

September 4, 1962

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FM NASA HEADQUARTERS WASHDC

TO MR HARRY H GORMAN DEPUTY DIRECTOR FOR ADMINISTRATION NASA

MARSHALL SPACE FLIGHT CENTER HUNTSVILLE ALA

NASA GRNC

BT

UNCLAS. RE OUR DISCUSSION ON ENGINEERING SUPPORT AT MSFC. CONCERNING REARRANGING YOUR SUPPORT CONTRACTORS TO SUPPORT VARIOUS DIVISIONS, I HAVE DISCUSSED THIS MATTER WITH SEAMANS, VON BRAUN, ROSEN, AND SIEPERT AND THEY ALL FEEL THAT THIS IS A GOOD PLAN. WOULD LIKE TO POINT OUT THAT THE FUNDS FOR THE R&D IN-HOUSE SUPPORT CONTRACTORS WOULD HAVE TO BE OBTAINED FROM THE PROGRAM FUNDS. YOUR PLAN IS SATISFACTORY. SGD THOMAS F. DIXON DEPUTY ASSOCIATE ADMINISTRATOR

BT

14/1831Z SEP

*9/17/82*  
Harry G.  
 Very good. Let's go.  
**PRIORITY**  
 Bg/15

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ACTION COPY TO	
M-DEP-ADM	<input checked="" type="checkbox"/>
INFORMATION TO COM CENTER	<input type="checkbox"/>
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M-DIR	<input checked="" type="checkbox"/>
M-DEP-PTD	<input type="checkbox"/>
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MARSHALL SPACE FLIGHT CENTER HUNTSVILLE ALABAMA

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NOTES 9-4-62 GORMAN

Bg/4

1. MEETING WITH CHRYSLER: Bob Lindstrom, George Constan, and myself, met with Doug Lowery and Arlie Trahern Thursday of last week to discuss the role of Chrysler in support of MSFC. Since Willie Mrazek is much concerned about the loss of experienced Chrysler personnel, presently integrated with Civil Service personnel in the P&VE Division, we devoted considerable time to discussing the pros and cons of this particular situation. Both Lowery and Trahern are in accord with Willie's desire to retain his present capability and will cooperate. They are not optimistic about the outcome if individuals are allowed a choice. Doug is to provide me with a "confidential" plan to accommodate MSFC requirements, including a proposal for continuing a "commercial" operations in downtown Huntsville. I plan to brief Willie on our discussions no later than Tuesday or Wednesday of this week, since I did not have an opportunity on Friday. ✓

T.S.  
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2. MEETING WITH HOLMES: As a result of a telephone conversation with Milt Rosen on Saturday, the meeting with Holmes on the matter of negotiating a definitive contract with Boeing has been <sup>tentatively</sup> set for Wednesday of this week. Rosen has confirmed that it is not necessary for you to attend, unless you want to.

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→ Sorry, I'm too busy here.  
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gan

1. ROOF FOR MANUFACTURING BUILDING

\* *gcm* [ Project approval and money has not yet been received from NASA Headquarters for The Replacement Roof of the Manufacturing Building. ] Facilities Engineering Office is attempting to expedite this action.

\* *gcm* 2. OFFICE SPACE FOR BOEING AND CHRYSLER

Boeing and Chrysler are preparing to lease office space in the 225 Baronne Building (downtown New Orleans) for about one year. Chrysler is to lease about 85,000 sq. ft. and Boeing about 100,000 sq. ft.

