MILA. This proposal is unmanageable from NASA's standpoint and would involve extensive redesign plus curtailing of the present communications contract now on the market. Headquarters is cooperating in taking the next and final necessary step, that is, a formal letter of certification to AT&T and to the Southern Bell system. This certification would formally establish our intention to operate MILA as a Government owned installation and to request external hook-up with the Bell systems under an established AT&T tariff for tie-in to NASA space vehicle data requirements. Southern Bell does not have this tariff in its own structure and may not see fit to accept this linkage to the AT&T tariff. In this case, our next step will probably be to carry this informally to FCC and formally to the Florida Utilities Commission for a hearing.

11. NASA Pass Installation Planning. Our first potentially serious difficulty in implementing the LOC-AFMTC agreements arose this week when LOC introduced its new combination ID card and access badge. Our agreements with AFMTC security had established complete interchangeability of our new cards with other AFMTC badges. However, the 6555th Test Wing (which has "operational responsibility" assigned to it for certain NASA mission pads such as Delta on 17, Mercury on 14, and Gemini on 19) refused to honor these new badges for pad access. The Test Wing wants special access lists maintained at the pad gates or continued use of the old AFMTC badge. The absence of the AFMTC Commander, General Davis, has made it inopportune to press this question to a conclusion. For the time being, we are carrying on interim negotiations, meanwhile reissuing the old AFMTC badge to such NASA employees as do require access to the contested pads.

12. Apollo Building. Move still on schedule due to start June 10. Completion of 3rd floor by July 1 appears tight. However, arrangements have been made to extend the lease of the Kabboard building if necessary.

13. Primary Water System, MILA. Bids opened 4 June 1963; 9 bids received. Low bidder was J. Hilbert Sapp in the amount of \$752, 155; government estimate \$860, 662.

14. JetStar. Contemplated contract date July 1. Seven firms replied and review of bid proposals is in progress. Heckendorf is to be hired as pilot in all proposals.

15. Multi-Mission Support. The Range has recently completed a two part study on Multi-Mission Support. This effort has grown out of many discussions between range users and AFMTC. While the study gives a reasonably complete summary of things as they stand now, it makes no great strides forward in planning or in new approaches to the problem. The study was returned to AFMTC on 21 May with our comments concerning the areas for further study.

16. Visit of His Excellency Dr. Sarvepalli Radhakrishnan, President of the Republic of India occurred on June 5 and 6 as scheduled. No major problems. The party appeared to be impressed with the tour.



B 6/17

NOTES

6/10/63

CONSTAN

Negative report

NOTES 6-10-63 DAVIS

B6/17

1. Instrument Unit for Astrionics: (Reference your comment on Item 1, Notes of 6/3/63, copy attached.) OMSF has agreed to wait until July to adopt the "cradle-to-grave" concept of planning the entire instrument unit buy. The processing of contracts for currently defined requirement is proceeding satisfactorily. ✓

* 2. Douglas S-IVB Tooling Towers at Huntington Beach:
Negotiations will begin with Douglas on June 11 for lease agreement needed to protect the Government's interests in the structure after completion of fabrication of the stages. Douglas management has refused to execute any lease agreement to date, stating their preference for a "long term advanced storage agreement" for this structure to be categorized as "special tooling". NASA Headquarters has not said officially whether the tower complex should be treated as facility or tooling. In any event, special agreement is needed to cover the residual value. ✓

1 Attachment
Notes of 6/3/63

B6/4

Item 1. - Instrument Unit for Astrionics: Negotiations with IBM for instrument unit discontinued because the employee fringe benefit (guaranteed home sale plan, etc.) exceeds limitation imposed by NASA Headquarters. Initial contract amount estimated \$4.7 Million. Total buy estimated \$25 - 30 Million. MSC has same problem. Headquarters will take over to secure agency-wide agreement.

BD
Has about (MSF's insistence that we first submit a PDP for entire 10-buy? B

Item 2. - Telemetry for SATURN V: During early April, Douglas Aircraft and North American Aviation, S&ID, refused to accept instructions from the Director, SATURN Systems Office, on method of subcontracting telemetry for SATURN V. The companies contended, and properly so, that the instructions were in violation of the contract terms and conditions. Thereupon, the Contracting Officer arranged for a solution that was acceptable to the contractors, SATURN Systems Office, Astrionics, and P&C, all based upon Class I documentation being finished by HOBERG before December 1963. According to SSO, there is significant duplication of MSFC effort by the contractors and the Class I documentation by HOBERG may be delayed until 1965. Correction could involve a sizeable termination of the Contractors' responsibility for definition, design, and development of telemetry airborne and associated ground support equipment. Additional data is needed from SATURN Systems Office and Astrionics to enable preparation of procurement plan for submission to Headquarters, since it appears that the total value of the transaction involved may exceed \$5 Million.



Eberhard R

Suggest you call a meeting with Lange, Davis, Haussermann + Hoberg to hammer out an acceptable solution. This is a sticky problem indeed. (I'm unable to do it prior to our West Coast and my ensuing Paris trip, but I think the matter is urgent),

B

NOTES 6-10-63 FORTUNE

B 6/17

1. Air Transportation to MTO: Last Thursday, Mr. Newby, Davis Foxworthy, Bill Morrow, Henry Auter, Henry Williams, and a representative from Michoud Operations met with Messrs. Hall and Courtney, VP's, Southern Airways to discuss service to MTO. Southern Airway Officials stated that the Airport at Picayune is not adequate to accommodate large aircrafts. They proposed that a flight go into Gulfport. We feel that it would be more advantageous if a flight originated at Huntsville and land at the Lake Front Airport in New Orleans. Such a flight would be convenient for the personnel going to Michoud, Slidell or MTO. Southern Airways is going to check on the feasibility of such flight. ✓

*
Jan [2. Ground Breaking Ceremony: Officials in the cities surrounding MTO site are being notified that we are planning a dedication ceremony in the Fall of 1964 in lieu of having a ground breaking ceremony. So far, everyone has accepted the explanation that activity at the site has increased much more than we had anticipated and that we could not get all the Washington officials together on the date desired. (Col. Young, Mr. Webb's office, told me last week that this was a bad time for Mr. Webb to be out of town.) ✓

*
Jan 3. GE Negotiations: Negotiations with GE are scheduled to get underway tomorrow. The further delay is to give NASA Headquarters personnel time to discuss some contract items with our P&C people. ✓

NOTES 6/10/63 GEISSLER

B6/17

Comment
sent to
Aers
to day.
See
attachment
Bh
6/10/63

1. System of Measuring Units: Re: my notes 5/13/63-item 1 (copy attached), we need guidance as to how to proceed with implementing the International System of Units as preferred system within this Center. This would require a revision of the present policy. The change has been agreed to by all divisions primarily involved. In the meantime, OMSF has made the decision to go metric on all trajectory units. Is it alright by you if we prepare a new policy statement for MSFC, obtain all necessary concurrences, and submit for your signature?
2. SA-D5 Dynamic Testing: Re: your question on item 4 of Notes - 6/3/63 - Geissler (Copy attached). The difference in frequency between theoretical and experimental (14.1 cps theoretical - 9.9 cps experimental) of the SA-D5 second stage vehicle is very significant and is being thoroughly investigated. A stronger influence of the engines has been put into the theoretical analysis with no appreciable effect. Static stiffness tests are being planned to help clarify the problem. Until the reasons for the difference are understood and measures are taken to insure accuracy in future prediction, it is imperative that the control computer design be completely based on experimental results.
3. Apollo Mission Control: Re: your question on item 3 of Notes 6/3/63-Geissler, copy attached. Dr. Speer has requested nominations from ASTR and P&VE via Memo, subject "Personnel Requirements for Operations Support of the Apollo IMCC," dated May 31, 1963. Nominations are expected by July 1.

B 6/17

- * 1. S-I-5: Test of the S-I-5 Stage is progressing on schedule, and transfer to the Manufacturing Engineering Division is expected on Friday, June 14, 1963. Major portions of the mechanical cleanup operations are scheduled after 3:30 on Friday and Saturday, June 7 and 8. This is required since pre-static pressure test on SA-7 is scheduled to begin on Monday, June 10 and we have a shortage of pressure test teams. Main LOX valves will not be removed from S-I-5 to check for condition experienced in S-I-6 short duration firing. ✓
2. S-IU-5: Compatibility test of the S-I-5 Stage and S-IU-5 is planned for Tuesday, June 11, 1963, and will be accomplished with nonflight air bearing unit. Replacement of this unit with flight hardware will take place after the compatibility test. ✓
3. S-I-6: All main LOX valves were modified, retested and returned for installation on Friday, May 31. Upper turbine exhaust ducts at engine positions #5 and #8 were distorted during the short duration static firing and have been replaced. Modifications to bracketry and heat shield beams are expected to prevent distortion of the exhaust duct bellows. ✓
- * 4. S-II: NAA's claim that MSFC direction on the airborne and GSE telemetry, RF (radio frequency) and DDAS (digital data acquisition system) equipment is causing delay in the electromechanical mockup (EMM) activation schedule was not accepted as valid in a meeting on May 31, 1963 with Quality Assurance Division, Astrionics Division, and Saturn Systems Office. It was stated that if NAA cannot conform and meet the schedule, MSFC could, as a last resort, GFE the TM and RF stations. The utilization of Systems Measuring Devices (SMD) and Systems Development Devices (SDD) was defined during this meeting. SMD and SDD will not be used for stage checkout. If additional equipment is required for stage checkout, it will be called GSE and meet all GSE (ground support equipment) requirements.

