

12 / 3 / 62

B 12/3

NOTES 12/3/62 CONSTAN

1. MICHOUD COMPUTER CONTRACTOR OPERATION

A bidders' conference for interested contractors that are proposing to operate the Michoud Computer Facility at Slidell was held November 27, 1962. Fifty (50) persons representing thirty-one (31) companies attended. Several of the interested organizations appear to be well qualified. ✓

\* 2. IBM 7090  
9600

in Slidell?

The IBM 7090 computer was placed in Operation^ Some minor debugging is required which is expected to be completed this week. ✓

\* 3. BUDGETARY & PLANNING PROPOSALS  
y20

CCSD submitted the revised budgetary and planning proposal for FY 1963 which is based on a new schedule for C-1, C-1B, and the 1963 fund limitation. ✓

NOTES 12-3-62 DEBUS

B 12/3

Negative report.

Ym

1. Saturn Wind Tunnel Program Movie: Re: your suggestion on Notes 11/19/62 Geissler, a 15-minute documentary film of MSFC Saturn wind tunnel programs is being prepared. Emphasis will be on the major programs, participating NASA Centers, and MSFC managed contractors. ✓

2. Air Load Manuals: Re: your suggestion about the identification block of sheets in the Air Load Manuals (Notes 11/19/62 Geissler), the block previously called "Configuration" now reads "Book Identification". The actual configuration is described in the title block to avoid future confusion. This correction is being integrated into the manuals. (Please see attached old and new samples.) EOR data were included as back-up information for the LOR configuration since they are useful for analysis work pertaining to the LOR configuration. For example, contributions to stability of the fins and shrouds of the EOR are directly applicable to the LOR since sizes are identical. ✓

3. Quasi-Static Aeroelastic Tests for Apollo: Quasi-static aeroelastic tests of the Apollo payload for C-1, Block II, have been completed at Ames. Static forces were measured on individual components. (CM & LES, SM & instrument unit, S-IV frustums), as well as overall forces on the three components. This integration of local forces showed that (a) Force and moment data for the CM&LES are highly non-linear, as expected, and (b) addition of LES flow separator disc (added to improve static stability of abort configuration) shifts CM&LES center of pressure rearward by 0.15 calibers and increases LES lift curve slope by 16% at Mach 0.8 to 40% at Mach 2.5. Analysis of test data to determine effects of Apollo payload on launch vehicle flutter is continuing. A quick look indicates no problems. ✓

\* 4. MSFC-MSD Flight Mechanics, Dynamics and Control Coordination Panel Meeting: The third meeting of subject panel was held at MSFC on Nov. 20, 1962. Mr. Calvin Perrine is now the official co-chairman of the panel from MSD. This seems to improve working relations (due to MSD organizational structure) and cooperation between the centers is good. A guidance implementation sub-panel, established at the November 20, 1962 meeting, will be responsible for all guidance hardware associated problems. This group met briefly Nov. 21, and discussed interface areas of importance to both centers. They plan to meet again in mid-January. The following is a brief list of action item subjects discussed in the November 20, 1962 meeting: (1) Submittal of performance data for C-1, C-1B and C-5 vehicles to MSD, (2) Submittal to MSD of MSFC studies on S-IV and S-IVB explosions, (3) Control System failures, (4) Limit cycle for S-IVB attitude control system, (5) S-IVB sloshing disturbances during earth orbit and translunar phase, (6) Disturbances of SM sloshing and separation as applied to S-IVB, (7) Possibility of reducing roll limit cycle velocities on S-IVB stage to meet MSD navigation requirements, (8) Definition of spacecraft separation characteristics (S-IV and S-IVB stages), (9) Determination of effects of providing 1 - 4 orbit capability for S-IVB stage, (10) Time required for attitude control by S-IVB after translunar injection, (11) Definition of configuration, weight, CG, aerodynamics, etc. for operational C-1 payload. ✓

EG. Lunar Extension Shroud  
Launch Escape System?  
 or what?

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NOTES 12-3-62 GORMAN

Negative

gan

3/2/62

\*1. SA-4 POST STATIC CHECKOUT: The SA-4 vehicle air bearing flow test was performed and accepted for flight on the ST-124 Air Bearing System. No defects were noted. Performance Testing was discontinued and the vehicle was moved to the alignment area for weight, center of gravity, mass moment of inertia and alignment determinations on November 27, 1962. ✓

\*2. S-IV STAGE:  
 All-Systems Vehicle - Checkout is scheduled to start at Santa Monica, California on December 15, 1962.  
 Air Force Support - A meeting on this subject is to convene today at Western Contracts Management Region (WCMR) and we should know tomorrow the number of spaces allocated to the Douglas Facility. ✓

\*3. SA-6 ENGINE STATUS: All four inboard engines were post modification pressure and functional tested and accepted. Determination of strut length: (used in place of actuators) require the engines to be placed in the engine alignment stand. This determination was made and all four engines released to Manufacturing Engineering Division for booster installation on November 28. ✓

\*4. PROCUREMENT ACTION REVIEW: A representative of this Division returned from the Douglas Aircraft Company (DAC), Santa Monica, California, where he performed a review of purchase orders for the Saturn S-IVB stage to assure that applicable quality requirements were being included in the procurement actions. During this period (October 3-31), 92 purchase orders were issued which concerned the S-IVB Program. DAC has established a system for adequate review of purchase orders to ensure inclusion of applicable quality documents. As far as the Quality Assurance representative could determine, necessary quality provisions are being included in these purchase documents.

\*5. PROJECT 60 QUALITY ASSURANCE SUB-TASK GROUP: Personnel of the Quality Assurance Division presented the MSC Quality Assurance Program to the Project 60 Quality Assurance Sub-Task Group on November 26, 1962. The presentation covered twelve elements relating primarily to Quality Assurance Division functions performed in the preparation and management of space system contracts with industry. The element subjects and type information desired had been provided by the Project 60 team to the Quality Assurance Division prior to the presentation. The presentation was well received and the team chairman commented that it was the most comprehensive one which the Sub-Task Group had heard to date. ✓✓

\*6. GOVERNMENT INSPECTION AGENCY PERSONNEL SUPPORT: According to information received on November 30, 1962 from the Office of Reliability and Quality Assurance in NASA Headquarters, the Department of Defense has released 180 spaces to the Government Inspection Agencies in support of [unclear] work.

B...

*[Handwritten signatures and notes]*

NOTES - HAEUSSERMANN, 12/3/62

✓ 1. STATUS OF ST-124 DEVELOPMENT: ST-124, serial #2, has been received from  
Eclipse-Pioneer. The first inspection yielded excellent results. Friction levels of  
the gimbals are considerably improved from serial #1. Initial dynamic tests indicate  
#2 will pass all functional tests. ✓

NOTES 12/3/62 Hainburg

\* 1. SA-D5:

Installation continues. Start of testing by 12/6/62 is not possible. New start date, 12/18/62, established by PCVE. ✓

2. RL10A-1 ENGINE TESTING, MSFC:

Successful 40-second firing made on Thursday, 11/29/62. Next firing is planned in about two weeks.

\* 3. GSE TESTING:

One complete set (8 arms) of Block II launcher holddown support arms has been received from the LCC vendor, Hayes, for test. The test is scheduled to be completed and the arms delivered to the Cape by 1/21/63. The main differences between the Block I and Block II arms are that none of the Block II arms are retractable and steel castings are used in lieu of welded type construction. ✓

4. MODEL TESTING:

A small test position for firing LCX/gaseous-hydrogen model engines was completed and the first test of a 150-pound-thrust model engine was successfully conducted 11/30/62. ✓

1. STATUS OF DE-CENTRALIZED AIR FORCE COMPUTER DEVELOPMENT. In addition to the large high speed reflective analog computer installations in Aeroballistics Division, small analog computer installations are in operation in Aeroballistics, Astrionics, and Propulsion and Vehicle Engineering Divisions. These computers are operated by personnel of those divisions, on small problems, and are providing effective service. Maintenance is provided by Construction Division. ✓

Recently requests have been received from Aeroballistics and Astrionics Divisions to expand their installations to medium size (30 to 80 amplifiers) and provide a new or expanded division for programming and operating support. One expansion is listed represents a new requirement which was not included in the FY 63 Budget Estimates. The purchase price of the equipment needed is approximately \$150,000. The two additional percental also represent a new requirement.

*Dr. Hoff*  
*12-3-62*

NOTES 12-3-62 HUETER

1. C-1/AGENA:

Representatives from this office, along with Division personnel, will attend a meeting during this week at Lockheed Missiles & Space Company (LMSC) with Jet Propulsion Laboratory (JPL) to review the C-1/Agena Statement of Work. Review at this time will permit LMSC to make any necessary changes and have a definitive Statement of Work together with Rough Order of Magnitude (ROM) cost data completed by December 15.

2. ATLAS:

All Atlases have been red-lined due to defective diodes in the programmer. All programmers must be removed, disassembled and checked. L&M Quality is working in conjunction with the Air Force to resolve this problem.

L&M technical personnel are attending the Atlas Familiarization Course at General Dynamics/Astronautics (GD/A) this week.

There is a meeting at Space Systems Division (SSD) Tuesday of the Atlas Configuration Board. L&M personnel will be in attendance.