See Lange's NOTES of 9/4 B

1. Centaur: Arrangements have been completed with GD/A Centaur Launch Operations Manager at the Cape for GD/A engineers of Complex 36 to observe a portion of the checkout of SA-3 in order to obtain a better understanding of LOC test philosophies, methods, checkout procedures, etc. A two-week period of orientation is planned with the LVOD counterparts furnishing the orientation to GD/A personnel. ✓
2. Lightning Protection of Cape Facilities: A joint effort of MSFC and LOC regarding lightning protection for Cape installations resulted in a meeting August 15 to discuss this problem area. Three major danger areas exist: direct lightning stroke in vehicles or structures, induced currents in vehicles due to nearby lightning strokes, and ignition of venting vapors and fumes by corona discharges. The task force effort led to decision that a study contract should be given to General Electric of Pittsfield, Mass., as an assignment in connection with an existing open-end contract. The first step to be completed by GE on September 6 will be the presentation of a proposed scope of work following which the MSFC/LOC task force will establish the final contract. (Coordinated with Stuhlinger) ✓
3. The Technical Information Office's mission contract is presently being negotiated with RCA. The contract will provide technical writing and related services. The contractor (Chrysler) presently performing the functions was not successful in securing the contract due to excessively high contract bid. Phasing out of the present contract personnel and installation of new personnel is being worked out with RCA and Chrysler. Obviously, the loss of several years experience in this group of personnel will have some repercussions in change over. ✓
4. Blockhouse 37 Equipment and Layout: The arrangement of the racks and consoles has been finalized. The present configuration allows for the anticipated growth in spacecraft and booster requirements for the C-1 program. ✓
5. 37B Launcher: Spellman (a sub-contractor for Blount) is in default on 37 launcher plumbing installation. P&C is to negotiate with Blount and Spellman and give the 5th of September as a deadline for the contractor to be off the launcher whether he is complete or not. This is necessary in order for the load tests of the launcher to be initiated (which is already 10 days behind schedule now.) ✓
6. Assignment of Dr. H. F. Gruene: During the period September 7 to October 3, 1962, Dr. Gruene will be the Acting Director, LVOD and official notices have been sent to all segments concerned. ✓
7. Copy of Notes to Holmes attached. ✓

1. Solid Vehicle Capability for 39 Design Criteria: Reference is made to the discussion in the Management Council Meeting, August 28, concerning possible savings in Complex 39 costs if we eliminate the C-5 solid capability. Investigation this week has indicated that the new provisions for moving the mobile arming tower to the pad requires roadway almost equal to the solid weight possibility. Furthermore, the additional costs of the transporter launcher for solids are estimated to be only in the order of 1.5 million dollars. With our previous contention that we retain solid equal thrust capability in the complex, I have instructed LOC to move accordingly. As follow up to the Management Council records, I will advise Clyde Bothmer accordingly. No further action required at this time. ✓
2. Launch Complex 39 (VAB): The Corps of Engineers representative of the A/E firm (Urbahn, Roberts, Seeyle and Morgan) selected to develop the design criteria for LC 39 were briefed on the concepts and given a site orientation on Wednesday, August 29, 1962 in preparation for finalization of negotiation. The criteria development is scheduled to be completed on October 20, 1962. ✓
3. Crawler Transporter Procurement Plan is being reviewed with NASA Headquarters' personnel in accordance with Management Council direction. Meeting has been scheduled for next Thursday in Washington and the general feeling at present is that some negotiation type of procurement will be the best method to follow. Will keep you current. ✓
4. Systems Checkout Design Review Board: (Follow on info from Management Council.) During the meeting of August 30, at LOC, Mr. Sloan clarified GE's relation to the Centers. Early meetings between each of the Centers and GE personnel will be held to discuss specific areas for GE participation in order to permit GE to organize for the job and to start defining tasks which will indicate over-all scope and level of effort anticipated. (Sloan has all details.) ✓
5. Spacecraft Budget Estimates: In the absence of formal and specific requirements for Complex 39 from MSC, an estimate was prepared by LOC for flight crew quarters, checkout crew quarters, forward medical area (including industrial dispensary), control room for Operational Director and storable (hypergolic) propellant. This information is needed for the current budget exercise. ✓
6. Visit of Mr. Lingle: Mr. Lingle, the Assistant Administrator for Management Development, was briefed on MLLP planning during his visit to LOC August 30-31. ✓

ATTACHMENT NO. 1

B9-9

7. Mariner: Mr. Lingle of NASA Headquarters appears to be in complete agreement with the way we handled Atlas roll problem at the time of the Mariner 2 post-launch conference at the press site. He raised the question during his visit to the Cape, and I explained the situation. ✓

In connection with the Mariner R-2 flight, I am still exploring every avenue possible to explain proper Atlas roll orientation after 36 revolutions. It seems impossible that luck is the only answer. ✓