We have received an unofficial copy of the NAA supplemental cost proposal for implementing the April 1962 edition of NPC 200-2. A cost of \$295,000 has been attached to this proposal and we are in the process of reviewing it. ✓

8:30 land - 3:30
1/2 hr late

NOTES 6-10-63 GRUENE

B 6/17

1. Wet Test-VLF-37B:

a. Automatic dual lox tanking of both the SA-D5 and S-IV-5D vehicles with simultaneous lox topping of both stages was conducted with minor problems developing on June 8. ✓

b. A re-examination of the hydrogen bulkheads in the S-IV-5D was started the week of June 3, with hydrogen flow tests scheduled for the week of June 10. ✓

2. Saturn I Dynamic Test Vehicle: Daily review of the wet test operation and schedule is conducted with LOC and M-SAT representatives to provide adequate time for possible necessary schedule changes for the shipment of the vehicle to MSFC. ✓

B 6/17

1. OPTICAL COMMUNICATIONS SYSTEM: A technique has been developed for pulse position modulation of a gallium arsenide injection laser to achieve an optical communications link suitable for line of sight voice transmission on earth or in space. W.H.
 A demonstration model has been built using a non-coherent type gallium arsenide diode pulsed at a 200 KC rate. Audio transmission of excellent fidelity has been achieved from 50 cycles to 30 KC with the system. *request decision - station B* ✓

2. USE OF AUTOMATION BREADBOARD FACILITY FOR SA-6 STATIC FIRINGS:

The hardwire link (coaxial cable) between the static test stand and the automation breadboard building (S-4436) was employed during the test firings of SA-6: The first on 5/15 (a 35 second test) and the second on 6/6 (a 120 second test). The RCA 110 Computer monitored the DDAS ground station in real-time and recorded the data that exhibited a 0.7% change in measurement values. ✓

Immediately after the firing, the computer printed out the real-time values monitored. The measurements that exhibited characteristics of interest were re-analyzed by re-playing the magnetic tape through the DDAS ground station. The data obtained from the second firing was significantly improved by recording a time channel along with the data channel. The purpose of this test program is to prove the feasibility of transmitting the PCM telemetry over coaxial line of a length that will be used at Complex 39. ✓

After the 6/6 static firing, Capt. Freitag and party from NASA Headquarters visited the breadboard facility and were briefed on the breadboard operations in general, and the results of the measurements transmitted from the test stand to the breadboard's automation system. ✓

3. PILOT CONTROL OF SATURN V LAUNCH VEHICLE: (Reference item 2, Dr. Hoelzer Notes of 6/3, copy attached.) Early this year a subcommittee for man-in-the-loop control was formed to report to the NASA Advisory Committee for Guidance, Control and Navigation. I considered it advisable to request that ASTR-F (Flight Simulation Branch) gives the necessary guidance; Mr. Gunderson of this branch is now the chairman. The subcommittee has additionally members of MSC, Ames and Lewis; it functions, for all practical purposes, like a working group. The flight simulation is carried out with Astrionics participation at Ames where most of the simulation equipment, operating personnel (including test pilots) and experience are available. I had proposed Ames as a neutral place for the investigation between MSC and us, because we are of different opinion about the feasibility of the man-in-the-booster-control loop. I have discussed this with Dr. Hoelzer.

1 Enc:

Dr. Hoelzer Notes of 6/3/63 (Provided only M-DIR copies)

W.H. ✓

Are you sure that I agree with you? Let's hear your reasons occasionally. B

B 6/17

1. S-1-6: Full duration firing completed for intended duration of 142 seconds, 6/6. Engine position 5 was reorificed prior to the test to bring the thrust within specifications limits; however, no response was obtained and thrust is still above the specification limit. Stage removal scheduled 6/17, pending decision on engine position 5. Number of visitors witnessing this firing was 665. ✓

* 2. S-IV-5, DAC/SACTO: Assembly of stage and facility continues. Engine leak (dye) checks complete with no cracks or failures noted. Facility steam and water system checkout planned this week. Helium heater acceptance firing scheduled this week. Stage checkout scheduled 6/17; firing 6/28. ✓

3. MTF: Negotiations with Aetron for MTF Phase I Technical Systems are completed. Proposed contract sent to NASA Headquarters for approval. Contract finalization expected by 6/28. ✓

MTF Cryogenics Procurement Plan has been approved with certain conditions imposed by NASA Headquarters. Request for proposal package handcarried to Headquarters by M-P&C, Friday, 6/7. Approval of package being expedited by M-CP. ✓

* 4. UMBILICAL SWING ARMS: Testing has been completed on the second (spare) set of swing arms for LC-37B. The three swing arms have been removed from the Test Facility and are being prepared for shipment to Cape Canaveral. The DAC quick release housing on swing arm 2 was replaced by an LOC-designed housing due to numerous failures of the DAC equipment. The LOC-designed housing will be used on swing arm 2 for all Saturn I, Block II vehicle launchings. ✓

5. BLOCK II HOLDDOWN ARMS: All eight of the third set of holddown arms have been repaired and testing is approximately 90% completed. All eight of the second set were sent to Hayes (Birmingham) for repairs. ✓

6. HIGH SPEED SHIP: USN BuShips Scientific Staff was consulted "to obtain Navy endorsement" of gas turbine propulsion. BuShips Scientific Staff could only give personal opinions which favored the (gas turbine) engines. Mr. Sawyer, Program Manager, USN Applied Research Division, declared further that, "if we thought you were making a mistake selecting a vessel with this type of propulsion, we'd certainly let you know." ✓

MSTS would be willing to negotiate for the 27-knot ship or any other vessel our program needs. MSTS Technical Staff are investigating the reliability of the gas turbine. (Military Sea Transportation Service:MSTS). ✓

B 6/17

NOTES 6-10-63 HOELZER

1. EXTENDED FLIGHT SIMULATION LABORATORY PROJECT: Information received from Mr. Kennel of Astrionics Division indicates that it will be another six months before the Celestial Body Motion Simulator is ready for installation in the Extended Flight Simulation Laboratory. The facility has been ready since October 1962. ASTR.
Wiley?
B
2. SLIDELL ANALOG COMPUTER INSTALLATION: Mr. John Seiley has been assigned to replace Mr. Ben Barnes who resigned as technical supervisor of this installation. ✓
3. ADPS PERIPHERAL EQUIPMENT: Necessary paperwork has been submitted revising peripheral requirements for the ADPS Branch which will effect a \$5,000 per month saving. ✓
4. CONTRACTOR EMPLOYEE CEILING: Efforts are being made to recall offers of employment and to redistribute existing employees in such a way as to minimize the impact of the contractor employee ceiling put into effect during the week of 6-3-63. Efforts had been underway to staff to a total of 440 people in order to meet sponsors request for more help from the Computation Division. This included peak load employees hired to cover summer vacations. The new ceiling is set at 405 people. If the normal acceptance rate holds for those offers of employment which are now outstanding, it may be necessary to transfer 8 to 10 employees currently on the payroll to other General Electric locations. ✓
5. AIR BLAST SIMULATION PROJECT: At the request of Mr. Reisig, M-TEST, a study is being made of the best method of using Flight Simulation Branch facilities to analyze the focussing of sound rays from a firing due to atmospheric conditions. Large amounts of data are available but have not been completely analyzed. ✓

NOTES 6-10-63 HUETER

B 6/17

1. LUNAR PAYLOADS: We have been advised by Mr. Evans, OMSF, (Mr. Evans is replacing Mr. Taylor in this area; Taylor is being given another assignment within OMSF) that he is preparing a letter authorizing \$300,000 for application to engineering services in support of our study efforts. This money will be used to cover both Hayes and Northrop engineering services support. ✓

* 2. SATURN 3RD STAGE STUDY: Discussion was held on Thursday, June 6, with STL representatives and Marshall division people on the STL Work Statement in response to our RFQ. Minor changes were made and concurred in, and contractual negotiations were consummated with a total contract price of \$200,000. ✓

B6/17

1. IIIrd ERUOPEAN SPACE FLIGHT CONGRESS

A trip report is being prepared covering items such as attendance, general environment, distribution of papers according to nationality of authors and area of activity, major technical points and general observations. This report will be distributed sometime this week. ✓

2. SPACE STATION COMMITTEE (HQ)

Jim Carter is back from the special committee exercise in Washington which attempted to establish a NASA position on the subject for Dr. Seamans. This effort was chaired by Mr. Hyatt's office. A summary paper was compiled stating the pros and cons and also the alternate routes which are open. The results were presented to Dr. Seamans without any indication on his part as to what to do next. He was a silent listener. There seems to still be a preference for a small space station based initially on APOLLO hardware. ✓

You might remember that you directed us to familiarize ourselves with the problem of using SATURN 1B hardware for a small space station program. We have developed a concept which looks attractive to us, and we are checking it out at the present time. It is a small effort concentrated in Mr. Goerner's branch. We should have a reasonable story to present to you in about two months. ✓

3. LETTER ON HUMAN FACTORS

We drafted a letter to Dr. Bisplinghoff concerning our interest in this area. You might recall that our only study in this area was transferred to MSC. You apparently did not want to sign this letter in its present form. We do feel that Dr. Hueter's "need-to-know" in this area will not suffice, as it does not cover the role of the crew in the next generation of launch vehicles which might be rocket airplanes. This is why we wanted to have the letter sent to Dr. Bisplinghoff to express our strong interest. Do you want us to try something else?

Hermann: The letter was not to the point and was rejected twice because of its negative tone. The decision was to "work through Hueter" to stay abreast in this field. Why not try it this way - There are lots of ways to "work thru Hueter".

JCM 6-10
 ↙ Agree B

B4/17

1. Saturn V, S-IC Stage:

a. Reference: Your question to my notes, 6-3-63(copy attached): The major milestones affected by the reported delays are "Design Release (S-ICT)" and Fabrication (S-ICT), both shown on level 3 charts No. 111-3-9. I would recommend to wait with the official report of a program delay until the S-IC program review meeting on June 20 has taken place where Boeing will openly state the status of the program. o.k. ✓

b. Development of Electron Beam Welding Process for Y-Ring: Delivery of equipment from Sciaky Brothers is now scheduled for first part of July. The arcing problem between electrode and gun housing, due to high power levels required, has not been completely solved yet and programming of welding parameters (Voltage, Current, Focus Length, Tilt Angle and Speed) require improvement and refinement. We plan now to continue this development in-house with support from Sciaky. ✓

* 2. Saturn V, S-II Stage:

gm

a. Problems of forming and chemical milling of gore segments are now cleaning up. Welding development is presently hampered by bad environmental conditions at Seal Beach resulting in high porosity of welds due to dust and drafts. Delays in completion of this facility is now affecting bulkhead fabrication.

b. The major problem in fabrication of the common bulkhead is in our opinion the sizing of the domes for bonding. The fit-up tolerance for bonding is still + .010". The 54" Aluminum Mandrel is in fabrication. But results from this sub-scale test will only be available in approximately 2 months from now. I would still like to see a more vigorous program for the back-up design including a hardware program.