3. AGENA:

a. Mariner R-2: Mariner R-2 status as of 2300 GMT 11-28-62: CC&S cyclic pulse No. 133 occurred on schedule at 0801 and pulse No. 134 is due at 0040 GMT 11-29. The attitude control system is continuing to operate properly and the present gas supply is 2.39 pounds. Usage is 0.017 pounds per day. The earth brightness data number is currently 26. The power system is essentially unchanged and the spacecraft is still operating properly from the power supplied by one solar panel. Voltage and current measurements are continuing to fluctuate slightly as they have since the 4A11 panel developed the electrical short. -Tracking at 2000 GMT's of 2400 GMT 11-28 the S/C was 24.56 million statute miles from the earth and the probe Venus distance was 4.83 million statute miles. The earth referenced velocity was 26,457 statute miles per hour. It has been 93 days since launch and 16 days remain to Venus encounter.

b. Mariner R-64: MSFC has requested the Air Force to initiate action for Mariner R-64 Atlas/Agena configuration as outlined in TWX M-L&M-AS-11-67. These are modifications needed to meet the additional 93 pound payload capability for the Mariner R-64 configuration.

c. A-12 Echo Satellite: GSFC and Langley are still having problems with the pressurization of the A-12 balloon. In order to give them more time in-house to correct this problem the A-12 interface meeting at LMSC and PMR next week is being rescheduled for a later date. LMSC is still looking into the impact on schedule of adding a TV camera in the adapter and injecting the spacecraft 90 sec. earlier.

### 1. NEXUS - LAUNCH VEHICLE CONCEPT

The advanced NOVA studies brought out one outstanding vehicle concept of a reusable NOVA-size vehicle in the one million pound payload class. It is a reusable vehicle, one stage to orbit with solid rocket assistance during take-off. This GD/A vehicle concept has all the elements of a potential "breakthrough" in large launch vehicles. It does require a new hydrogen/oxygen engine and, therefore, cannot be available for flight test prior to 1971/72. I have about 20 slides describing this concept. I would appreciate an opportunity to present these slides to you and/or the board at your earliest convenience, because it can influence greatly our thinking on NOVA.

### 2. EARLY MANNED PLANETARY MISSION

We will have three final presentations on our EMPIRE mission studies this week. A two-hour summary is scheduled for your convenience on Wednesday afternoon. Mr. Douglas Lord, representing Dr. Shea, will attend the briefing prepared for you. He will probably want to have your opinion on this subject. There is a prevailing opinion among Dr. Shea's staff that manned planetary flights without landings are without interest. We were of the same opinion about six months ago when our studies were initiated. We changed our view during the course of the studies, because it became apparent that there might be no opportunities for Mars landings during the seventies. This is due to the facts that second generation nuclear power plants might not be available prior to 1975, and that the velocity requirements go up rapidly for 1977 and later. If we would be satisfied with the long round-trip time of a Hohmann mission profile, 1975 looks like a possible Mars landing mission. However, if this looks unacceptable, our only hope for manned planetary missions in the next decade are one- to two-year fly-by missions for Mars and Venus; therefore, we do suggest to keep some study effort going along this line. Some of Dr. Shea's staff people, not understanding the situation, want to cut this effort out. If we, with your help, cannot convince Doug Lord to continue our Lockheed study, you might want to call Dr. Shea personally.

### 3. ORION VEHICLE CONCEPT

We are preparing a one-hour briefing for you for early February, as you requested. New "political" developments, about which I will hear on December 10 by special messenger from General Atomics, might accelerate our presentation and possible action required. I still recommend that we follow the development very closely, as this is the only known concept at this time which offers a combination of high thrust and high specific impulse.

NO. 88 12-3-62 HUBERS

1. C-1 Project: (a) The Payload Adapter (replacement of dummy Apollo Capsule for SA-5) has been completed for the Dynamic Vehicle SA-D5. The second one, for SA-5, is in structural assembly. (b) The SA-5 Mock-Ups will be transferred to CCMD, Michoud, by barge. Since Chrysler has taken over the design responsibility for S-1 they are really in need of a full scale mock-up which we urgently need the floor space that was occupied by the mock-ups for core assembly tooling for S-1C.

2. C-5 Project: We overcame the stalemate in contract negotiations with Boeing as to whether component tooling would be under the level of effort portion of the follow on contract or under the regular contract. Component tooling to be retained at Wichita will fall under the regular portion of the contract as Boeing desires, however, they have agreed to supply complete plans for these tools for our approval prior to starting any work, and to follow up with periodic reports on the progress.



B12/3

NOTES 12-3-62 MAUS

1. 3RD QUARTER OMSF PROGRAM REVIEW

On account of Mr. Holmes' visit on December 13th, we have rearranged for the quarterly review meeting to be conducted here. ✓  
Mr. Rosen will come here on December 12th for the Quarterly Review and stay over for the Holmes' visit on December 13th. ✓

2. TOP MANAGEMENT SEMINAR AND PERT STATUS AND REVIEW MEETING

\*  
plan

The Top Management Seminar on Tuesday, December 4, will be attended by Tom Jenkins and Walter Haase from Office of Programs and by Mr. Martin Offenber, who will conduct the seminar.

The PERT Status and Review to be held Wednesday, December 5, is to be an internal affair. ✓

plan

1. RIFT: Workers at Lockheed returned to their jobs as a result of the President invoking the Taft-Hartley Law. The strike to date, however, has had no effect on the RIFT Project. ✓

2. SA-5 STRUCTURAL TESTING: (Reference NOTES 11-19-62 MRAZEK, Paragraph 1, Attachment #1.) At this time it appears that testing will be performed during the week of 12-9-62. These tests will be on launch holddown and launch rebound condition. Schedule of tests will be reconfirmed during this week and we will arrange your visit with Mrs. Holmes. ✓ *Boswell Yes*

3. S-IC GROUND TEST STAGES: Reference your comments to Memo No. M-SAT-S-IC-283 dated 11-19-62, Subject: S-IC Plan V Schedule and Revised Ground Test Stage Description (Pages 5, 6 and 11 extracted as Attachment #2).

a. Answer to Comment on Page 5: The test fuel tank will primarily be built to test the bulkheads, prior to fabrication of the S-IC-T stage. Any additional test information to be gained from this test fuel tank is, at this point, considered to be secondary. Only one oxidizer tunnel is presently planned for the test fuel tank for the following reasons:

(1) All preliminary information required for developing and verifying the design of the oxidizer tunnel can be obtained from one tunnel. ✓

(2) Manufacturing time required to incorporate all five of the oxidizer tunnels into the test fuel tank will reduce the structural test time allocated under Plan V. This could delay final fabrication and assembly of the S-IC-T stage as well as the static firing program. (It appears there will be a four week delay all the way down the line if all five of the oxidizer tunnels are included in the first test fuel tank.) ✓

(3) All five oxidizer tunnels will be included on the second fuel tank to be fabricated at Marshall Space Flight Center beginning 10-63. ✓

b. Answer to Comment on Page 6: Yes, there will be two fuel tanks built at Marshall Space Flight Center to verify the tank structural design. The first will be a test fuel tank (bulkhead) with the specific mission of testing and verifying the design of the upper and lower bulkheads. The second fuel tank will conform to flight documentation and will incorporate, as much as possible, design information obtained from the first test fuel tank. ✓

c. Answer to Comment on Page 11: As a possible improvement to eliminate cable resonance, the Structures Branch is contemplating the use of floating bearings with spring suspension. A decision is likely concerning the feasibility of this technique by about 3-63. As an alternate, we can use suspension cables with springs, as was the case for SA-D-5. ✓

\* 4. SIGNIFICANT PROPULSION EVENTS ON SA-3 FLIGHT:

a. Successful operation of pressurization system under SA-5 simulated ullage volumes. ✓

b. Successful accomplishment of LOX depletion cut-off which will give added performance as compared to timer cut-off (SA-3 indicated a gain of 0.8 second burning time for eight engine operation). ✓

c. Successful ignition and operation of retro rockets. ✓

Attachment #1: NOTES 11-19-62 MRAZEK

Attachment #2: Pages 5, 6 & 11 of Memo M-SAT-S-IC-283

1. Assignments to Systems Engineering Office (Huntsville)

- a. Office of Systems responsibility for ground and flight testing of Saturn Launch Vehicles was assigned to our office. (The responsibility for ground and flight testing of the spacecraft was given to Systems Engineering Office (Houston)). The overall responsibility for System Tests within Office of Systems was also assigned to our office. ✓
- b. Office of Systems responsibility for Launch Facilities was assigned to our office. ✓

2. Apollo Systems Specifications

- a. Our office is responsible for review and approval of all sections of the Apollo Systems Specification (Bellcomm) concerned with Systems Testing and Launch Facilities.
- b. The Apollo Systems Specifications will be distributed to NASA Centers for comments on approximately December 15, 1962. It is expected that the rewritten and approved Specification will become effective by January 15, 1963. ✓

3. Systems Review Panel

Mr. Gautraud informed this office (prior to last Management Council Meeting) that the first meeting of the Systems Review Panel is scheduled for 17 December 1962 at MSFC.

Mr. Gautraud also stated that this subject would be discussed at the last Management Council Meeting. No feedback to this office from Management Council. ✓

P.R.  
Make sure you include yourself in all relevant MSFC meetings.  
B

I guess the Release is MSFC's Action Officer on this. Right? B

B 12/3

20

- \* 1. OSS SUPPORTING TECHNOLOGY: After considerable liaison and informal coordination, seven MSFC technology tasks totalling 400K have been submitted to the Office of Space Sciences as a proposed FY-1963 Supporting Technology Program. We expect that the seven tasks will probably be approved. Six of the seven tasks will be supervised by the Engineering Materials Branch of P&VE, and the other is an Aeroballistics task. ✓
2. RESEARCH INSTITUTE: Research Institute personnel have begun a series of group visits to various MSFC divisions. Test Division was visited on November 21, and RPD will be visited on December 4. There is a strong interest in Astrionics and PSVE visits later in December. No definite information on degree granting in Huntsville has come from the University of Alabama as yet, but much discussion is in progress. Dr. Harvey Hall of OMSF called Dr. R. Hermann and asked him to emphasize the degree-granting possibilities of the Research Institute. ✓
3. OMSF RESEARCH PROGRAM: Mr. G. Miles hand-carried our latest submission to OMSF on Wednesday, November 21. It was so complete down to minute details that even Mr. Trueblood could not find any flaw in it. I followed up by telephone on November 26, and Dr. Rees phoned Milton Rosen on November 30. Actions to have the program authorized were promised. On December 3, I learned from Mr. Smolensky in OMSF that he had signed our program, that Mr. Holmes is expected to sign it today, and that Mr. Smolensky will then hand-carry it to Dr. Seamans for his signature. ✓

E.S.