On September 7, I plan to have a meeting in Dr. Morrison's office on the Agena Management. ✓

8. Long Range Plan: The staff effort to prepare an LOC Long Range Plan for submission to Headquarters by September 4, has been complicated by proposed changes to the launch schedule as published by MSFC. They include the C-1/Centaur, the C-1/Agena and decelerated launch schedules based on MSFC fund shortages. However, submission schedules will be met. ✓

9. Dedication of Land for MLLP: Document No. 23151 wherein the Trustees of the International Improvement Fund of the State of Florida dedicate certain described land, beach and water areas in Brevard County for the exclusive use of the U. S. so long as required for MLLP, has been received from the Office of the General Counsel, NASA Headquarters, requesting advice if anything further is required with respect to this area to satisfy the needs of MLLP. A copy of this document has been forwarded to the Facilities Management Office for review and comment. ✓

10. Real Estate Acquisition: As of August 23, 1962, a total of 30,010 acres has been acquired, amounting to 100 percent of Area I, 87 percent of Area II and a few percent of Area III. ✓

11. Siting Approvals: Siting approvals have been granted by the Range for the following:

- a. Atlas Agena B, Complex 38.
- b. Unmanned Spacecraft Facility No. II (Between buildings "AM" and "M").
- c. Revised NASA-MSC Ordnance Storage Facility (may not be required). ✓

12. MA-8 Press Auditorium: Contract awarded for MA-8 press information center facilities to the Cape Colony Inn, the low bidder for \$75. per day, after the bid was negotiated. Funds forwarded by NASA Headquarters to cover the expenses. ✓

13. NASA Audit Division: On August 1, 1962, the NASA Audit Division established a regional office at LOC. This office will provide audit services to LOC management officials, particularly in the areas of Financial Management and Procurement and Contracts. It will audit contractor activities and provide liaison services with Department of Defense auditors and the Corps of Engineers. It will also participate in audits of the activities of other NASA organizations located at LOC. ✓

14. 37B Launcher: Spellman (a sub-contractor for Blount) is in default on 37 launcher plumbing installation. P&C is to negotiate with Blount and Spellman and give the 5th of September as a deadline for the contractor to be off the launcher whether he is complete or not. This is necessary in order for the load tests of the launcher to be initiated (which are already 10 days behind schedule now). ✓

15. Blockhouse 37 Equipment and Layout: The arrangement of the racks and consoles has been finalized. The present configuration allows for the anticipated growth in spacecraft and booster requirements for the C-1 program. ✓

16. Weather Support: An informal discussion was held with Mr. Amman, US Weather Bureau Representative to Mercury, concerning his rendering of weather support to NASA activities at AFMTC. It appears this is a common service like others, and should be rendered by LOC. Amman has explored this possibility with MSC personnel. Chris Kraft indicates that neither he nor Walt Williams would object to having this type support rendered by the existing Weather Bureau Office as a function of LOC except that they would like to retain the present office in the same location for the duration of the Mercury-Atlas program. ✓

17. U. S. Wildlife Service: Messrs. Stieglitz and Wilson, members of the U. S. Fish and Wildlife Service, have discussed a desire to conduct a test using several species of birds and noise level effects during a Saturn launch. ✓

18. German Rocket Society Presentation: I plan to be absent for the period September 7 to October 3. My office at the Cape knows where to contact me during the period in event of emergency. I plan to make regular contacts by telephone with my office in the event any information is to be passed on, it can be done by contacting Mrs. Ferguson at my office numbers. ✓

19. Assignment of G. Merritt Preston: During the period of my absence, G. Merritt Preston of MSC has been appointed as Acting LOC Director. Official notices have been sent to NASA Centers, etc. ✓

20. Assignment of Dr. H. F. Gruene: During this period, Dr. Gruene will be the Acting Director, LVOD, and official notices have been sent to all segments concerned. ✓

21. The Technical Information Office's mission contract is presently being negotiated with RCA. The contract will provide technical writing and related services. The contractor (Chrysler) presently performing the functions was not successful in securing the contract due to excessively high contract bid. Phasing out of the present contract personnel and installation of new personnel is being worked out with RCA and Chrysler. Obviously, the loss of several years experience in this group of personnel will have some repercussions in change over. ✓