So would I.
Oswald Lange

What can we do to get more steam behind this back-up program?

B

Dave Newby }
Jim Shepherd } Note: B
Mr. Newby has ey

B6117

1. SATURN I/IB: S-I-6 - A 136-seconds static firing was performed on 6-6-63. Quick look indicates no major problems were encountered. Fuel leaks were noted at the turbine to gear case seal on all engines during flushing operations. This has been a recurring problem on all long duration firings of Block II. A stage vibration phenomenon is suspected. The 7 - 10 days delay in completion of static tests will be recovered downstream. ✓

S-IV SACTO Team - Week of 6-10-63: M-TEST, Messrs. Heimburg, Johnson, Artis, Egan, Rutledge; P&VE, Messrs. Stewart & Peunello; QUAL, Messrs. Rice & Johnson; ME, Mr. Snellgrove, and Resident representatives from TEST (3), P&VE (2) and QUAL (3). ✓

2. SATURN V: - Headquarters informed that the USAF is contemplating the phase down of all Air Force activities associated with Plant #16 within the NAA/S&ID Downey complex. The impact of this proposition is being reviewed. ✓

Bulkhead Gore Thin Section - The first thin gore section for the AFT Common Bulkhead has been accepted by NAA and has been given to NASA for acceptance. It is felt that we may now have worked out the Bulkhead gore problem. ✓

Telemetry - Re Item 2, Notes 6-3-63 Davis (Attach. 1) - you will receive today a memo covering the subject, which outlines the Standardization Philosophy, and our efforts to resolve this problem which has been under discussion since October 1962. Subject has become critical from a schedule point of view. Mr. Davis's notes do not describe factually the action which M-SAT took. ✓

S-IVB Attitude Control Module Development Test Site, SACTO - Re M-SAT Memo dtd 4-29-63 (Attach. 2) - DAC initially proposed 4 test cells. It was agreed that the program could be conducted with only three cells in an effort to stay within available funding. The present estimated cost of Complex Gamma with three cells is about \$1.5 Million. ✓

3. APOLLO: - Informal contacts with MSC confirm the MSC in-house thinking of slipping the production payloads (SA-10 and subs) by 3 months. !!

SATURN IB Payloads - MSC had made informal inquiries, to be followed by letter request, concerning the following payloads (same external configurations): (1) unmanned S/M and C/M shell with full LEM; (2) full S/M and C/M manned with no LEM (14 day mission); (3) S/M, C/M plus LEM for remaining flights. No answers will be given until payload weight, c. g., and inertia data arrive in MSC letter. ✓

Dr. Kuettner and Dr. Farish flew the new SATURN I/APOLLO EDS boost flight simulator of Vought, with malfunctions programmed in. Their best performance - .8 seconds from hardover to abort. Displays based on Crew Safety Panel results are tentative. Astronauts due next week in Dallas. Simulator to be reprogrammed for GEMINI maneuvers in July. ✓

O.L.

→ I'd like to have this program, when submitted by MSC, reviewed in our Board Meeting. It has so many aspects that I think there'll be universal interest.

B

NOTES 6-10-63 MAUS

Be/17

1. MTO LH2 PLANT - Re your question about possible location in Baton Rouge (copy 6-3-63 NOTES attached), the plant site will not be specified in the RFP, therefore, it still could be located in Baton Rouge. Storage and delivery point (acceptance and barge loading) must be within 50 miles, on the waterway. ✓

2. PROJECT SUPER (SUPPORT PROGRAMS FOR EXTRA-TERRESTRIAL RESEARCH) - Russ Bollinger, MSFC Coordinator for Air Force Support has rescheduled the tour of Air Force Research Installations so that Dr. Mrazek can also participate. Present plan is to visit Aerospace Med Div at Brooks AFB, June 21; Aeronautical Systems Div at Wright Patterson AFB, June 24; and Electronic System Div and AF Cambridge Res Labs at Hanscom AFB, June 25. This is pending confirmation of aircraft availability, which we anticipate today. ✓

The first meeting of the Joint Coordinating Board for Project SUPER was held at AEDC on June 4. In addition to discussing administrative functions and operational relationships, the board decided that a charter defining the boards responsibility should be established, and approved by you and General Rogers, AEDC. Accordingly, Capt. Bollinger with Lt. Col. Carlson and Maj. Peters of AEDC, will proceed to draft this charter. ✓

3. OMSF SCHEDULING AND REVIEW PROCEDURE - OMSF has consented to relieve centers from submitting schedule books for this month. However, we are required to prepare material for the June 20 OMSF Schedule Review. Capt. Freitag's staff is working with the project manager's offices in selecting charts to be used in the review. ✓

B6/17

NOTES 6-10-63 MRAZEK

1. RIFT: Mr. Joe Wright has been appointed Acting RIFT Resident Manager at the Lockheed Sunnyvale office replacing Mr. William E. Davidson.

FY-64 contract negotiations with Lockheed on RIFT were completed on 6-6-63 involving a cost of \$8.62 million to accomplish 619,000 manhours of labor through 6-26-64. The fee is yet to be negotiated. ✓

*
gn

2. BLAST HAZARDS PROGRAM: Informal contact with the Office of Manned Space Flight on 6-6-63 disclosed that the Basic Blast Hazards Test Program still has not been approved by the Department of Defense (DOD)--Dr. Kavanau. Edwards Air Force Base (EAFB) reportedly has a proposal in transit through DOD to the Office of Manned Space Flight. DOD desires that EAFB, rather than White Sands Missile Range, perform the program.

Because of these delays in Washington and the pressing need for information in connection with the S-II acceptance firing at Santa Susana, a backup experimental program has been initiated by the Engineering Materials Branch of this Division.

Overall general plans have been made. Implementation details are being considered now. Calibration tests using high explosives will begin this week. Propellant spill tests will begin within one month. ✓

3. PRELIMINARY NUCLEAR MANNED MARS LANDING MISSION STUDY: One phase of a study, in a continuing effort to determine whether the possibility of a realistic manned Mars mission exists in the 1975 to early 1980 time period, has been completed. The results indicate that a fast mission, of about 500 days, is probably not practical because the initial launch weight per vehicle is about 2.7 million pounds out of earth orbit, and requires a nuclear thrust level of about 800,000 pounds. These and other studies continue to portend the possible necessity of NOVA for manned interplanetary exploration. This type of study is continuing and will include later time periods up to 1986 and less ambitious manned missions such as orbital capture, fly-by, or slower trips. This work is being done in conjunction with, and in support of, the Future Projects Office EMPIRE studies.

W.M.
↳ Who in P&VE is reporting this item? Findings do not side with FPO's (FE study)
B

4. S-IC CONTRACTOR PROBLEM: Boeing stress group personnel informed Mr. Boardman (M-P&VE-SS, S-IC Technical Supervisor) during his last visit to New Orleans that they intended to continue using the equation from page 15.6215 of their Design Manual Book #82. This is the equation that contains a 1.5 factor of safety over and above our required 1.4 (ultimate). The Saturn Systems Office Technical Directive #20, which directed Boeing to discontinue the use of this page of their Design Manual, was rejected by Boeing. Their reply to this directive stated that since MSFC was approving and signing the design drawings, "endorsement is presumed of the design." Immediate action is being taken by the Structures Branch (with the Saturn Systems Office) to get the Contracting Officer on top of this problem. *Good idea* ✓

Nonsense!
↳

5. KIWI REACTOR: A movie of cold flow test is available for showing-- important you see it today since film must be returned to Los Alamos on 6-11-63. *Have seen it* ✓

Done.
12W
6/10/63
5pm

NOTES 6-10-63 Rudolph

B 6/17

No Notes.

B 6/17

NOTES 6-10-63 SHEPHERD

1. FY-64 CofF: The House Sub-Committee has questioned OMSF in some detail on the FY-64 CofF program. OMSF has indicated to us that the Sub-Committee has seriously questioned the need for \$55 million of the total Marshall program of \$188 million. This total is comprised of \$19 million at Huntsville, \$4.9 million at Michoud, \$28.7 million at Mississippi, and \$2.2 million at various locations. OMSF cautioned us not to push the panic button, as the Committee may report more favorably to the House than this would indicate. Secondly, the Senate hearings on this subject has not been completed. Bob Freitag indicated that we may get a minimum of a 10 percent cut in the CofF program with authority to reprogram within the balance. ✓

2. Central Laboratory and Office Building: First occupancy of the new headquarters building was achieved this past week end. This office moved 30 people on the 7th floor, no major problems were encountered during the move. The week-end of June 15, Aeroballistics will begin the move of approximately 250 people. This move will start the regularly scheduled occupancy of the building with personnel moving in on each following week-end through July 27. At that time approximately 1,200 people will occupy the building. ✓

*
Jm 3. F-I: Strike situation at Edwards Air Force Base has completely cleared up as of June 7, the job is fully manned. Colonel Peacock expects no further difficulty. ✓

B of 17

NOTES 6-10-63 Stuhlinger

*1. MICROMETEOROID MEASUREMENT PROJECT: Ed Uhl, President of Fairchild-Stratos Corporation, called you on June 6; in your absence, I took the call. He wanted to inform you of the changes in the Fairchild-Stratos Corporation management structure. The Hagerstown and Bladensburg facilities have now been combined to form a Space Systems Division under Mr. Lee Farnham. This change should be beneficial to our project since this cuts down on the FSC internal red tape. ✓