Has is my letter to Seamans  
coming along, - the one you  
agreed to prepare with Chris Anderson  
re Centro fund for certain support  
Research?

B 12/3

12/10/62

10/12/1962

NOTES 12/10/62 GORMAN

B 12/10

- 19
- \* 1. EMERGENCY HEADQUARTERS - The emergency MSFC headquarters in the igloo area has been completed. The igloo modifications have been completed. Food has been ordered for 200 people. ✓
- \* 2. GRUMMAN - We are scheduled to get delivery of Grumman on March 10, 1963. Approval of the plan to base it at Redstone Airfield and to have a contractor perform operations and maintenance has been approved by Headquarters. Colors will be:
- Top of fuselage - white
  - Bottom of fuselage - light blue
  - Dark blue stripe along window line of fuselage
  - Wings - white
  - One NASA insignia immediately aft of pilot's window, superimposed on dark blue stripe
  - Nacelles - gray
  - Orange (Da-glo) paint on nose, wing tips, vertical and horizontal stabilizers ✓

B 12/10

1. MICHLOUD OFFICE SPACE

MSFC has prepared and forwarded to NASA Headquarters a report on office space deficiency at Michoud. This report outlined several alternate ways to solve the deficiency of office space and outlined costs and funding comparison of the alternatives. An early decision by NASA Headquarters is needed. Mr. Gorman has personally acquainted Mr. Holmes of this problem. ✓

NOTES 12/10/62 DEBUS

219  
B 12/10

No NOTES received from Dr. Debus this date.

1. Quasi-Static Aeroelastic Tests for Apollo: Reference item 3, Notes 12/3/62 Geissler, subject as above (copy attached), the abbreviation "LES" stood for Launch Escape System. ✓

2. High Altitude Environment Measurements at Atlantic Missile Range: This subject was raised as agenda item 3 of the September 24, 1962, Management Council meeting, in an attempt to encourage NASA Headquarters (Office of Applications) to institute a NASA Project Development Plan for a measuring program at Atlantic Missile Range. At that meeting, questions were raised concerning the practical application and need for the information from an engineering or design viewpoint. Consequently, we sent a letter of justification to Dr. Shea over your signature. To date, we have received no feedback from NASA Headquarters. Have you heard anything on this subject? If not, would you prefer that we contact Dr. Shea's office informally on status of request, or write another letter? → E.F. ↪ yes, if no reply

3. Headquarters Response to LLS Study Representation: After the last board meeting, I received word from Mr. de Fries concerning results of follow up discussions with Mr. Taylor and Dr. Lee. I am attaching a copy of his message which can hardly be more condensed. Item 3 should not yet be considered as official transmittal of information.

I am also attaching an unsigned copy of a letter from Dr. Shea to you which will soon follow. Joe de Fries will carry the ball on the requested cost estimates and will be supported by Mr. Foster and a few other gentlemen from P&C and Mr. Huber and Mr. Sanders from FPO. We think we can produce some data which are a lot better than off the cuff estimates, but we realize that a real cost analyses cannot be accomplished in such a short time. ✓

*Bob*  
*Bonus*  
*Have*  
*we?*  
*B*  
*No reply*  
*in yet.*  
*Bob*  
*12/11*

NOTES 12/10/62 GORMAN

B 12/10

- \* 1. EMERGENCY HEADQUARTERS - The emergency MSFC headquarters in the igloo area has been completed. The igloo modifications have been completed. Food has been ordered for 200 people. ✓
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  - Dark blue stripe along window line of fuselage
  - Wings - white
  - One NASA insignia immediately aft of pilot's window, superimposed on dark blue stripe
  - Nacelles - gray
  - Orange (Da-glo) paint on nose, wing tips, vertical and horizontal stabilizers ✓

B 12/10

NOTES 12-10-62 GRAU

1. PROCUREMENT ACTION REVIEW: In answer to your question on this subject of NOTES 12-3-62 GRAU, (copy attached), there is no connection between it and "Material Review Board Procedure" discussed in my notes of 11-26-62 (copy attached). ✓

Eberhard R.  
How did you  
make out  
re par. 5,  
Grau's  
NOTES  
dated 11/26?  
B

\* 2. SA-4 POST-STATIC CHECKOUT: Weight and Alignment operations continued on schedule with completion of this operation anticipated on December 13, 1962. ✓

\* 3. SA-5 PRE-STATIC CHECKOUT: Pressure-functional testing is continuing in the Bldg. 4705 test cell with completion of these operations scheduled for December 19, 1962. ✓

4. INSPECTION REPORTING ACTIVITIES: The following chart depicts the number of Analysis Record Tags, Defect Reports, Inspection and Acceptance Requests and Final Disposition Cards processed during the month of November.

Analysis Record Tags-----	1775
Defect Reports-----	855
Inspection and Acceptance Requests-----	99
Final Disposition Cards-----	308

\* 5. MANPOWER ALLOCATIONS: This division was advised by the Director of Quality Control, Air Force Western Contract Management Region, that WCMR is receiving forty-one (41) additional Quality Control manpower allocations in January 1963 for NASA support and seventy-two (72) more in April. This will permit assignment of approximately thirty-two (32) more allocations to Douglas for S-IV coverage. Other programs will receive proportionately increased coverage. Recruiting will begin immediately and personnel will be hired on an overstrength basis until the allocations become official. ✓

\* 6. S-IVB STATIC TEST FACILITY: A meeting with representatives from the Test Division, Facilities Engineering Office and Saturn Systems Office was held to discuss quality requirements for the instrumentation package at the S-IVB static test facility in Sacramento, California. It was generally agreed that it would be feasible to invoke NPC 200-3 on the prime contractor and NPC 200-1 on the Corps of Engineers. ✓

2 Enc  
Attachment 1  
Attachment 2

B 12/10

NOTES - HAEUSSERMANN, 12/10/62

1. CONTROL SCHEME FOR SA-4: Accelerometer control will be used on SA-4. Since a 7 engine tilt program would cause considerable wind restriction, an 8 engine tilt program will be used. Aero has concurred; details to be discussed 12/12 between ASTR and AERO. ✓

Because of particular changes in the filter networks, the flight control computer will not be available before 2/1. It will be sent directly to LVOD; a functional computer will be available for vehicle checkout at QD. QD has concurred in this approach. ✓

W.H. \*  
Bravo!  
B

2. ST-124 SLED TEST: The first acceleration sled test of the ST-124 Stabilized Platform system was performed 12/6. This test applied up to 8g vibration noise to all three axes of the platform. A first look at the performance data gathered from 42 telemeter channels indicated satisfactory performance by the system. Pitch, yaw, and roll phi signals were measured in a straight line throughout the test run. Operation of the platform after the acceleration tests determined that no functional damage occurred. ✓

\*3. GUIDANCE COMPUTERS: Two ASC-15 computers have been completed by IBM. The first was retained at IBM for qualification tests. The second has been received in Astrionics and is being tested here. ✓

B 12/10

1. SA-D5:

Installation continues. To simulate total S-IV LOX mass, it was necessary to place inner tubes filled with water into the liquid hydrogen tank as a supplement to filling the LOX tank with water. Testing is still scheduled to start 12/18/62. ✓

\* 2. RL10A-1 ENGINE, MSFC:

An 80-second firing was successfully completed Saturday, 12/8/62, to evaluate various transducers and LOX pump seal cavity. Prior to firing, LH<sub>2</sub> was held under zero vent conditions for 30 minutes (approximate S-II conditions) to investigate possibility of stratification. No stratification was noted by temperature measurements. ✓

\* 3. MTF:

FY 1963 design funds (\$500,000) were forwarded to Mobile District Office, Corps of Engineers, to initiate design of lock and for foundation investigations of test and support facilities. Funds were added to A-E contract (S&P) to permit continuation of work to 12/31/62. Plan to modify A-E contract by 1/1/63, to permit completion of all criteria for the C-5 program. Design for support facilities and S-IC test facilities is still awaiting receipt of FY 1963 design funds. S-IC funds are expected today, 12/10/62. Capt. Fortune and FEO representative are at NASA Headquarters today to expedite release of balance of FY 1963 funds. Recent MSFC decision reached to recommend all communication facilities within MTF boundary be government-owned with connections to common carrier for external circuits. Slightly higher initial cost should be more than offset by anticipated operational efficiencies and control. Mr. Gorman has prepared backup documentation and forwarded recommendation to NASA Headquarters. ✓

4. MARINE ACTIVITIES:

Barge PALAEMON drydocked at New Orleans for examination and painting. Numerous contacts between underwater parts of the barge and the bottom of the inland waterway from Fort Pierce to the Cape eroded the protective coating and resulted in severe pitting and corrosive damage to the underwater parts of the barge. Barge scheduled to return MSFC, 12/18/62, to load M-ME's SA-5 "mockup" for shipment to Michoud. ✓

Arrangements are being made with Military Sea Transportation Service (MSTS) for testing and inspecting the USS POINT BARROW in early January 1963. ✓

NOTES 12-10-62 HOELZER

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B 12/10

1. RESEARCH INSTITUTE: Certain investigations now being carried on by the staff of the Research Institute will require the services of a large scale computer. We are somewhat concerned as to what services may be available to the Research Institute interim to the installation of the Univac 1107 and the establishment of research contracts with MSFC. Our policy is to furnish computer time on research contracts which are supported by our Center. However, at the present time certain research efforts being pursued by the Institute are interesting to some of our Divisions but are not supported under contract. Would you please give your feelings to Dr. McCall as to what procedure we might follow and we can sit down and discuss this with him?
2. STATUS OF DE-CENTRALIZED ANALOG COMPUTER INSTALLATIONS. Reference is made to our Notes 12-3-62. A meeting held between our people and Aeroballistic's people which included Carl Prince and Dr. Geissler established the fact that there are requirements in our divisions which are not being met by the small analog computers in those divisions or by the large analog computers in our central building. These requirements include an extremely heavy work load on both the small and large computers and other factors such as convenience of solving problems just slightly larger than those that can be handled by the small computers but not large enough to warrant tying up a 120 amplifier console, and the fact that geographic location introduces more inconvenience in analog computation than it does in digital computation. I recommend that we secure and install the requested equipment in both the Aeroballistics Division and the Astrionics Division. We will probably procure this equipment on a rental basis with option to buy.