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23. Lightning Protection of Cape Facilities: A joint effort of MSFC and LOC regarding lightning protection for Cape installations resulted in a meeting August 15, to discuss this problem area. Three major danger areas exist: direct lightning stroke in vehicles or structures, induced currents in vehicles due to nearby lightning strokes, and ignition of venting vapors and fumes by corona discharges. The task force effort led to decision that a study contract should be given to General Electric of Pittsfield, Mass., as an assignment in connection with an existing open-end contract. The first step to be completed by GE on September 6 will be the presentation of a proposed scope of work following which the MSFC/LOC task force will establish the final contract. ✓

24. Royal Visit: The Prince Juan Carlos and the Princess Sophia of Spain (and party) visited NASA installations at the Cape on 30-31 August. They appeared to be much impressed and appreciative. ✓

25. MSC/LOC Houston Meeting on GSE: It was indicated in the Management Council meeting that agreement has been reached between LOC/MSFC on all items except one. On this point concerned with a "Launch Operations Panel," Preston had indicated that MSC would chair the panel. In a discussion with Preston 1 September, we reached agreement that the function would be called "Operations Coordination Committee" chaired by MSC. Minutes will be published to reflect this agreement. ✓

B9-4

1. HIGH ALTITUDE ENVIRONMENT MEASUREMENTS AT CAPE CANAVERAL: In May 1961, NASA Headquarters was requested to establish a measuring program to obtain high altitude natural environmental data above AMR. This was in line with the stated position of MSFC of having other NASA Centers support work in these areas. Goddard Space Flight Center indicated an interest in extending their scientific measurements to the Cape Canaveral and Ascension Island area. The apparent problem, which could possibly be solved (since this is of interest to the Manned Spacecraft Center) by direction from the Management Council, is that action on the part of NASA Headquarters is dragging to the point where it seems we will have to make more and more needless guesses on the environment before they ever establish a program. At present it is understood that the Office of Applications has been attempting to get a project development plan established for some months now. Perhaps a little official pressure in this area would be worthwhile and produce valuable results, especially for future programs.

Central Planning  
Please place this item on agenda for Man. Council Meetg. 21 Sept BA

\* 2. C-5 LUNAR LOGISTICS VEHICLE LANDING STUDY: A performance study in support of the C-5 lunar logistics system vehicle study has been conducted investigating the two basic modes of a lunar landing, i. e., the direct powered landing and the approach through an intermediate orbit. It was concluded that two or three P&W RL-10 engines in the landing stage offer more advantages than a larger number of RL-10 propulsion systems or a single J-2 engine. As yet, however, there is no decisive argument against either the direct landing or the waiting orbit. ✓

\* Item 1 for TWX to Holman: "In May, 1961 NASA Headquarters was requested... above AMR. This program has not received proper attention and action is needed to get it moving".

- \*1. SA-3 CONTAMINATION: Results of the P&VE analysis shows that the contaminant found in SA-3 was impact sensitive. In view of the findings, the following systems were cleaned and retested; GN<sub>2</sub> control, bootstrap, gas generators, Gox, Lox tanks, GG injector purge, main Lox valve purges and the air bearing supply. The purge system will be shipped disconnected due to scheduled flushing operations at LOC. The booster was released to M. E. Division on 8-30-62. ✓
2. AIR FORCE INSPECTION ON MSFC CONTRACTS: Mr. James Koppenhaver, Director, Office of Reliability and Quality Assurance, NASA Headquarters has been advised of the current manpower being expended by the Air Force at major plants on MSFC contracts. Mr. Koppenhaver had requested this information to give to Mr. Siepert, NASA Headquarters, who is to contact General Ritland of the Department of Defense, in an attempt to immediately secure more Air Force manpower allocations to cover MSFC's most urgent support requirements. ✓
3. VENDOR CODE BOOK: The supplier identification code system presently in use on the Saturn S-I will be used on the S-II and APOLLO programs. It is expected that Douglas and Boeing will be contacted on the S-IVB and S-IC stages to implement the same code system to make the entire C-5 vehicle compatible in the use of this system. ✓
4. DIVISION TRAINING PROGRAM: Work is progressing in the development of a Division Training Program, particularly that portion pertaining to NASA/MSFC Quality Program philosophy and operational documents. ✓
- \*5. QUALITY PRESENTATION: A presentation to the Joint Western Regional Conference, American Society for Quality Control, was given in Seattle, Washington. This conference was sponsored by the Aircraft and Missiles Division of American Society for Quality Control. The subject of the presentation was "Quality Audit—MSFC Viewpoint". ✓
- \*6. S-II/APOLLO LIAISON AT NAA: The liaison and coordination between our S-II resident Quality Assurance personnel, MSC Apollo personnel and NASA-O quality assurance support personnel has been effectively established. There seems to be a sincere desire to adapt our philosophy, operational concepts and implementation processes to the Apollo program. Renewed effort is being made to establish a division working level focal point at MSC to carry out the quality assurance functions adaptable to both S-II and Apollo programs. ✓