2. LUNAR LOGISTICS PAYLOAD PROJECT: A memorandum of agreement was written by H. Hueter and E. Stuhlinger regarding the cooperation between SAO and RPD in the Lunar Logistics Payload Project. A copy of this memo is being sent to you today. ✓

A program of supporting research tasks, covering SAO's needs in the Lunar Logistics Payload Program to the greatest possible extent, is presently being worked out by SAO and RPD. Support of this advance technology work is expected predominantly from OART. ✓

3. STATUS OF FY-64 OMSF SUPPORTING TECHNOLOGY: Captain Freitag and his staff visited MSFC on June 6 and 7 to discuss the overall FY-64 MSFC-OMSF funding requirements and, in particular, to develop requirements for the 1st Quarter. ✓

Captain Freitag definitely supports the MSFC-OMSF Launch Vehicle Supporting Technology Program; however, he indicated that more emphasis should be placed on in-house investigations. He does not think this program should be reduced in scope or funding. The current planning figure for the FY-64 OMSF LVST Program is \$16,876,000, including \$3,432,000 for 1st Quarter requirements. (This does not include technology requirements submitted to OMSF by Mr. Weidner, Propulsion Technology, or Mr. Koelle, Advanced Studies.) ✓

B6/17

1. RL10 ENGINE: Go-ahead has been received from the Office of Manned Space Flight (OMSF) to re-initiate vehicle-oriented and Lewis Research Center testing support work previously covered under Contract NAS8-5605. Also, authority was received to re-initiate the RL10 throttling feasibility work at a lower level of effort than originally performed under the NAS8-5605 contract. ✓

2. J-2 ENGINE: Fourteen engine system tests were conducted this reporting period on Test Stand 3B. The objectives of these tests were the evaluation of engine operation and performance under extended duration, vibration survey, and evaluation of hardware durability. These fourteen tests had a total "run time" of 3220 seconds, including twelve 250-second tests. ✓

Seven engine tests were run on Test Stand 2 this past week. The objectives of the tests were the evaluation of the starting characteristics, and mainstage performance under various fuel pump inlet pressures. The first five tests were terminated with a fire either in the LOX pump area or around the gas generator. The gas generator valve and fuel by-pass valve were replaced, and a new electrical harness was installed. The last two tests were successful, but they were limited to 25-seconds duration each because of a liquid oxygen shortage. The seven tests had a total run duration of 186 seconds. ✓

The liquid oxygen shortage is due to annual plant maintenance. Our resident office at Rocketdyne is presently investigating duration of plant shutdowns. ✓

* F-1 ENGINE: (Reference NOTES 6-3-63 WEIDNER, paragraph 2, copy attached.) In anticipation of future labor disputes upon the arrival and assembly of the two fuel-run tanks for Test Stands 1C and 1E, a "show clause" order has been issued by the Courts as to why the unions should not be enjoined from further strike action on this job. The reply from the unions is due 6-10-63. This action was initiated by the National Labor Relations Board and based on charges filed by the contractors. Mr. Paul Styles, of NASA/MSFC Industrial Relations Office, is actively involved in the solution of this problem. ✓

F-1 engine facility construction at Edwards Air Force Base has resumed. All workers with the exception of a few members of the Boilermakers Union have returned to work. Construction of the new production test stands and the repair of Test Stand 2A is progressing satisfactorily. ✓

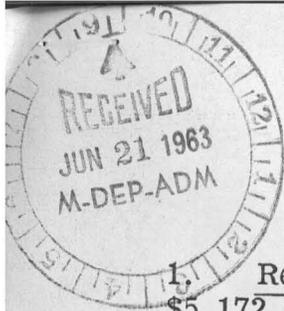
* F-1 STABILITY: Late last week, two engine tests were run with 5U full kitchen sink, low fuel sp injector, baffled. After bombing with 13.5 grains, both runs recovered in less than 10 milliseconds. ✓✓

5. H-1 ENGINE: The first furnace-brazed stainless steel thrust chamber has been modified slightly and subjected to test for the second time. The modification consists of a heavier turbopump mounting strut pad on the thrust chamber. Total accumulated engine test time on this unit is 4000 seconds. This brings the total test time on the first two units to 7000 seconds. The third unit was scheduled for engine test on 6-7-63. This test series represents a significant milestone in the H-1 engine development program. ✓

Attachment #1: NOTES 6-3-63 WEIDNER

H.W.
I'd like to talk to you about
fire-proof engine cable harnesses, at
your convenience B

June 24, 1963



Notes

Mr. Rees H/HG
Copies to
Mr. Harmon

NOTES TO HOLMES - 6-18-63 - DEBUS

1. Reprogramming of FY-63 CofF. The action to reprogram \$5,172,000 from the precision early launch rate and data handling equipment to the Indian River Causeway was approved on June 10. This will delete the instrumentation from the FY-63 CofF Program. Since this instrumentation will not be developed before FY-65, it will probably be procured by the Air Force.

2. Complex 37B Wet Test. The dual lox automatic tanking test was terminated short of 100 percent completion because of another rupture in the facility lox replenish vaporizer. The vaporizer has been repaired. Further lox tests will be run if time is available.

The S-IV stage common bulkhead was reinspected utilizing slightly changed procedures. No cracks were found.

Preparation for manual hydrogen loading scheduled for Saturday was extended over the weekend. On Monday, LH₂ tanking reached 95 percent when a leak developed in the DAC "Prepackaged-valve-skid" around the stem of the replenish valve. This was relatively minor. It will be fixed Tuesday and the tanking test rescheduled for Thursday.

3. Trip to West Coast. We returned Friday night from a technical tour with MSFC to Sacramento on the S-IV and to Rocketdyne for the F-1 and J-2 engines. At Santa Suzana, we observed a successful long duration run of the J-2. On Friday, we visited the Space Information Division to discuss problems with the S-II stage and inspected the S-II electro-mechanical model.

4. Communications MILA. In accord with guidelines from the Administrator's meeting of June 18, we are looking into separate types of contracts for administrative and technical communications. We should have a preliminary analysis by tomorrow, Wednesday, June 19.

5. Arming Tower. A meeting was held on June 7, 1963 concerning platform operation for the Arming Tower, LC 39. A rolling type platform was adopted and it was agreed that design would incorporate the requirement and platforms be open while the Arming Tower is in transit.

6. MSC Support. Discussions have been held with Preston and his people to arrive at a means of giving them the support they need in outfitting their test facilities on MILA. Originally, they wanted to use the Noble type contractor to do the design and installation on all the equipment in the fluid test facilities that fall between McDonnell GSE and the brick and mortar facility. With no success in steering them to Brown Engineering or to LO-FO for the design, they agreed to modify the McDonnell contract

for system design. The installation drawings and installation will be performed by the Noble type modification contract. This lies within the scope of this contract and can be handled. This will take care of what they wanted in the Martin contract. LOC can cover this fund wise and we will work out details of drawing procedures to make sure all drawings are fed into their shop for record keeping.

7. Meteorological Radar. A letter has been sent to AFMTC requesting whether the Puerto Rico radar will be made available for MILA meteorological purposes or not. Should AFMTC not provide the radar, a new FPS-16 radar will have to be purchased by LOC.

8. Status NOVA Launch Facilities Study. On June 5, 1963, a mid-term progress review presentation on Phase II, Part I, of the NOVA launch facilities (NLFS) was made in Denver, Colorado, to the LOC management team by personnel of the contractor (Martin-Marietta Corporation). Work is progressing satisfactorily in all phases of this study with emphasis being placed on "Launch Building" concepts, water versus land oriented transportation systems, and launch complex concepts for the Class III (advanced unconventional NOVA vehicles) configurations. Some of these vehicles will impose severe handling transportation and facility problems at MILA.

9. MSFC/LOC/MSC Mission Control Operations Panel. A splinter group of this panel has devised information flow diagrams for the initial phases of an Apollo mission. These diagrams are to be discussed at a June 26 panel meeting here at LOC.

In the meantime, Dr. Shea has called a meeting for June 18 in Washington to discuss the same subject on a NASA-wide basis and also to establish an OMSF Communications and Tracking Steering Panel as well as to absorb the tri-center activity started by the MSFC/LOC/MSC Mission Control Operations Panel.

10. Procurement of Launcher Umbilical Towers, Complex 39. Ingalls Iron Works' protest was forwarded by Mr. Webb on June 7 to the General Accounting Office for adjudication.

11. Institutional Support Funds. Will be exceedingly short for the balance of this fiscal year. However, I do not believe that it is necessary to ask for additional money at this time.

12. University. Florida Institute of Technology, Inc. has now received from the Florida State Board of Control, certain criteria to be met as concerns land sites for a new university. FIT is submitting to the state such land grants that meet the requirements, 1,000 acres minimum, etc. Approximately seven land donations are now in the offering and must be site inspected and approved before the Board of Control will consider.

13. Temporary Office Buildings. On June 10, the Associate Administrator approved the construction of 30,000 sq. ft. of temporary office buildings on Cape. (This item was presented at the May Management Council for action.)