Mac  
Please give  
me your  
views on  
this  
B

H.H.  
O.K.  
with  
me  
B 12/10

NOTES 12-10-62 HUETER

20

B 12/10

1. C-1/AGENA:

MSFC Division and L&M Veh. Ofc. personnel met with JPL and LMSC to discuss and finalize the Statement of Work. The final draft of this document is expected 12-14. Technical Coordination Panels were discussed and set up by all present. Headquarters must now allocate money and establish proper funding channels. The Project Approval Document (PAD) was signed on 12-7. ✓

2. ATLAS:

a. Personnel of the Booster Systems Office returned from San Diego from attending an orientation on the Atlas vehicle.

b. Col. Brandeberry, SSD, will visit this office on Thurs., 12-13, for further NASA/AF discussion relative to personnel participating in the Atlas vehicle at SSD, Los Angeles.

c. The AF-GD/A has called a meeting of all vendors to the Atlas program at San Diego this week for an orientation on what is expected of them as producers of hardware for the Atlas program. Approximately 600 people will be in attendance. Someone from this office will attend.

3. AGENA:

*H.H. Shouldn't QUTL send a man, too? B*

\* a. Mariner R-2: Mariner R-2 status as of 2400 GMT 12-6-62 - Spacecraft power system measurements have started to fluctuate again. Approximately 146 watts are being used by the spacecraft and the 4A 12 solar panel is providing a minimum of 163 watts. A radiometer calibration at 2110 GMT caused 2 extra counts in event register four. The previous radiometer calibration at 0523 GMT this date did not cause an extra register count. The antenna reference angle increased one degree during CC&S cyclic update No. 146 at 1601 GMT this date. Current antenna hinge and reference angles are 47 and 56 degrees respectively. The earth brightness data number is currently 15. DSIF coverage has been continuous and normal. As of 2400 GMT 12-6 the S/C earth distance was 29.89 million statute miles and the S/C Venus distance was 2.34 million statute miles. The earth referenced S/C velocity was 31,660 MPH. It has been 101 days since launch and 8 days remain to Venus encounter. ✓

b. Mariner R-64: (1) The JPL spacecraft restraint document is due 12-12-62. (2) Mariner R-64 contract negotiations are presently scheduled for the 1st week of Jan. 1963. (3) At the Agena status and configuration review 12-3-62, LMSC stated that redesign of the restart timer for R-64 could reduce the weight from 11 lbs. to 2 lbs. This redesign is possible because the only function required on this mission is to restart the "D" timer. ✓

c. Gemini: (1) The latest LMSC Work Statement for Letter Contract AF/129 which must be negotiated by 12-21-62, has been received and is being reviewed. This Work Statement covers the period from 3-19-62 through 12-31-62 and does not include certain C&C subcontract effort, reliability plan, and other items. Negotiations for this Work Statement are scheduled for 12-17-62. (2) A new Letter Contract and Work Statement are to be issued to cover the balance of effort on the Gemini program. These documents will cover the period 1-1-63 through the end of the program. ✓

d. A-12 (ECHO Communication Satellite): Conforming to a request from GSFC, LMSC has stated that it is feasible to separate the A-12 spacecraft from the Agena into its programmed orbit 90 sec. earlier by backing up the second burn. This would have minimum effect on mission schedule and performance capability. ✓

\* 1. HEADQUARTERS STUDIES - Dr. Shea's office has let another study - this time on lunar base construction with the Corps of Engineers. We welcome this study but not the fact that we had to hear about it through the news. We could have made the work statement much more meaningful, if we had been consulted. The worst thing about it, however, is that it confirms a trend that more and more detailed technical studies are being let by Headquarters. We feel strongly that such studies should be supervised by the centers, as only they have the resources and variety of talent it takes to get the maximum return to the taxpayer, and to NASA as a whole. Our experience is that it takes the efforts of a 10-man supervisory panel, which must meet frequently and do their home work properly, to give satisfactory guidance and support to such a study contract. Under Headquarters rules, such studies get very limited supervision. We should at least insist that we review the work statements before they are issued and that we have an opportunity to assist in contract supervision, as members of the supervisory panel. When you have a chance and when you feel it is appropriate, we would appreciate your objecting to the increasing number of technical studies let by Headquarters personnel. ✓

2. COST CONTROL - I would like to offer a suggestion concerning cost control on future and present projects. We have observed that costs are greatly and quickly altered with change in specifications. Our present system permits each individual engineer and designer to incorporate specifications and changes which fall in the total spectrum from "nice to have" to "must." However, the individual who introduces these specifications is rarely asked for a cost estimate tied to this specification or change, nor for an evaluation of the benefits (such as reliability), accrued from such a change. Normally, it suffices to say: I want it! While this is not objectionable when resources are plentiful, it might not be the best mode of operation in case of limited resources. I would suggest that, in the future, the Change Control Board and the Project Director insist on a cost and benefit evaluation before such changes are approved. There should be a certain cost limit above which approval must be obtained from the Deputy Director for R&D or the Director, MSFC.

I do hope that we can keep cost down, at least for new projects if we make these trade-off studies, while we are writing the specifications during the program definition phase. I believe our present rather loose cost control is responsible for a fair share of our cost overruns.

Dr. Lange and Mr. Maus might want to join in a little study on the practicality of this suggestion. ✓

3. NEXUS - LAUNCH VEHICLE CONCEPT - I forgot to make one important point in my Friday presentation. One NEXUS vehicle at 90 percent reliability can handle the same traffic as fifty (50) C-5's during its lifetime. This drops the specific transportation cost by an order of magnitude! ✓

NOTES 12-10-62 KUERS

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B 12/10

- \*1. S-I Stage: Eleven items of special tooling for tail fabrication, valued \$223,600 have been shipped to Michoud, CCSD. More than \$1,000,000 worth of tooling for structural work and vehicle assembly has been scheduled for shipment during the next year as we phase out of this project. ✓
  
2. S-IC Stage: Multipass welding of 5" thick plates for Y-Ring fabrication by Boeing at Michoud seemed for some time to become a critical item because Boeing was not able to produce a single sample weld which was acceptable to Quality Assurance Division. We worked out a welding technique for this special application, using preheat, Tungsten-arc welding for the root passes, followed by Mig-welding. We had excellent results and recommended our procedure to Boeing. They had finally also succeeded to produce quality welds by using gas shielding from the rear side. Basically Boeing applies Mig-welding without preheat. They claim, however, the main problem has been interpretation of x-ray pictures and development of the x-ray technique of shooting pictures from different angles and determining the location of defects in 3 dimensions. At the present time there seems to be no problem with the welding of Y-Ring. We expect first deliveries in January. ✓
  
- \*3. Facilities: The erection of the Mock-Up Butler Building for S-IC has been completed. Installation of light and heat, however, will be done by a different contractor who will start working today, December 10, 1962 and complete the installation by January 10, 1963. ✓

Notes 12-10-62, Lange

B 12/10

19

\* 1. C-1: S-IV Battleship - A-3 engine installation is progressing. Cold helium bubbling tests are scheduled for week of 12-24-62 with turbine spin-up and hot firing the first week in January, 1963. ✓

\* \* National Industrial Reserve Equipment - Approx. \$750,000 worth of machine tools have been accepted by the CCSD-Michoud team and are now in transit to Michoud. The team is continuing re-screening cards. ✓

\* 2. C-5: S-IC Follow-on Contract - Negotiations have progressed to the point where the "fact findings" have been completed and the P&C negotiator requested Boeing to re-evaluate their man-hour requirements. Meetings are presently held within MSFC and with Boeing to resolve this problem. ✓

Michoud Plant Modification - According to M-FEO the C of F project is expected to be approved by Headquarters this week. ✓

S-II - MTF Test Philosophy - See attached Note of Mr. Bramlet, dated 12-6-62, concerning your comment on Notes 12-3-62, Lange. ✓

\* S-IVB - DAC was directed to hold all action pertaining to procurement of CDC 924A computers until further notice. ✓

Battleship Test Program and All Systems Test Program - In MSFC meeting on 11-30-62, it was decided that both programs would be conducted by DAC at SACTO. For details see attached Memo (Mr. McCulloch) dated 12-4-62. ✓

December 6, 1962

1. I received a notice from your secretary of an invitation (limited to only one) to attend meeting at Test Division on MTF test philosophy. The meeting was attended by the following: Messrs Heimburg, Grau, Hoberg, Driscoll, Sieber, Taylor, Godfrey, Weber, Aden, Boggs, Auter, and Bramlet.