B9/4

1. MEETING WITH CHRYSLER: Bob Lindstrom, George Constan, and myself, met with Doug Lowery and Arlie Trahern Thursday of last week to discuss the role of Chrysler in support of MSFC. Since Willie Mrazek is much concerned about the loss of experienced Chrysler personnel, presently integrated with Civil Service personnel in the P&VE Division, we devoted considerable time to discussing the pros and cons of this particular situation. Both Lowery and Trahern are in accord with Willie's desire to retain his present capability and will cooperate. They are not optimistic about the outcome if individuals are allowed a choice. Doug is to provide me with a "confidential" plan to accommodate MSFC requirements, including a proposal for continuing a "commercial" operations in downtown Huntsville. I plan to brief Willie on our discussions no later than Tuesday or Wednesday of this week, since I did not have an opportunity on Friday. ✓

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B

→ Sorry, I'm too busy here.  
 B

9am

B9-4

1. MTF:

Total MTF FY 63 C of F fund requirements to be presented to Dr. Rees today is \$68,200,000.00. Modification of S&P contract to include S-11 Test Facility partial design criteria was mailed to contractor for signature on 8/28/62. ✓

2. WEST AREA (C-5) TEST STAND:

Reprogramming approved. Contract for aboveground part of tower let to Ets, Hokim, and Galvan of San Francisco by Mobile District Engineer. ✓

\* 3. MARINE ACTIVITIES:

gem

Departure of barge PROMISE with SA-3 stages scheduled, Sunday 2.am., 9/9/62. Vessel will pass below the Florence bridge, now under construction, at approximately 7.p.m., at which time TVA promises lowest possible pool elevation to provide required vertical clearance. ✓

K.H. Management Council has turned down

In compliance with Mr. Webb's instructions, we have proceeded with the NEW GRAND HAVEN procurement, "short of commitment!"

Use of FY 62 funds for NEW GRAND HAVEN! R

S-1-4 ACCEPTANCE FIRING:

More time required for decontamination than previously anticipated delays the short duration firing scheduled on this stage to 9/13/62. ✓

\* 5. BATTLESHIP TESTING S-IV STAGE DAC:

gem

The second hot firing on this stage now scheduled for Thursday, 9/6/62. Delay due to exchange of No. 3 engine. ✓

6. SUPPORT SERVICE CONTRACT:

21 bids were received for contract of support services for Test Division. These are presently under evaluation and recommendations should be presented to the Contracting Officer on or about 9/20/62. ✓

NOTES 9-4-62 HOELZER

Bs-4

No report.

1. NEW STUDIES

In the next two months we will prepare work statements for new studies (approximately \$100,000 each) on the following subjects:

- a. Multiple Reuse of Rocket Engines ✓
- b. Computer Program for Shielding of Actual Vehicle Designs
- c. TITAN II as a Potential Standard Launch Vehicle ✓
- d. Parametric Study of Advanced Nuclear Stage for Use on NOVA ✓
- e. Orbital Rescue and Maintenance Vehicle Using the NERVA Engine ✓
- f. Space Vehicle Human Engineering Design Manual ✓
- g. Advanced Chemical Orbital Launch Vehicle for Lunar Logistics Supply ✓
- h. Lunar Base System Requirements and System Integration ✓
- i. Planetary Transportation Systems Requirements and Definitions ✓

*Is this approved by Comp. Dir.?*

*I'd like to hear more about this myself. Shelton, RPD, Fred in?*  
B

Which of these work statements do you wish to review before they are finalized?