H. Simon

NOTES TO HOLMES 8-13-63 DEBUS

1. Increase in Personnel Authorization. Authority has been received from Headquarters for an additional 50 personnel spaces for the month of August.
2. MSC Static Test Facility, MILA. At request of MSC, design has been stopped. MSC is making reappraisal of operational requirements and relationship of the initial facility to the future facility.
3. S-I-5 Stage Shipment. The S-I-5 stage, IU and payload were shipped from Huntsville on the barge "Promise" on 10 August, to arrive at LOC on or about 21 August.
4. General Electric Company Task. A task order was issued to the General Electric Company on August 2, 1963, to assist in the design and preparation of specifications necessary for the procurement of telemetry equipment for Complex 39.
5. Crane for Launcher/Umbilical Towers for LC 39. Personnel of LOC and Ingalls Iron Works Company, Birmingham, Alabama, made a survey of Colby Crane Company, Seattle, Washington, and reported a satisfactory capability for the crane subcontract. Colby Crane will provide one crane each for Launcher/Umbilical Towers No. 1, 2, and 3 for LC 39. Ingalls Iron Works Company is the prime contractor to provide and erect the steel frame, elevators, and crane for these launcher/umbilical towers.
6. Title II Services for Launcher/Umbilical Towers for LC 39. Contract negotiations have been completed with Reynolds, Smith and Hills (architect-engineers) to provide Title II services on the three launcher/umbilical towers being procured, and shop drawing approval services. A contract was prepared and submitted by Procurement and Contracts Office to NASA Headquarters for approval.
7. SATURN V Service Arms, Preliminary Engineering Report, LC 39. Volume I, TR-4-4-2-D, "Saturn V Service Arms, Preliminary Engineering Report, Complex 39" has been completed and is being distributed. The report presents requirements for fabricating SATURN V service arms and contains design and operating details of the service arms and associated equipment.



8. CIF. The CIF 60% design review will be held Wednesday, August 14, 1963 at the Canaveral Engineering District Office on Merritt Island.
9. Modification Contract of the Boattail Conditioning and Water Quench System at LC 34 was let to Gulfport Piping Co., a division of First Mississippi Corp. for \$28,875.00. The other bids received were from Winger Construction Co. at \$42,500.00, Paul Hardeman, Inc. at \$58,922.00, and AMF at \$40,469.00. The Government estimate was \$40,000.
10. Temporary On-Cape Office Building. Contract awarded 7 Aug 63. Prework conference set for 9 August 63. This contract will provide 30,000 sq ft additional administrative space in the immediate Cape area by Nov. 63.
11. Spacecraft Bldg. #2. Bids opened 7 Aug 63. Four bids were received. Apparent low bidder was Kenneth Reed in the amount of \$1,288,243.10; Government estimate \$1,186,164.67.
12. Railroad - MILA. Bids opened 30 Jul 63. Awarded to B. B. McCormick & Sons in the amount of \$2,131,759.49 on 6 Aug 63.
13. Water Supply Schedule, City of Cocoa. Start construction 15 Jul 63; complete all work 4 Jan 64.
14. FY 65 C of F Program. A presentation was made to NASA Headquarters representatives on August 2, of the LOC portion of the FY 65 C of F program.
15. Unmanned Spacecraft Facilities, FY 65 C of F Program. On August 17, Jack Rosenberry, Assistant Director for Facilities, OSS, visited the Resources Office and requested a review of the FY 65 Unmanned Spacecraft Requirements. The project writeups and supplemental justification have not been completed but requirements have been firmed up and these were reviewed and concurred in by Mr. Rosenberry. Detailed requirements and justification will be submitted in order that the unmanned projects can be combined with the LOC & MSC packages to be submitted to NASA Headquarters on August 19.



Notes

NOTES 6/24/63 DAVIS

Douglas Move to Huntington Beach: A formula was adopted on June 14 as basis for computing the options to the Government upon completion of the S-IVB Program, whereby the Contracting Officer could support the spending of about Eight Million Dollars for severable and nonseverable tooling and facilities to be placed upon land rented by Douglas from the property owner. The unresolved matters to be negotiated are:

1. Agreement upon estimated value of nonseverables.
2. Over-design of the "so-called" Tooling Tower Complex, including extra costs for decor.
3. Douglas-proposed revision to employee travel and movement allowance cost from Santa Monica to Huntington Beach.
4. Whether Douglas has legal authority to permit the Government to place nonseverables on land not owned or totally controlled by Douglas under terms of their rental agreement.

Active negotiations are being conducted on these points. In the meantime, work is proceeding without delay.

1. BOEING PERSONNEL BUILD-UP

As a result of the S-IC Quarterly Review at MSFC on June 20 and 21, 1963, I informed Mr. Stoner on June 24, 1963 to "freeze" personnel employment pending further FY-64 budget guidelines. This action was taken as per direction of Messrs. Rees, Gorman and Lange.

2. NASA HEADQUARTERS VISIT

Dr. James Hootman, Executive Secretary, Inventions & Contributions Board and members of his staff visited Michoud Operations on June 20 and 21, 1963. They were given a general orientation and tour of the Michoud facilities.

3. COMPUTERS

The IBM 7090 Computer at the Slidell Facility will be converted to an IBM 7094. This conversion began on June 22 and should be completed by June 25. This conversion will provide additional scientific computing capability.

NOTES 6-24-SHEPHERD

FY-65 Budget: The present indications are that Office Manned Space Flight (OMSF) is carrying the following totals for the Construction Budget:

| | | | |
|------------|--------|-------------------|----------|
| Huntsville | 31.140 | Various Locations | 16.050 |
| MTO | 140 | S-IVB, Sacramento | |
| Michoud | 21.9 | 3rd test stand | 9 (RD&O) |

To staff this to Bureau of Budget the following tentative plan has been established by Office Manned Space Flight:

- a. The week of 24 June, User Division and Facilities Engineering Office review the program with Mr. Crone, OMSF.
- b. July 9 and 10, review program at Marshall with Messrs. Lilly, Freitag and Low. This is part of a round robin visit to each of the Centers.
- c. July 29, Messrs. Lilly, Freitag and Low will conduct "mock" hearings on the FY-65 program for Marshall.
- d. August 19, Marshall submit final FY-65 Budget to OMSF.
- e. September OMSF submit Construction Budget to Office of Programs.
- f. October Office of Programs submits to Bureau of Budget.

OFFICE OF DIRECTOR

MSFC ROUTING SLIP

| | CODE | NAME | INIT. | <input type="checkbox"/> ACTION | <input type="checkbox"/> INFORMATION |
|---|------|-----------------------|-------|---------------------------------|--------------------------------------|
| 1 | | XXXXXXXXXX | | | |
| 2 | | | | | |
| 3 | | <i>Davis</i> | | | |
| 4 | | | | | |

REMARKS

Davis

Note items 12 + 14

*Copy sent to Mr Davis
7-1-63
JR*

| | | |
|------|------|------|
| CODE | NAME | DATE |
|------|------|------|

MSFC - Form 495 (Rev. February 1961)

Parsons
Notes



NOTES TO HOLMES 6-25-63 DEBUS

1. Apollo Interface Control. A meeting was held with Liccardi and Grivas of NASA-OMSF-MI to discuss the Apollo interface control program. LOC was opposed to the plan as proposed. OMSF-MI has asked for comments by June 25. We plan to submit a statement as to our position.

2. Relationship of Dr. Shea's Function with Centers. A joint MSFC-LOC meeting was held on June 10 at MSFC for the purpose of generating policies on relationship of the centers to OMSF Systems Integration Office. This meeting was preparatory to a meeting with OMSF-MI personnel on the 14th of June in Washington. As a result of the 14th meeting, it was agreed that Dr. McCall would develop a concept paper which would endeavor to delineate the interface points between Dr. Shea's office and MSFC. This document will be coordinated with LOC in draft form and submitted to Dr. Shea's office as a proposal within the next few weeks.

3. Launch Site Abort Instrumentation. A series of investigations have been set in motion for the purpose of developing instrumentation sufficient to reliably support ground abort action during the 10-second liftoff period. Among these is a color television demonstration which was set up for observation by LOC personnel on June 20. An internal LOC meeting will be held to ascertain desirability of incorporating this type of TV presentation in the SA-5 launch for evaluation. This type of TV presentation will have value for optical damage evaluation.

4. Mission Control Operations Panel. A meeting of this panel is scheduled at LOC on June 26th. As a result of urging by LOC, data flow diagrams for each center have been prepared jointly and will be assembled at the meeting into an overall communications data flow plan.

5. General Electric Effort. The GE Co. has been issued a task order to furnish 119 engineers to LOC Launch Support Equipment Division (Huntsville) for engineering services in support of the SATURN I and SATURN V programs.

6. Crawler Transporters. (1) Additional funds in the amount of \$172,784 were committed to finance an increase in the size of the leveling and jacking cylinders of the transporters. Out of the \$11,000,000 which is approved for the transporters, the total now committed is \$8,721,547. (2) Evaluation was completed on the proposals for the diesel-electric system for the Crawler-Transporter. The system will be used on each of the Crawler-Transporters. On June 13, 1963, Procurement and Contracts Office approved the placement of the sub-contract (by Marion Shovel Company, the prime contractor) to General Electric Company for the system.

7. Wet Test Schedule. LH₂ tanking tests have been completed successfully on the S-IV stage. It is the general opinion that a manual controlled loading sequence for the S-IV LH₂ is most desirable at the present time, to be used for SA-5.

8. Study on Fluorine. Present progress on an in-house study on "Fluorine" is being limited to gathering of reports and articles that list commercial and military activities to date on this subject. Bell Aerospace Systems and Allied Chemical Corporation have performed most of the work in the fluorine area. Bell Aerospace Systems has developed a 35,000 pound fluorine UDMH engine that has made runs of 30 seconds; total time on the engine is in excess of 4,000 seconds. Allied Chemical Corporation processes approximately 400,000 pounds of fluorine per year. A summary report will be written on fluorine and boron status in the space vehicle field.

9. Cryogenic Services for LC 39. A Request for Proposal was issued by Procurement and Contracts Office on June 14, 1963 for "Cryogenic Engineering Services for LC 39." These services provide for assignment of engineers to LOC for a cryogenic capability "in-house" as well as for certain test facilities for pumps, valves and lines, test reports, and sets of "as built drawings." As approved by Low the contract is to run not less than one year, but no more than three years.

10. Flight Safety Study Required for SATURN SA-5. The originally submitted flight safety data for SA-5 are no longer applicable as far as the up-range situation is concerned, since a flatter trajectory has been selected. AFMTC had a number of legitimate requests for additions to the data pertaining the overflight of Africa. These data have been requested from MSFC in the meantime.