2. The conclusions of the meeting with Mr. Heimburg are listed as follows:

a. A clarification of the GSE equipment was made and I believe a better understanding by all resulted from this meeting.

b. There is still the intent to use the basic GSE at all locations involving the flight type system, that is, at the manufacturing area for final checkout, at Santa Susana for all systems tests, at MTF for the static test, and at the Cape for the stage checkout. (This generalization does not apply for launch except for the S-IC and I.U.)

c. There is going to be a certain amount of instrumentation which will be needed for supplementing the flight vehicle instrumentation for testing at MTF. This instrumentation will be identified by the Test Division and coordinated with other elements of Marshall. An item-by-item determination will be made as to how this should be built into the flight bird. For example, if it is a simple modification, it might be installed at MTF prior to test; if it is more complicated and actually requires design changes to incorporate certain transducers or cabling modifications, it might be necessary to carry some pieces throughout the entire life of the stage, including flight. These questions relating to static test modifications will have to be discussed in considerable depth with S&ID and Rocketdyne because one of the major problems still seems to be instrumentation relating specifically to: (1) engine performance, and (2) special areas of concern or investigation of component reaction during static firing cycle.

d. The MTF area offers one more peculiarity since the government will provide certain services to the contractors and maintain a common data recording system service. This influence will require a more detail definition as to the exact impact upon the design of the automated GSE. Either certain contractor furnished equipment will be inoperative or (more preferably at first discussion) the equipment in question should not be included in the contractor furnished GSE.

2. In conclusion - Mr. Driscoll will prepare a write-up of this area and include the clarifications which, I believe, were obtained in the meeting. Mr. Driscoll will furnish this to other elements of Marshall including Quality Division, Networks Design people of Astrionics, Propulsion and Vehicle Engineering, and Engine Management Office. Final coordination will result in a meeting internally to reconfirm an overall position. This internal Marshall

Attachment #1

NOTE TO DR LANGE

December 6, 1962

action should be accomplished by the middle of next week and notice given shortly thereafter to the contractors. In turn we would expect to have a meeting with the contractors and Marshall elements about the middle of January. This approach is applicable to all stages of C-5, that is, S-II, S-IC, and S-IVB.

  
James B. Branlet

Copies to: Mr Driscoll, M-TEST-T  
Mr Urlaub, M-SAT S-IC  
Mr Flake, M-SAT C-II  
Mr McCulloch, M-SAT S-IVB  
Mr Seltzer, M-SAT-G

✓ B 12/10

DEC 4 1962

M-SAT-S-IVB/FILE COPY

All Attendees

Memo No. M-SAT-S-IVB-99

M-SAT-S-IVB Stage Manager

Results of Meeting on S-IVB Static Test Plans on November 30, 1962

A meeting was held on November 30, 1962, to review S-IVB static test plans as related to Sacramento and Huntsville. Attendees are shown on the attached list. Conclusions of the meeting are as follows:

1. A battleship test program and an all-systems test program are required for S-IVB. A study had been made to determine if the battleship and all-systems test programs could be combined into a single test program utilizing flight type tankage; however, it was found that this would have delayed the start of S-IVB systems testing by a minimum of seven months.

2. The battleship program (as well as the all-systems program) will be conducted by DAC at Sacramento. The facilities at SACTO are expected to be available at approximately the same time as facilities in Huntsville. Also, there are advantages in having this test program as near the DAC engineering and manufacturing groups as feasible.

3. Three test stands are required at SACTO with funding for the third stand required in Fiscal Year 1964. Two stands will be fully utilized for acceptance testing of S-IVB/C-1B and S-IVB/C-5, and the third stand is required for development testing, flight support testing, and as a back-up in the event any repair time is needed on the other two stands. No S-IV stands can be made available at the time the third stand is needed for S-IVB.

4. Huntsville testing of the J-2 engine will utilize simulated S-IVB tankage in the initial test phase. There had been a plan to use simulated S-II suction lines for the first tests in this facility, but this approach has now been revised. Some items of equipment for the Huntsville tests will be procured through DAC where this appears advantageous. M-TEST will conduct this program as a separate activity from the battleship program at DAC, so that support can also be provided to Rocketdyne and S&ID as required.

Karl Heinberg

So the plan to move the battleship tank from Sacto to Huntsville (after completion of Sacto battleship testing) is out, eh?

James G. McCulloch

Attachment #2

B 12/10

ATTENDEES

M-TEST-DIR - Mr. K. L. Heimburg  
M-TEST-T - Mr. D. H. Driscoll  
M-TEST-T - Mr. C. Thomas  
M-FE-CH - Mr. J. T. Shepherd  
M-FE-P - Mr. R. P. Hall  
M-ASTR-E - Mr. R. M. Aden  
M-ASTR-E - Mr. J. L. Cochran  
M-P&VE-VJ - Mr. R. F. Griner  
M-P&VE-OJ - Mr. T. M. Drummond  
M-CPO - Mr. P. C. Read  
M-ME - Mr. J. Parker  
M-SAT-DIR - Dr. O. E. Lange  
M-SAT-C-5 - Mr. J. B. Bramlet  
M-SAT-C-1 - Mr. R. E. Lindstrom  
M-SAT-S-IVB - Mr. J. C. Hughes  
M-SAT-S-IVB - Mr. J. C. McCulloch  
M-SAT-S-IVB - Mr. H. L. Boling

\* 1. MANPOWER JUSTIFICATION DATA - As requested by headquarters, we sent a TWX Saturday to Office of Programs providing additional justification on the 7100 and 8800 manpower requirements for FY-63 and FY-64. This was a follow up to Mr. Newby's (et al) visit to headquarters. We also included reasons why the 7100 is inadequate for FY-63 and will transmit additional details to support the 7500 figure. ✓

\* 2. PERT

PERT STATUS AND REVIEW MEETING - We are preparing minutes on the PERT Status and Review Meeting last week, and will distribute these locally. We are also preparing a paper to send to NASA Office of Programs to inform headquarters of the MSFC policy for PERT in division level activities. ✓

TOP MANAGEMENT AND PROJECT MANAGEMENT 8-HOUR SEMINARS

Participation was good at the five seminars that have been held. A total of 100 people attended. Cooperation of project offices was excellent. We are scheduling three additional project management seminars. ✓

3. NASA DIRECTORY BOARD - The Managerial Data Center has obtained directory charts from all NASA headquarters offices and field centers. These have been permanently posted on a NASA Directory Board in Room A306. This board gives the organizational listing of most of the key people in NASA. Copies of these charts will be distributed to MSFC top management. ✓

4. LIQUID HYDROGEN SUPPLY - The fire that started at about 10:30 Friday morning at the LH<sub>2</sub> plant at West Palm Beach, was under control at 6:00 p.m. Friday. The cause was a rupture in an LH<sub>2</sub> line, cause of the rupture is not known. Estimates today are that production will resume in 7 to 12 days. Considering quantity in storage and shipments from West Coast, our estimate is that Pratt and Whitney testing will not be seriously affected if production is resumed within 9 days. ✓

5. SATURN LAUNCH COMPLEXES, VLF 34, 37 and 39 - As requested by Dr. Rees at the November 14 presentation on VLF 39, M-CP is working with M-SAT and Dr. Debus' staff on a portfolio of launch complex loading alternatives. We will furnish a set of launch schedules to LOC covering the most probable program combinations, i.e., approved programs plus C-1/Agena, C-1/3 stage, LLS, etc. LOC will then specify the launch complex loading and planning for each of the probable total programs. The complete portfolio will provide ready reference on launch complex loading and impact on scheduling and funding of alternate programs. ✓

1. RIFT: The second RIFT Materials Working Group meeting was held 12-3/4-62. This meeting resulted in either resolution or clarification of action items from the first meeting in 10-62, and indicated positive progress in the development of a sound and logical materials program. Of significant importance, however, was Lockheed's statement that the favored structural material is now 2219 instead of 5456 aluminum alloy as originally proposed.

- \* 2. C-I: Flight evaluation of SA-3 indicated that a total propellant utilization of 99.6 percent was obtained. ✓  
In view of obvious gain in propellant utilization on SA-3, it was requested and approved that SA-4 have a depletion-type cutoff for out-board engines. ✓

B 12/10

NOTES 12-10-62 Stuhlinger

1. RESEARCH INSTITUTE: Dr. Frank Rose will be featured at the annual banquet of the local Chamber of Commerce on December 11. We hope to get a report from him at that time on the latest status of the Research Institute. Dr. Harvey Hall wrote a memorandum to Dr. H. Newell, to be signed by Mr. D. B. Holmes, requesting Dr. Newell's support of our efforts to improve education in the Huntsville area. ✓

2. OART AND OMSF FUNDING: We have now received all of the planned FY-63 funding for three of the four OART programs being managed by RPD. The table below indicates the present funding status.