11. Appeal-Blount Brothers Construction Company. Appeal from termination for Default-Supplemental Agreement No. 9 to Contract No. 8-3431 has been negotiated and awaits execution by contractor,

after which action will be dismissed by NASA Board of Contract Appeals. There will remain two issues: (a) claim of A. O. Smith Company for failed epoxy linings (This claim will be denied.); and (b) recovery from Blount Brothers Construction Company costs for liquids and gases. Billing to be made against contractor.

12. Merritt Island Railroad. Bids opened 20 Jun 63. Low bidder was approximately 30% over government estimate on both basic bid and additive alternates. The situation is being explored with the Corps of Engineers to determine the reasons for the overpricing as well as an appropriate course of action to take.

13. Apollo Building. It now looks very doubtful that this building will be available for the initial moves planned on June 25. Decision will be made on Friday, June 21, whether or not to proceed with the move as scheduled.

14. Status of MILA Base Communications. All proposals from bidders on the MILA Communications Maintenance and Operations Contract are being held in P&C unopened until NASA resolves questions regarding the administrative networks and data interconnects with the Bell System. I signed a letter to Bell 21 June asking for their comments on the three plans. This was fully coordinated with Lingle.

15. Base Services. Extensive consultations with MSC staff on Base Services for the immediate and longer range future have been held. Some contract support will be required to begin 1 July in the supply and transportation areas. Details are being developed to determine capability of providing support as requested. MSC plans a three shift operation which will require logistic services support around the clock.

16. JetStar. Eight proposals for the operation and maintenance of the JetStar were received. Negotiations were completed with Lockheed Service Corporation and the contract signed last week.



* 1. BOEING PERSONNEL BUILD-UP

9000

As a result of the S-IC Quarterly Review at MSFC on June 20 and 21, 1963, I informed Mr. Stoner on June 24, 1963 to "freeze" personnel employment pending further FY-64 budget guidelines. This action was taken as per direction of Messrs. Rees, Gorman and Lange. ✓

2. NASA HEADQUARTERS VISIT

Dr. James Hootman, Executive Secretary, Inventions & Contributions Board and members of his staff visited Michoud Operations on June 20 and 21, 1963. They were given a general orientation and tour of the Michoud facilities. ✓

3. COMPUTERS

The IBM 7090 Computer at the Slidell Facility will be converted to an IBM 7094. This conversion began on June 22 and should be completed by June 25. This conversion will provide additional scientific computing capability. ✓

B 6/27

NOTES 6/24/63 DAVIS

* Douglas Move to Huntington Beach: A formula was adopted on June 14 as basis for computing the options to the Government upon completion of the S-IVB Program, whereby the Contracting Officer could support the spending of about Eight Million Dollars for severable and nonseverable tooling and facilities to be placed upon land rented by Douglas from the property owner. The unresolved matters to be negotiated are:

1. Agreement upon estimated value of nonseverables.
2. Over-design of the "so-called" Tooling Tower Complex, including extra costs for decor.
3. Douglas-proposed revision to employee travel and movement allowance cost from Santa Monica to Huntington Beach.
4. Whether Douglas has legal authority to permit the Government to place nonseverables on land not owned or totally controlled by Douglas under terms of their rental agreement.

Active negotiations are being conducted on these points. In the meantime, work is proceeding without delay. ✓

1. Visit of New GE MTSD Manager to MTO: Last Tuesday, Mr. W. R. Eaton, Manager, General Electric Mississippi Test Support Department flew down to Picayune with Colonel Palmer and myself. We were met there by Bill Roy who is to be their Assistant Manager for Plant Support. Both men appear to be well qualified for their assignments. ✓ We gave them a complete tour of the construction sites and building areas. Lunch with Messrs. Hubbard, Chairman of Hancock County Board of Supervisors; Williams, Mayor of Picayune; Scafidi, Bay St. Louis Mayor; and Mayor Hursey of Pass Christian was arranged at Annie's. We had very good discussion on all their community problems. ✓

* *gcm* 2. Project Agreement Details Finalized by Union and Contractor's Representatives: Wednesday, Harry Gorman, Paul Styles, Marion Kent, and myself flew down to Biloxi to be in on the final negotiations between the Building Trade Unions and Contractors Associations, regarding the three-year no-strike agreement for Mississippi Test Facility. Accord was reached late that afternoon and signed copies were brought back Thursday morning. ✓ I believe the President's Missile Site Labor Management Commission will have to ratify it. ✓

*Paul Styles
would like
to see
a copy B*

3. Public Health Officials to Look Into MTO Mosquito Control: Mr. Les Beadle and Mr. Clyde Sehn, Bureau of Public Health, are to visit MTO this week to determine the types of mosquitos breeding in our general area and what measures can be taken to control them. Meanwhile, we are trying to unite all the communities in a joint effort to work on this problem. This will be the first step towards establishing a Regional Planning Council. Also, we are stressing in a PIO release that the control measures will not be injurious to fish, fauna, fowl, wild life, or animals. ✓

* *gcm* 4. Likely Delay in GE Getting Operational at MTO: Two full weeks of preliminary discussions have ensued and it looks like another week will be required before we get down to actual negotiating with GE. We have alerted Michoud Operations, and they are prepared to render us support until the GE force gets on board. | We also will have to renew an MSFC P&C contract to finish rehabilitating the telephone center and an MTO temporary office structure. The Blue Roof House will be ready for GE Headquarters and two 40' x 100' Butler Buildings are to be erected for their other needs. ✓

1. Saturn IB Payload Penalty: Re: your question on Item 5 in Notes 5/27/63 Geissler (copy attached with action items from Dynamics and Control Working Group Meeting of May 14, 1963). The 4 1/2 hour Saturn IB mission requires 120 lb. of attitude control propellant of which 40 lbs. is consumed during powered flight of S-IVB for roll control. (This 40 lbs. is required for either mission, no-coast or coast.) The 80 lbs. of propellant used during coast is in addition to the 187 lb. dry weight increase which results in a payload penalty of approximately 267 lbs. for the 4 1/2 hour coast mission. ✓
2. Communication and Tracking Steering Panel: The first meeting of this new panel was held in Washington on 6/20 and was chaired by Shea and Truszynski (OTDA). Kroeger (ASTR) and Speer (AERO) attended from MSFC; gave status report on Mission Control Operations Panel activities; requested consideration of precision instrumentation on Bermuda for launch vehicle R&D; mentioned briefly our projected communication requirements between MSFC and LOC (Project LIEF). The Panel failed to establish an acceptable charter or authority for both the panel and the corresponding working group to be chaired by Graves (MSC) and Covington (GSFC). Most center representatives were opposed to assigning complete authority and control of all Apollo instrumentation requirements to these new institutions. The chairmen are supposed to work out an acceptable proposal. ✓
3. Fluid Mechanics Facility Presentation: On June 18, 1963, Marshall personnel, including Dr. Stuhlinger, Mr. Newby, Mr. May (M-AERO), and Mr. Holderer (M-AERO) made subject presentation. Among those in attendance from NASA Headquarters were Captain Freitag, Dr. Harvey Hall, and Mr. Lovejoy. Neither the Bureau of Budget nor Seamans' staff were present. In general, the presentation was well received. However, we were again reminded of the "old questions" when Capt. Freitag told us that he needed back up material in sufficient detail to answer any justification questions that Congressional Committees might raise. In other words he wondered whether Thompson from Langley and De France from Ames would back us when we state that the work we propose to accomplish in our facility could not be handled adequately at the other centers. We are now considering ways and means of getting the support we will need from the above mentioned centers. We are considering working through members of the NASA Fluid Mechanics Committee by having Mr. Dahm of our Division who is a member of that committee contact his counterpart in Langley. The counterpart might then "grease the skids" with Mr. Thompson, thereby paving the way for a discussion by you with Mr. Thompson. ✓

o.k.

- * 1. S-I-5 POST STATIC CHECKOUT: Post Static checkout of S-I-5 Stage has been completed with the satisfactory accomplishment of the S-I/IU Compatibility Test. No major problem areas on the S-I Stage were encountered during this mating test. The vehicle was released to the Manufacturing Engineering Division on Saturday, June 15, 1963. ✓
2. S-IU-5 FINAL CHECKOUT: Final Checkout of the SA-5 Instrument Unit is progressing on schedule in Building 4708. Flight air bearing regulator installation is expected on either 6-22-63 or 6-24-63 depending upon results of hydrocarbon and dropoff tests. ✓
- * 3. S-IV-6 CHECKOUT AT SANTA MONICA: Leak and Functional checkout of the S-IV-6 Stage at DAC, Santa Monica, California is to be discontinued on June 19 or 20, 1963 to start instrumentation checkout, which will continue for approximately two weeks. Leak and functional checkout will resume after completion of the instrumentation testing. The modification program, including installation of thirty-four major modifications, will be performed after completion of the checkout and will nullify data and results obtained in leak and functional testing. Disapproval of this procedure has been registered with the Saturn Systems Office. ✓
4. S-II: In a meeting on June 4 and 5, 1963 with NAA/S&ID, a satisfactory solution to the problem of the Electro-Mechanical Mockup (EMM) slippage (NOTES 6-10-63 GRAU) was obtained. This Division has taken additional steps in the area of Quality Control to assure operational status of the EMM by March, 1964 so that there will be little or no effect upon completion of the All Systems Stage. ✓
5. LOCKHEED PERSONNEL VISIT: Dr. R. Smelt, Vice-President and General Manager of the LMSC Space Programs Division, Dr. H. F. Plank, Director of Nuclear Space Programs and Dr. L. Gephart, future Director of the Space Programs Division-Product Assurance, will visit the Quality Assurance Division June 26, 1963 to discuss the management structure and alignment of the RIFT Quality Control and Checkout organization within LMSC. We hope to avoid some of the problems experienced with Douglas and General Dynamics/Astronautics of this area. ✓
6. CENTAUR: Our Senior Quality Assurance Division Representative at General Dynamics/Astronautics, San Diego, California was reassigned to Quality Assurance Division, Huntsville on June 2, thus concluding activities of this division on Centaur in support of Lewis Research Center. ✓

B 6/27

NOTES 6-24-63 GRUENE

1. Propellant Facility Checkout for Complex 37: Complex 37 propellant loading test was successfully finished on June 21. Because of the unreliability of different level sensors, it was decided to load SA-5 in a manual rather than an automatic mode. If reliable sensors are available later, the automatic loading mode will be checked probably on Complex 34. The S-ID stage is being prepared for shipment back to MSFC for next week. ✓

2. Stratification Test: Studies are being made at present to determine whether or not a stratification test can be accomplished on Pad 37 in the near future. LVO is in contact with P&VE and LOC to set up a satisfactory schedule. ✓

B6/27

*1. STATUS OF IBM CONTRACTS: Systems contract is at IBM for signature; should ^{pm} be back to MSFC by 6/24. Relocation cost agreement between MSFC/IBM has been negotiated; conditions of this agreement have been forwarded to NASA Headquarters. On 6/12 P&C was furnished all details for preparing a complete procurement plan for submittal to Headquarters, if required. Astrionics Division considers it mandatory that this contract is finalized in FY 63. ✓

2. CONTROL AND EDS ON SATURN IB AND V: It is presently planned to use a 9 rate gyro triple redundant system in open package in the IU on Saturn IB and Saturn V for control and EDS.* The electronics will be in a separate box and will contain power supplies, demodulators, voting logic, etc. It is expected that this combination will be utilized for EDS (during boost phase) and control (during S-IVB and other phases if practical). ✓

3. ST-124, SERIAL NO. 4 FOR SA-7: Unit has been received from E-P, Bendix. Preliminary inspections have revealed improvements in manufacturing and assembly techniques. ✓

*4. PROGRESS REPORT OF SATURN-APOLLO ELECTRICAL SYSTEMS INTEGRATION
^{pm} PANEL: The Panel held its 5th meeting at Astrionics on 6/20. In attendance were representatives from: MSC, OMSF, LOC, NAA, and MSFC. The main topics covered in this meeting were:

- a. The Panel was informed that Q-Ball transducers would be used on all Saturn I vehicles. The transducers will be used as back-up instrumentation in case of accelerometer control failure; also they will serve Aeroballistics requirements.
- b. MSC will study MSFC's philosophy on EDS as outlined in memo M-SAT-AP-95-63 and comment at the next panel meeting.
- c. MSFC's interface documents for SA-6, 7, 8, and 9 were presented to MSC and they will in turn make any necessary comments.
- d. General cable specifications were given to MSC for review.
- e. The Panel agreed that M-ASTR (Electrical Systems Integration Branch) will prepare Saturn-Apollo Composite Interface Schematics.
- f. The Saturn-Apollo Interface document preparation will continue to be made by MSC and MSFC with OMSF observing the preparation; all interface changes must be approved by the Panel. ✓

*Emergency Detection System (Thanks; in this case we know it, but often these abbreviations are meaningless. pm)

1. S-1-6:

The S-1-6 stage was removed from the test stand 6/17. ✓

2. S-IV-5:

Facility steam and water system checkout completed. Hydraulic system checkout scheduled this week. ~~Date of first firing delayed for one-two weeks; anticipated date 7/11~~ ✓

3. SOUND SUPPRESSION TEST STAND:

Installation of the sound suppressor was completed on 6/15. Two short-duration tests were conducted, 6/17 and 6/21, for facility checkout. ✓

* 4. MTF:
Jan

Request for Proposal package for MTF Cryogenics Plant has been revised and returned by NASA Headquarters. We are not accepting all Headquarters' revisions, but will negotiate any differences with the Evaluation Board. MSFC nominations for Board have been submitted to Dr. Seaman's office for approval.

We are following closely and are still awaiting Headquarters' approval of proposed Aetron contract for MTF Phase I technical systems.

Negotiations with Martin-Denver for study of future large launch vehicle test and support facilities at MTF scheduled for completion 6/25. Contract finalization anticipated by 7/1.

K.H.
What?? I thought this was settled 4 weeks ago?! Somebody told me that!
B Request status report on what AETRON is doing.

B 6/27

NOTES 6-24-63 HOELZER

*
gm | AMES SUPPORT: A contract modification has been signed, extending the Marshall contract to cover a small force of GE people to work at Ames Research Center on Automatic Data Processing. The funding of this group will be directly from Ames, but handling it as a part of the Marshall contract allows Ames to use Marshall experience in getting their ADP activities underway. / The Manager, Huntsville Operations visited Ames on June 13 and 14 to review the work being done by GE. Mr. Freeman, Assistant Director for Administration at Ames, expressed appreciation of Computation Division's willingness to spread their ADP capabilities to Ames, allowing them to take advantage of experience gained at Marshall. ✓

NOTES 6-24-63 HUETER

B 6/27

1. LLS: I met with Major T. C. Evans, OMSF, on Tuesday and discussed the OMSF proposed FY 1964 funding for the Lunar Payload Program (Apollo Logistics Support System). In addition, we discussed funding for the Lunar Base concept. Plans are in process now to present a briefing on this proposed funding to the MSFC Board on Friday, June 28. ✓

Mr. Evans, Mr. Schaefer and I traveled to Brooks AFB, San Antonio, on Friday, June 21, to review the facilities and resources for possible use in the Payload program. A similar trip is scheduled for Monday and Tuesday, June 24 and 25, to Wright Patterson and Hanscom AFB. ✓

B6/27

1. SPACE LABORATORY REVIEW

We have a small study going on, primarily in Mr. Goerner's Branch, to familiarize ourselves with the problem of a laboratory as one of the possible payloads for SATURN 1B and SATURN V. Our concepts fall in between the Langley configuration (one SATURN 1B supplied by GEMINI and AGENA) and the large Houston concept. It appears that one SATURN 1B will not satisfy the requirement for artificial gravity for several months. One of our concepts consists of two 1B launch vehicles, and a crew of three, for a lifetime of about 4 months. The other concept is one SATURN V, plus one 1B, with a crew of six and a lifetime of one year. The latter looks more attractive. We talk about a 1968 operational time period, or later. The main purpose of the study is to find out the alternatives with emphasis on what MSFC can or should contribute. We should be ready with a presentation to you by the middle of August. ✓

2. SPACE MAINTENANCE

Jim Carter participated at Wright Field in some free gravity flight tests, in a KC 135, to get a better feel for the problem of free space maintenance and repair. Do you want a verbal or written report on the subject? ✓

3. TEST PILOT VIEWPOINT

Last week, during the AIAA Summer Meeting at Los Angeles in which I participated, the test pilots made a strong plea to design the next generation of space vehicles with the idea in mind that they should be compatible with the idea of early manned flight testing, like airplanes. The main speakers were Scott Crossfield and Astronaut Borman. ✓

Dr. Fessler!
B

B6127

1. Saturn V, S-IC Stage:

- a. Porosity in weldment of Y-ring to bulkhead has been repaired. The weldment has been accepted.
- b. Test welds for skin panels are not yet quite successful with respect of shrinkage control (Mae West effect). This is not a major problem but to develop solution is time consuming.
- c. The gore segments for the lower bulkheads, which require welding of outlet fittings, and have been delivered from Ryan, are not usable because of error in mill pattern. New segments formed at Wichita will be chemical milled this week in San Diego with corrected mill pattern.
- d. In the S-IC Quarterly Program Review Meeting Boeing stated clearly that delivery of components, sub-assemblies, and tooling to MSFC for the static firing stage will be approximately 8 weeks late. Reference: Section II, Boeing Progress Report. This forecast is still very optimistic since it is based on documentation delays of up to 16 weeks. (Section II, Page 32). Therefore, the assembly of the structure for S-IC-T will be a minimum of two months later than presently scheduled.
- e. Boeing also shows in the schedules of this progress report that all the delays would be caught-up for S-IC-1. This seems a very optimistic assumption. Even if it would be feasible it would mean (1) a shortening of the time period of start of static firing and first flight, and (2) a higher cost because of manpower build-up in Wichita and Michoud (second shifts and overtime).
- f. Sciaky Brothers has succeeded to demonstrate on two samples EB welding of the full Y profile of acceptable quality. From this demonstration to the final production application is still a long way of development which we will accomplish in-house. ✓

2. Mock-Ups: The 3M mock-up is 90% complete. The first F-1 engine has been mounted in the center of the thrust structure mock-up for the S-IC Stage. An inter-tank mock-up for this stage is under construction. ✓

B 6/27

X Jan

1. SATURN I/IB: - Facility Checkout of Complex 37B at AMR - Hydrogen loading tests on the S-IV Stage were conducted satisfactorily on 6-17 and 6-20-63. No trace of hydrogen was found in gas samples taken from the common bulkhead, and on completion of the test no pressure rise above ambient was noted in the bulkhead as opposed to the All Systems tests at SACTO. These tests complete the wet test portion of the VLF 37B facility preparation and the S-I-5D will be ready for shipment to MSFC on 7-1-63 for the SA-6 dynamic tests. ✓

O.L.
Ass is
over
loses the
fee
action
coming?
B

S-IVB - On 6-13-63, during X-Rays, a shield of the X-Ray head support fixture fell and damaged one of the gores of the Forward Common Dome of the structural test article. The damaged gore has to be replaced. No further delays in the delivery of the first Common Bulkhead is expected, since the pacing item is still the Aft Common Dome, which was completely destroyed in a handling accident.

2. SATURN V: S-II - The first two sets of hydraulic engine actuation systems have been delivered to NASA for test. These systems incorporate the 14 sq. inch piston actuator and the electrical feedback positioning system which is not representative of the production flight hardware. Preliminary test results revealed that the accumulator failed at an average burst pressure of 5700 psi in lieu of the design requirement burst pressure of 8000 psi.