FY-63 MSFC-OART

<u>PROGRAM</u>	<u>PLANNED</u>	<u>PRESENTLY AUTHORIZED</u>
Space Vehicle Systems	2805K*	2805K*
Electronic Systems	2574K	2574K
Research	840K	840K
Space Power	420K	325K ✓

\*Includes 625K for Future Projects Office

After numerous and lengthy gyrations, the bulk of the approved funding has now been authorized by OART. Our dealings with personnel in OART while developing the FY-63 program during recent months have been very pleasant. However, it looks like MSFC must still maintain the great number of personal contacts with OART because of the task-by-task approval requirement which persists at least implicitly. ✓

We have recently been advised by Financial Management Office that 90% of the FY-63 funding authorized to MSFC should be committed by the first of April. This means the divisions must work particularly hard to get the presently authorized OART funding and the expected OMSF funding committed at an early date. - We have not yet received authorization for our Launch Vehicle Supporting Technology Program with OMSF, but we were assured that it is now on Dr. Seamans' desk. ✓

3. MICROMETEOROID PROJECT: Dr. Bisplinghoff has not yet officially reviewed the Project Development Plan on the Micrometeoroid Satellite. He will do so early today. He then plans to get together with Mr. Holmes. A final decision by Dr. Seamans by 12-15-62 is still hoped for. ✓

B 12/10

1. M-1 PROGRAM: Lewis Research Center has finally redefined the engine design and requested a revised proposal from Aerojet. The major changes are as follows:

- a. Thrust - 1,500K nominal with design alternates to be chosen to allow for growth to 1,800K, 500-second duration.
- b. Turbopumps - Axial fuel pump and optimized centrifugal oxidizer pump, 30 ft. net positive section head.
- c. Thrust Chamber - 40 to 1 expansion ratio with optimum contour, 15 to 1 portion regeneratively cooled for higher H<sub>2</sub> injection temperature.
- d. Injector - Coaxial type first choice with hole size 0.2 inch or less.
- e. Thrust Vector Control - Primary approach is gimbaling, supplemental proposal to be submitted on secondary injection. ✓

\* 2. J-2 PROGRAM: A meeting was held on 11-30-62 between Rocketdyne and Propulsion and Vehicle Engineering Division personnel to discuss current and planned effort in the liquid hydrogen technology area. Actually, Rocketdyne is already doing a sizeable effort on technology under the current program and will submit a list in two weeks of additional technology areas they would like to investigate should additional funding become available. ✓

3. RL10 PROGRAM: The RL10 engine (with field fixes incorporated) was successfully fired for two full-duration runs after being subjected to vibration qualification tests at model specification levels. ✓

4. LARGE SOLID MOTORS: Reference NOTES 12-3-62 WEIDNER, Paragraph 3. Per your request, the "White Paper" jointly prepared by the Department of Defense and NASA was forwarded to you on 12-7-62. ✓

\* 5. DAMAGE TO LIQUID HYDROGEN PLANT #74 (FLORIDA): A stainless steel line has ruptured in coldbox #4. Reason unknown at this time. Damage by explosion and fire apparently limited. One to two weeks repair time estimated.

Hydrogen for approximately eight days of reduced operation is presently in storage and in transit from the West Coast. ✓

12/17/1962

NOTES 12-17-62 GORMAN

B 12/17

1. C. A. B. HEARING: Your testimony as the NASA witness before the Civil Aeronautics Board in the United Air Lines case has been prepared. The hearing is scheduled for January 4, 1963, in New Orleans. Mr. Paul, NASA Office of General Counsel, is attempting to arrange a definite date on or about January 24 for your appearance and the appearance of the Headquarters witness who will be Mr. Lenzi of the Transportation and Logistics Branch. ✓

2. BOEING NEGOTIATIONS: Davis and Lange are meeting with Stoner at 1:00 today in a continued effort to close the gap between ourselves and Boeing on the man-hour requirements for the S-1C. Davis is not too optimistic about reducing the differences; however, we may get lucky and come closer together this afternoon. Harry, ✓

The meeting today between Dr. Lange and Dr. von Braun produced some useful guidelines on this subject. Suggest you call Lange. Jan. 12-17 ✓

*Show desist*  
*Copy to Russ, Dr. von Braun,*  
*Manua*  
*Jan 12-17*

Fortune's M.T.F. Notes  
12-17-62

To: Dr. von Braun

1. Last Monday's visit to Washington made clear that one function of mine will be to bridge a gap in communications between two Headquarters' offices. It was also evident that neither of the offices comprehended the timing of our requirements for design funds. Among various matters generated by the meeting between General Wilson and top NASA staff was a statement by Mr. Webb that perhaps each center should set up a project for advanced planning. I understand MSFC had made such a request a year or two ago but had been turned down by Headquarters personnel. General Wilson told Mr. Webb that the Army allowed 7 to 7 1/2 per cent of annual funds for advanced design that NASA could well use 10 per cent instead of the meager one per cent now set up for such purpose.

2. Friday, Colonel Klema, Deputy to General Hayes, inquired regarding the bridge for interstate highway 10 crossing the East Pearl River. This may have been one of the areas the Corps felt we did not keep them adequately informed on. We have an item in the 1964 budget for 4.5 million dollars to give to the Bureau of Public Roads. This is to pay for the difference in cost between the low level bridge which they had proposed and the 73 foot bascule bridge we feel necessary. If Nova is higher than 73 feet, we will install bascule operating machinery.

3. General feeling seems to be a lock width of 110 feet will be adequate for future needs. However, we have asked for a recommendation from Saturn Systems relative to sizing of Nova.

4. Final meeting on post office operation will be held with postal authorities in Bay St. Louis Thursday a.m. Conference with Col. Raymond and Roberts, MDE, on MTF working arrangements will follow. Mr. Shepherd and a Test Division representative have been invited. Friday Mr. Kent and I have appointment with the State of Mississippi Employment Security Board on local labor matters and possible employment of displaced personnel from M.T.F. lands.

*W.C. Fortune*  
W.C. Fortune

- 1) Send in separately
- 2) Send Fortune memo on "copies to Russ"
- 3) Get my Fortune for regular NOTES. Jan 12-17

*copy to Mr. Newby*  
*Mr. Kent.*



14.

B 12/17

NOTES 12/17/62 Constan

1. S-1C "Y" RING

The first S-1C "Y" Ring billet has been successfully welded by the Boeing Company. This billet is 33' in diameter, 27" high and 5" thick. The "Y" Ring billet will be machined after stress release by induction heating. Delivery date to Huntsville is scheduled for February 15, 1963. The two "Y" Ring segments for ME Division experimental welding are in an advanced state of machining. ✓

\* 2. COST EVALUATION OF MASON-RUST CONTRACT

A review was made of the Mason-Rust projected cost for balance of FY 63. Measures were initiated which will control and reduce some of projected cost increase for support services. Dr. Constan, M-MICH, and Mr. Cobb, Mason-Rust, met with Mr. Lowery, CCSD, and Mr. Nelson, Boeing, to solicit assistance and recommendations toward effecting an economical use of support services furnished to stage contractors. Areas of major concern included projected costs for communications, reproduction and transportation. ✓

NOTES 12/17/62 DEB US

B 12/17

No NOTES received from Dr. Debus this date.

q.lan.

B 12/17

\* 1. SA-4 Control: It has been agreed between Astrionics and Aeroballistics that accelerometer control will be used on SA-4, in order to build up confidence in this feature before Block II. There will be some deterioration in capability to deal with high winds, as compared to alpha-meter control due to the need for more filtering. In spite of this, it is hoped that about the same wind limit can be handled as with SA-3 by changing to an 8 engine tilt program (instead of 7 engine), forsaking engine out capability to a large degree. If the firing is on schedule, we may still have an increased risk of firing delays due to the probability of high winds during the month of March. - Maybe an "S" shaped initial tilt will be introduced right after take-off to study pad damage alleviation, pending further dynamic studies. ✓

2. SIV-B Dynamics and Control Working Group Meeting: An SIV-B Dynamics & Control Working Group meeting was held December 6, 1962. Discussion items included control hardware, total time needed for SIV-B attitude control (post-injection requirement by MSC!) and effect of hydrogen venting in orbit. This latter item poses a potential difficulty. About 5 hydrogen ventings per orbit will be required with preceding ullage thrust for phase separation. This would add up to about 23 m/sec velocity increase during 3 orbits. Effect on ephemeris determination, interference with platform alignment etc. will have to be studied to determine whether such an increase in orbital speed is acceptable. ✓

\* 3. MSFC Liaison Engineer at Langley: The establishment of a resident MSFC liaison engineer at Langley is nearing reality. Questions of responsibility, job purpose, logistics, etc. have been worked out within MSFC and with Langley. A prospective candidate has been chosen and he should take office in early 1963. When the exact date and office designation are known, a memorandum for your signature will be prepared officially announcing the position and requesting the furnishing of copies of all pertinent MSFC-LRC correspondence to the Liaison engineer. Briefly, the man's duties will be as follows: He will serve as MSFC's resident liaison engineer at LRC. He will be informed on all inter-center affairs. In particular, he will serve as Aeroballistics Divisions representative at Langley and will assume project engineering functions when so directed, especially in cases where MSFC contractors run wind tunnel tests at Langley. He will prepare periodic informal summaries on matters of common interest to both centers, and will be available for occasional technical consultation with MSFC's research coordinator from M-RP, for identifying research technology capabilities at Langley. ✓

1 agree B 4. System Specification for LLS: Dr. Shea will establish System Specifications for the Lunar Logistics System within the next 2 months (see attachment to Notes - 12-10-62 - Geissler - copy attached) and we feel we should really participate in this activity from the very beginning. I think Joe deFries is the logical main contact point for this activity; he is willing to spend the major part of his time during the next 6 weeks in Washinton. Should we send along with him somebody from his office, and/or from FPO, or another Division?

↑ E.F. that and whom would you suggest? B  
(Called comments to AEC 12-15-62)

NOTES 12-17-62 GORMAN

19  
B 12/17

1. C. A. B. HEARING: Your testimony as the NASA witness before the Civil Aeronautics Board in the United Air Lines case has been prepared. The hearing is scheduled for January 4, 1963, in New Orleans. Mr. Paul, NASA Office of General Counsel, is attempting to arrange a definite date on or about January 24 for your appearance and the appearance of the Headquarters witness who will be Mr. Lenzi of the Transportation and Logistics Branch. ✓

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The meeting today between Dr. Lange and Dr. von Braun produced some useful guidelines on this subject. Suggest you call Lange - Jan. 12-17 ✓

B 12/17

19

1. SA-4 POST STATIC CHECKOUT: The SA-4 booster vehicle has been moved back into the Performance Testing Area of Bldg. 4708 and is presently one day ahead of schedule. ✓
2. SA-5 PRE-STATIC CHECKOUT: The SA-5 booster vehicle is continuing pressure/functional mechanical checkout in the Bldg. 4705 Test Cell. ✓
3. ENVIRONMENTAL TESTING: Presently there are twenty-nine (29) different tests being conducted by the Force Application Test Unit with a current backlog of nineteen (19) request for tests. These tests are being performed for Aeroballistics Division (1 test), Astrionics Division (16 tests), Propulsion and Vehicle Engineering Division (1 test), and Quality Assurance Division (11 tests). Staffing of this group consists of three (3) civil service personnel and ten (10) contractors. ✓
- \*4. NATIONAL BUREAU OF STANDARDS: On December 6, 1962 we were visited by the joint National Bureau of Standards/Air Force-Calibration Working Group. The basic purpose of the visit came out only during the discussion, it was to get measurement requirements necessitated by future space vehicle development which exceeds the present state of the art, such as future requirements for measurement of thrust. I suggested that this Division be used as a contact point for gathering this information and that we would contact the necessary people to gather the information. Mr. Wildhack, Associate Director of the National Bureau of Standards, mentioned that Aerojet General Corporation had asked for assistance in planning a standards laboratory for the Mississippi Test Facility. He also noted that NASA was planning a calibration facility for Cape Canaveral. ✓
5. PARAGRAPH 5 OF NOTES 11-26-62 GRAU (copy attached): Dr. Rees called a meeting on the subject with the parties involved and the issue was cleared with no left-over. Other problem areas were discussed at the same time and a very promising looking approach for improvement of relationship and communication between the parties involved is under study from both sides. I'll furnish more information when some details have been worked out. ✓
6. S-IV STAGE: Mr. W. W. Reaser, DAC, newly appointed Saturn Quality Assurance and Reliability Manager, visited this Division on December 13, and was given a one-day orientation. He will return in January for continuation of this orientation and for a preliminary review of the Quality Program Plan. ✓

1 Enc:  
Attachment 1

Kase Heinberg

for info. B 12/17

NOTES - HAEUSSERMANN, 12/17/62

B 12/17

No submission for this week.

NOTES 12/17/62 Heimburg

1. MTF:

NASA Headquarters has authorized disbursement of 42 million dollars to this Center for MTF. Breakout of funds is as follows:

- 24 million for utilities and support. ✓
- 2½ million for S-II test facilities. ✓
- 500,000 design funds for additional utilities. ✓
- 15 million for S-IC test facilities. ✓

Remainder of FY 1963 funds, approximately 31 million, is expected shortly. ✓✓✓

2. SA-D5:

Buildup continues with installation of nose cone today. Testing due to start, Wednesday, 12/19/62. ✓

3. RL10 ENGINE FIRING, MSFC:

Next firing planned for Thursday, 12/20/62. ✓

\* 4. F-1 ENGINE TEST STAND, MSFC:

NASA Headquarters granted MSFC authority to instruct Mobile District to advertise for bids and award contract up to the presently available \$6 million, as requested by us on 10/23/62. The cost of recovering this ~~ultimately~~ delay is being investigated by Test Division. Necessary reprogramming action to cover funding deficiencies is still being studied by Headquarters. ✓

\* 4. MARINE ACTIVITIES:

Military Sea Transport Service (MSTS) has again postponed date (from 1/63 to 3/63) USS POINT BARROW can be made available for inspection and testing by MSFC and NAA for later S-II movements. This is the fourth postponement. We are watching this. ✓

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NOTES 12-17-62 HOELZER

B 12/17

No Report.



9/4/62

1. C-1/AGENA:

MSFC has not received the allocated \$647,000 but the understanding is that the approving document has been signed by Headquarters. Enough information is in-house to process the purchase request today. Present plans are to have the official request for quotation in the mail tomorrow. The second PAD which designates MSFC as the over-all Project Manager was ready for Headquarters' signature December 13 but nothing has been received to date. ✓

2. ATLAS:

The Atlas Improvement Group will continue to work with the Air Force in developing the standardized booster. Personnel are being assigned to go to SSD starting this week. Future activities will be phased into the Agena transfer effort. ✓

3. AGENA:

a. Mariner R-2: Mariner R-2 apparently successfully performed its mission last Friday afternoon as it flew past the planet Venus after a 108 day flight. No official reports have been received from JPL as of this morning; however, all news and press reports state all the experiments were operating properly and that excellent data were obtained. ✓✓✓

b. Gemini:

(1) A meeting was held at SSD on Dec. 10 to discuss the status of the Gemini Target Vehicle propulsion system test programs. Detailed test plans were reviewed and comparisons were made to the original program prior to the reprogramming exercise. It is still felt by MSFC that the current propulsion test programs are adequate to ensure that a reliable Target Vehicle will be developed. ✓

(2) An Atlas/Agena Coordination Meeting was held at MSC, Houston, to discuss propellant quantity sensors, TV equipment for the Agena, RFI testing and simulators, AGE checkout, method of controlling expenditures at LMSC and other miscellaneous items. Action items were formulated and the next coordination meeting was tentatively set for January 10, 1963. ✓

c. Mariner R-64:

(1) Contract negotiations scheduled for the week of December 17 have been postponed. No new date has been set but it will be after the first of the year.

(2) A fact finding meeting on Mariner R-64 Work Statement will be held on December 17 and 18, 1962 at LMSC.

(3) The Air Force has authorized LMSC to begin study effort on MSFC items listed as primary effort to gain the needed 93 lbs. of payload for this mission. ✓

1. LUNAR LOGISTICS SYSTEM - COST AND SCHEDULE SUBMISSION TO MR. TAYLOR

As you know, Mr. Taylor from Dr. Shea's office requested cost data for a program in which the C-1B LLV and the C-5 LLV would be developed concurrently. Very rough schedule and cost data have been prepared, and the question now arises as to if and how this information should be submitted to Mr. Taylor. I cautioned Mr. deFries not to do this on an informal basis without your approval, because it violates your directive that no data be submitted to Headquarters which might result in commitments for MSFC. As far as I know, these data are intended to be used for the project approval document now in preparation. If such a program should be approved, it would be very embarrassing to you if you should have to state that the schedule prepared by MSFC and used in the approval document is not feasible for two reasons: (1) we would not be able to have the specifications developed, RFQ's issued and evaluated, and two to three stage contracts signed by mid July 1963, as indicated in the schedule offered to Mr. Taylor (and used for cost estimates); (2) it does not appear likely that the ground test facilities required would be available in time to make this schedule possible. In summary: I feel that the schedule used for our cost estimates is not feasible regardless of the money situation. Furthermore, I am afraid that the submission of such a program (C-1B plus C-5 LLV's on an unrealistic schedule) could be construed as the MSFC proposal for the Lunar Logistic System. According to your most recent statements, you are opposed to this approach, so we should not give a hand in an effort to make Mr. Holmes and Dr. Seamans believe that such a program is attractive or possible. (We should stop fooling ourselves or anybody else.)

I see three different approaches to this problem:

a. Do not submit any data at this time, because a detailed schedule and program study is required before it can be determined that a parallel C-1B and C-5 Lunar Logistic Program is feasible.

b. Submit the data derived only over the telephone, but not in writing, with the qualification that these data have no official meaning whatsoever.

c. Submit the data in writing over your signature, with the qualification that we do not believe that the requested program and resulting schedule is feasible, or that the parallel development of a C-1B and C-5 LLV is a program MSFC proposes; on the contrary, that we are inclined to support a C-5 LLV only because of the limited resources available and also because of the limited usefulness of the C-1B LLV.

→ I recommend approach c. and we need your decision this week as to how to proceed!

2. PROJECT MANAGEMENT - LUNAR LOGISTIC SYSTEM (LLS) - The present workload assigned to my office (same thirty advanced vehicle studies, NOVA, and the program-oriented studies for the LLS) does not permit us to do justice to the LLS. Therefore, I propose that, beginning in January, Dr. Hueter and his team gradually take over the project management of the LLS. There is a need for detailed planning in the area of schedules, cost, manpower, facilities, specifications, interfaces, development and operational problems which need clarification. This is in addition to the technical optimization studies coordinated by Mr. deFries. He would then support Dr. Hueter's office instead of us. Honestly, we have more work than we can handle, and Dr. Hueter's team has now become available for a job they are better qualified to do than we are. I believe that this transfer of the LLS project is in the best interest of MSFC and NASA.

minutes called into FPO 12-18-62 JM

JM

B 12/19

\* 1. C-1 Project: (a) Structural fabrication of Tail Section and Second Stage Adapter for SA-7 was completed. Both were transferred to the assembly shop for sub-assembly work prior to clustering. SA-7 is slightly ahead of MSFC schedule. (b) Instrument Unit for SA-5 has been completed in the structural shop on schedule. ✓

2. C-5 Project: Forming of Gore Segments at Wichita is still the major bottleneck for start of fabrication of the Fuel Test Containers. Indications are that these components will be 3 to 4 weeks late according to Plan V. We have, therefore, ordered some additional gore segments from Pittsburgh Des Moines Steel Company, Birmingham, Alabama, made by incremental press forming. We have now received some good parts from this Company which were accepted by Quality Assurance Division. This enables us to start tool try-out and welding of gores during the next week. ✓

3. Procurement Actions: Since July this year we have been trying to establish a level-of-effort contract with Astro-Space, Inc., Huntsville, for fabrication of wind tunnel models for M-AERO. Funding was approved August 17. In spite of many inquiries and letters written to P&C we have not succeeded in obtaining this contract. Fabrication of wind tunnel models must be accomplished on a firm schedule. We cannot fulfill our commitments with such a service in contracting.