During the Quarterly Review on 6-15-63, the contractor recommended that the membrane seal bulkhead backup program be abandoned in lieu of the strip seal bulkhead backup program. MSFC will review all design criteria and offer firm direction to the contractor within three weeks relative to the backup bulkhead configuration to be pursued. ✓

Instrument Unit - Apollo load data verification from Manned Spacecraft Center has now slipped to 7-1-63. ✓

B 6/27

1. PROPELLANTS MANAGEMENT

a. WEST PALM BEACH PLANT - Down since June 15 - is expected to resume production again tomorrow, June 25. Shipments from West Coast have prevented curtailment of RL10 testing. ✓

X Jan b. LOX SHORTAGE ON WEST COAST - The current LOX shortage at Rocketdyne is due to Rocketdyne's unusually large requirements this month, and also to 5 of the 11 government LOX plants being down for repairs. All plants but one are now back in production. H-1, F-1, and J-2 engine development programs have lost significant amounts of testing time. ✓

We are assessing this situation to verify Rocketdyne's estimated requirements, evaluate program impact, and determine availability of LOX from eastern plants. ✓

X Jan c. MTO-LH2 PLANT - We received NASA headquarters approval last Friday, June 21 of the RFP (Request for Proposal) for MTO LH2 plant. It is probable that the delays encountered in getting headquarters' approval for the procurement plan and RFQ plus estimated future delays will result in a 2 to 3 months' slippage of the February 1, 1965 activation date. We will attempt to determine during contract negotiation whether it is possible to recover this slippage. ✓

2. FY 65 C of F PRELIMINARY REVIEW - Guidelines were received last week from headquarters for the FY 65 C of F submission.

Two representatives of OMSF, Mr. Norman Crone from Freitag's office and Mr. John Pollak from Diaz's office will be here this week and next week for preliminary review of MSFC FY 65 C of F projects and participation in project writeups. Their purpose:

To insure adequate backup validation for the project funding, schedules, and technical parameters, and

To insure that adequate coordination is accomplished between centers and other government agencies to avoid unnecessary duplication.

We will participate with Mr. Shepherd's office in this review. ✓

1. NERVA/RIFT INTERFACE ACTIVITIES: Nuclear Vehicle Projects Office (NVPO) and Space Nuclear Propulsion Office - Cleveland (SNPO-C) members of the NERVA/RIFT Interface Committee met on 6-19-63. A group of NERVA/RIFT interface panels, co-chaired by MSFC and SNPO-C will be established. SNPO-C is reviewing the proposal charters of the panels and will conform to the MSFC breakdown of technical specialties wherever possible. The SNPO has asked for two weeks to review the organizing structure. Immediate action has been undertaken to attempt to resolve the thrust vector control problem. ✓

2. PROPOSED REASSIGNMENT OF LOCKHEED PERSONNEL: Lockheed has proposed that Dr. Landis S. Gephart be made Director of Project Assurance for their Space Programs Division. In this capacity, Dr. Gephart would be responsible for the RIFT Quality and Reliability Programs. Dr. Gephart is presently Director of Product Assurance for Lockheed's Satellite Systems Division, and formerly was Director, Office of Reliability and Assurance, NASA Headquarters. ✓

*3. GUPPIE: The Structures Branch is participating in the Federal Aviation Agency flight certification of the "Guppie" aircraft at Los Angeles, California. The efforts are directly related to determining the feasibility of utilizing this aircraft for transportation of S-IV flight stages. ✓

4. WATER APPEARS TO BE BEST PROPELLANT: For satellite station-keeping and some other short lifetime applications requiring low-thrust propulsion, water appears to be the best propellant.

Dr. Olds of Lockheed-Palo Alto discussed various low-thrust methods at the June Space Science Seminar: hot gas, cold gas, chemical, nuclear, electric; he concluded, however, that water vapor was cheapest and required least weight of propellant tanks and other equipment if a two-year lifetime and a 24-hour period were assumed. For much longer intervals of time; e.g., 20-year lifetime, the electric propulsion gains and overtakes all others since propellant and tank weights increase so little. ✓

5. ARTICLE FOR "ASTRONAUTICS AND AEROSPACE ENGINEERING" CANCELLED: The Office of Manned Space Flight strongly advised cancellation of my proposed magazine article entitled, "Multi-Mission Module - Our Missing Link to Space Exploration?" Mr. Bart Slattery can give you details and reasons for disapproval by OMSF.

The editor of "Astronautics" expressed disappointment. ✓

W.M.

can understand

at Hq.

doesn't like this

kind of an approach
by a Field Center!

B

Ba/27

Reorganization of Shea's Office:

Inclosed is the announcement of the intended reorganization of Dr. Shea's Office.

I would be glad to discuss any aspects with you if you so desire.

(I am sorry I missed your Executive Meeting on Friday, 7 June, but I was called to Washington for the above).

Inclosure

See form instructions

NOTES 6-24-SHEPHERD

LATE!

B4/27
JCM

FY-65 Budget: The present indications are that Office Manned Space Flight (OMSF) is carrying the following totals for the Construction Budget:

| | | | |
|------------|--------|-------------------|----------|
| Huntsville | 31.140 | Various Locations | 16.050 |
| MTO | 140 | S-IVB, Sacramento | |
| Michoud | 21.9 | 3rd test stand | 9 (RD&O) |

To staff this to Bureau of Budget the following tentative plan has been established by Office Manned Space Flight:

a. The week of 24 June, User Division and Facilities Engineering Office review the program with Mr. Crone, OMSF.

b. July 9 and 10, review program at Marshall with Messrs. Lilly, Freitag and Low. This is part of a round robin visit to each of the Centers.

c. July 29, Messrs. Lilly, Freitag and Low will conduct "mock" hearings on the FY-65 program for Marshall.

d. August 19, Marshall submit final FY-65 Budget to OMSF.

e. September OMSF submit Construction Budget to Office of Programs.

f. October Office of Programs submits to Bureau of Budget.

NOTES 6-24-63 Stuhlinger

B 6/27

1. SCIENTIFIC PROGRAM FOR LLS: On Tuesday of last week, Hans Hueter, several members of RPD, and I attended a meeting in Washington with representatives from OMSF and OSS. A new group, now being called the "Manned Space Science Programs" group, is being formed to establish the scientific program for all aspects of the manned space flight program. Thus, this new group will be responsible for establishing the scientific portion of the LLS Payloads project. The group will be temporarily headed by Dr. Shoemaker; it will report administratively to OSS, but will be responsive to the requirements of OMSF. OMSF seems to support this group fully. The group has asked for MSFC's participation, particularly with respect to LLS payloads. Dr. Fryklund, who is working with Dr. Shoemaker to establish the group, will visit MSFC in July to discuss our participation. Representatives from Special Assignments Office and RPD will meet with him. ✓
2. METEOROID PROJECT: The next monthly review meeting of the Meteoroid Project will take place Thursday, June 26. Two items on the agenda may be of particular interest to you: Program Status (9:10 to 9:40), and General Problems (13:45 to 14:15). ✓
3. ANNUAL LEAVE: I plan to be on annual leave from early July until late July. Mr. G. Heller and Mr. G. Bucher will be here during that period. ✓

B 6/27

- *1. F-1 ENGINE SYSTEM TESTING: Last week eleven engine tests were run. Six tests were for scheduled duration, and five were terminated by observer or automatic cutoff. Four tests were bombed with 13.5 grain bombs which were centrally located on the injector. All instability induced by the bombs was damped within 12 milliseconds. ✓
- *2. F-1 INJECTOR TESTS: Five chamber-only tests were conducted last week, three with a tubular wall chamber and two with a solid wall chamber. All tests used a 5U baffle injector with low-fuel delta pressure. Centrally located 13.5 grain bombs induced instability on all tests. Damping occurred on three tests and rough combustion cutoff (RCC) occurred on two tests. One of the RCC tests damped before start of thrust decay. On both RCC's the thrust chambers were damaged. The tubular wall chamber was damaged when the fuel inlet manifold failed 50 milliseconds after ignition. One burn-through and several eroded areas were found in the solid wall chamber after the test. ✓
3. RL10 ENGINE: The liquid hydrogen facility at the Pratt and Whitney Aircraft plant in West Palm Beach, Florida, is currently shut down because of a leak in a cold box. Fuel has been ordered from the west coast to sustain test operations in anticipation of depletion of the current storage supply. It is expected that the liquid hydrogen facility will be operable within two weeks. ✓

4. J-2 ENGINE: Seven engine system tests were conducted on Vertical Test Stand (VTS) 3B for a total run time of 490 seconds. One test was a 250-second test and the balance were short-duration tests. The objectives were to conduct vibration studies, leakage measurements, start-stop capability and to investigate the pneumatic control system.

Nine engine tests were conducted on VTS 2 for a total run time of 619 seconds. This total time includes two 250-second tests. Other tests were 20-second runs as part of a concentrated program to evaluate engine-starting characteristics under varying start conditions.

J-2 hydrogen turbopump testing is scheduled to resume at Component Test Laboratory (after repair is completed) on 6-24-63. ✓

5. H-1 ENGINE: H-1 R&D testing has progressed slowly during this report period as a result of the LOX shortage at Santa Susana. The third stainless steel thrust chamber has accumulated 1944 seconds in 14 tests. This is the first unit fabricated with production-type, high-pressure die-formed tubes. No leaks have developed to date on this unit. ✓

6. AIRCRAFT POROUS MEDIA (APM) ALLEGES PATENT INFRINGEMENT AGAINST BENDIX FILTER COMPANY AND MSFC: APM claims that filters being supplied by Bendix Filter Company to MSFC for the SATURN program are infringing on their patent rights and is bringing patent infringement claims against Bendix and MSFC. MSFC is included in this claim since we are technically cognizant over the SATURN program. ✓

7. FY-64 LIQUID HYDROGEN TECHNOLOGY: As last year, we have again solicited from the Divisions a list of tasks in the liquid hydrogen technology area. These tasks are required above and beyond our MSFC submittals against all other sources. They amount to a total of \$2.8 million (75% in the vehicle area and 25% in the engine area). If it is your policy again this year to support these efforts, then our program offices have to be instructed to plan accordingly for provision of funds.

H.W.

Coordinate
w/ CPO

Yes, it is. Please prepare
available directive for my sign. B