Harry  
Note  
12-17-62  
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Notes 12-17-62, Lange

- \* 1. C-1: S-I Facility at MTF - Information from OMSF-ML indicates that the acceptance facility at MTF was not included in the OMSF submission to the Office of Programs for the FY-64 C of F Program. M-SAT is preparing a reclama on this project to attempt to have it reinstated. *I guess it wasn't with disacc (from what I hear) B*
- 2. C-5: S-IC Follow-on Contract - As was previously reported, formal negotiations with the Boeing Company have been temporarily suspended pending studies on both sides relative to areas of clarification of relating the cost estimate to the Technical Work Statement.

Meetings between Mr. Davis and the undersigned have led to a basic understanding of the necessary relation between cost estimate and Work Statement.

Negotiations with Boeing were resumed on Friday, Dec. 14, and were continued over the weekend. Participants: Davis, Lange, Morrison, Urlaub, (MSFC); Stoner, Nefner, Judd (Boeing) ✓

\* Michoud - The contract for the Vertical Assembly Building was awarded on 12-13-62 to the Ross Corporation of New Orleans for 2.7 M dollars. ✓

S-II - The direction to employ manual check-out equipment on the Battleship test program, offered to S&ID on 10-26-62, was reaffirmed. This action is deemed appropriate to minimize the variables associated with the program and, therefore, concentrate on the evaluation of the five clustered J-2 engine configuration. Automatic check-out equipment will be employed on the All-Systems test program. ✓

3. Guidance System: Upon your request, the briefing on the management and scheduling of the Instrument Unit development has been scheduled for 2-4-62. ✓

*Gorman*



GEORGE C. MARSHALL SPACE FLIGHT CENTER  
HUNTSVILLE, ALABAMA

*Memorandum*

TO NOTES Writers

DATE December 19, 1962

FROM *Office of the Director*

SUBJECT Progress Reports of Working Groups in Weekly NOTES

The requirement was placed on all NOTES Writers by memoranda dated February 13 and February 19, 1962, that once per month the NOTES should contain a brief progress report on the activities of the major working groups. This should be reported by the division director for the chairman of the working group who is employed by that division or office. Recently, NOTES Writers have become lax in submitting these reports.

It is emphasized that this requirement is still firm, and working group reports should be included with the NOTES at least once each month in the future.

*J. C. McCall*

J. C. McCall  
Assistant to the Director

*Gorman -*

*This doesn't apply to us, does it?*

*Bh*

B 12/19

1. LIQUID HYDROGEN SUPPLY

Air Force Plant 74 - After the fire on December 10, Air Force Plant Nr. 74 at West Palm Beach began producing LH<sub>2</sub> again Friday December 14, and is operating at about 95% capacity this morning. There was no delay to the Pratt and Whitney testing; more than 153,000 gallons are in storage at West Palm Beach today.

Linde Ontario (California) Plant - Foaming in one of the purifiers stopped production Wednesday, December 12 at the Linde Ontario Plant. Limited production resumed Saturday, December 15, 1962, and the plant is in full production today. ✓

2. MANPOWER CEILINGS, FY 63 AND FY 64 BUDGET

FY 64 - In preliminary hearings with the Bureau of Budget, NASA received a reduction in requested personnel strength from 35,000 to 32,500 or 7.1%. MSFC was then cut 1308 spaces from 8800 to 7492 or 16.3%. This 1308 cut was made up of Centaur, 288, M-1, 90 and Agena, 113 and other 807. Mr. Gorman called Brainerd Holmes today stating we could not stand a cut below 8300.

FY-63 - MSFC Ceilings have been cut from 7500 to 6887 or 613. This 613 cut was made up of Centaur, 295, M-1, 70, and Agena, 96, and other 152. Mr. Gorman stated in FY 63, we could not live with less than 7300. We currently have approximately 6600 on board; 7300 would provide 700 for growth this year.

The 7300 and 8300 numbers used in the reclama were arbitrarily chosen. The FY 63 7300 was based on having spaces available for the spring hiring season and the many needs for Michoud, MTF. Quality and Division and Administrative support for R&D and C of F. The 8300 reclama for FY 64 was based on absorbing our prorata share of the Bureau of Budget 7.1% NASA wide cut. ✓✓

An urgent action TWX was sent to Brainerd Holmes today, confirming Mr. Gorman's call and pointing out that these reductions negate the intended gain from transferring of projects to Lewis.

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latest  
status  
after  
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with Brainerd?  
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\*1. SATURN C-1 AND C-1B REDESIGN: The weight studies on the redesign of the S-I Stage and the Instrument Unit of the C-1 and the C-1B operational vehicles were completed.

At present, the following savings are accomplished for the dry weights:

- a. 5,750 pounds for the C-1.
- b. 15,250 pounds for the C-1B.

\*2. EMERGENCY DETECTION SYSTEM: The Structures Branch is presently investigating the feasibility of an Emergency Detection System for space vehicles. The purpose of the system is to monitor the inflight loads experienced by the vehicle and inform the astronaut of impending structural failure. A full time working group has been formed to evaluate methods of approach to this problem.

3. RIFT: The ROVER Program (KIWI-NERVA-RIFT) combined Atomic Energy Commission/NASA budget request for FY-64 is almost double the FY-63 budget. As a result of recent Bureau of Budget and Presidential review the ROVER budget will probably remain at about the same level as in FY-63, i.e. \$200 million. Under this budget limitation, RIFT stage fabrication and Nuclear Rocket Development Station facilities are deleted from FY-64. Emphasis is to be placed on technology areas, such as radiation effects, fabrication techniques, etc. ✓

4. PRESIDENTIAL TOUR: The President visited Los Alamos Scientific Laboratory and the Nuclear Rocket Development Station on 12-7/8-62. He was briefed on all aspects of the ROVER program. Dr. Harold Brown, of the Department of Defense, a member of the presidential party, raised objections to the program since there was no specific mission assigned. Senior Atomic Energy Commission and NASA representatives strongly defended the program. ✓

NOTES 12-17-62 Rudolph

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NOTES 12-17-62 Stuhlinger

1. OMSF SUPPORTING TECHNOLOGY PROGRAM: During the 3rd Quarter Review Meeting it was announced that Dr. Seamans has approved the MSFC-OMSF FY-63 Launch Vehicle Supporting Technology Program. The package approved by Dr. Seamans does not include requirements in the advanced studies area, which is being managed by Mr. Koelle. Although we have not yet received funding authorization from OMSF for the 6.05 M program which has been approved by Dr. Seamans (only 615K has been authorized to date), we have asked all the divisions to begin processing their Procurement Requests. Mr. Rosen has indicated that MSFC will have essentially the same flexibility in implementing the FY-63 LVST Program as we have enjoyed in previous years. This freedom would certainly be a drastic departure from the present procedure requiring that Dr. Seamans approve each individual task. ✓

2. UNIVERSITY OF ALABAMA RESEARCH INSTITUTE: Dr. Hermann will deliver to Headquarters on Monday, December 17, a revised request for NASA support of the University of Alabama Research Institute. A master's degree program in Huntsville in mathematics, physics, and aerospace sciences will be included as part of the proposal, but money in the form of a NASA grant is to be requested only for research.

I suggested that Dr. Hermann should contact also Dr. R. Bisplinghoff and leave a copy of the proposal with him. Dr. Bisplinghoff has supported our efforts to build a Research Institute, and to improve the academic climate of Huntsville, very strongly in the past. ✓

J. Stuhlinger

B 12/19

\*1. F-1 PROGRAM: Three engine runs scheduled for a total of 210 seconds actually ran for only 61.7 seconds. Two of the runs were terminated prematurely by an observer because of fires caused by fuel leaks. One test ran stably throughout the scheduled 30-second period.

On 12-15-62 we had our third case of combustion instability. After approximately 60 seconds of mainstage operation the engine went rough. The engine had several thousand seconds of accumulated operating time. Details not known yet.

On 12-15-62 during acceptance procedures of new LOX storage facility at Edwards Air Force Base two members of the corps of engineers were killed when trying to enter a tank still filled with nitrogen gas.

2. J-2 PROGRAM: The J-2 engine C of F funds for FY-63 have not been received at Marshall Space Flight Center yet. It was necessary that Rocketdyne be granted anticipatory costs of \$2.005 million by 12-15-62 to prevent engine delivery schedule slippage. Office of Manned Space Flight and the Marshall Space Flight Center Facilities Engineering Office are aware of this situation and are attempting to expedite matters. ✓

3. HIGH ENERGY PROPULSION (FLUORINE) STEERING GROUP: NASA has formed such a group with Mr. Tischler (Office of Manned Space Flight), Mr. Sloop (Office of Advanced Research and Technology) and Mr. Morrison (Office of Space Sciences) being members. It is their plan to study and document NASA's needs and recommendations in this area and formulate suggestions for propulsion supporting research and possibly engine development. Donald M. DeMars (Propulsion and Vehicle Engineering Division) is Marshall Space Flight Center's member of this group's working panel. ✓

\*4. SOLID MOTOR PROGRAM: Ground was broken this week for the construction of a new Air Force Solid Booster Engine Test Facility at Edwards Rocket Base. The facility will be used in support of the large 120-inch diameter solid motor currently under development at United Technology Corporation, Sunnyvale, California.

Plans call for a central blockhouse and two test positions. One will be a horizontal stand, and the other will be vertically aligned for firing in an upward direction. One of the chief purposes for the vertical stand will be to accurately measure the response of the thrust vector control system.

Cost for the site preparation and brick and mortar contracts has been estimated at \$4 million. More than \$3 million additional will be added for instrumentation. Activation date for the new test facility is scheduled for December 1963. ✓

H.W.  
Request  
Details  
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