*These ones (b) and (h)*

2. ROTHROCK WORKING GROUP

(NASA-wide system and vehicle studies). I will attend the first meeting of this group next Monday and Tuesday, September 10 and 11, 1962.

The total submissions from all NASA Centers amount to \$43.5 million for FY 1963. Of this, \$18.6 million will be spent on large preliminary design projects (each over one million) and \$14.8 million on small studies. Our share is presently \$5.9 million for FY 1963. I do not expect any serious opposition to our study program - we have greased the skids with the Program Offices quite well. ✓

*gan*

Bg-4

1. Saturn C-1: SA-3 has been released to ME Division for final preparation for shipment on September 8, 1962. ✓

2. Hydrostatic Test Tower (S-IC): The request for additional funds for this project has been released from Mr. Canright's office and has been signed by Mr. B. Holmes, It is now in the office of Mr. Ulmer.

Mr. Kuers  
Is this  
OK? If  
not, say so  
9/5

\* 3. C-5 Mock-Up Shelter: Contractor started breaking ground for this building directly behind Building 4707. Completion is scheduled for the end of November 1962. ✓

B

\* 4. S-IC: Tool design for containers is approximately 90% complete waiting only for last structural design information which is now in some areas 6 weeks in delay. Tool fabrication is now in full swing with approximately 400 men working in Wichita. Work on foundation for 33 ft. bulkhead weld fixture has been started in Building 4707. Fabrication of gore segments and forgings for bulkhead-outlets could not be started as scheduled because of lack of design information. ✓

Jo Ann,  
Please note:  
Add to next  
week's TWX  
Buller  
9/5

no underlines from *B9-4*

- 1. C-1: S-I-3 - Shipment is scheduled for 9-9-62; launch date is under study. ✓
- S-I-4 - First static firing is scheduled for 9-13-62. ✓
- S-IV - Battleship - 60 second hot firing is scheduled for week of 9-3-62 and the 200 second firing for week of 9-10-62. ✓
- Dynamics Vehicle - Was moved to assembly area 8-29-62; checkout is scheduled to start 9-21-62. ✓
- All Systems Vehicle - is having LH<sub>2</sub> tank cleaning in environmental chamber. ✓
- S-IV-5 - is due to be out of assembly tower 9-4-62. ✓

2. C-5: S-IC - M-SAT presented current status of MSFC/Boeing effort to OMSF on 8-17-62.

Technical work statement for definitive R&D program is being revised to reflect specifically Boeing's involvement in the S-IC program. ✓

Michoud - Procurement requests have been prepared to release \$90,000 C of F funds for A&E design. Funds are anticipated to be available by 9-7-62. Work stoppage of A&E design was caused by this delay. ✓

MSFC requested from OMSF authority and C of F funds for re-roofing the Manufacturing Building (\$955,000) and the storm drainage construction (\$700,000). M-SAT understands that appropriate authorization and funds are available from FY-62 supplemental budget.

\* *9m* S-II - AF Systems Command (Mr. Ackermann) did not approve waiver for 25 sec. duration of all systems test yet, but requested NAA to furnish in addition information on blast effects on other facilities at Santa Susana. ✓

S-IVB - Headquarters (Mr. Canright) was requested to get approval for MSFC to authorize DAC to initiate work on S-IVB for C-IB starting 9-1-62 with \$2.25 Mill fund limit for first ninety days effort. ✓

\* *9m* P&VE is preparing criteria for S-IVB/S-IB with target date 10-1-to-15-62 for requesting firm proposed scope change from DAC. ✓

Quarterly program review of S-IVB by DAC is scheduled for 9-12-62 at MSFC. ✓

WOO was requested to transfer \$40,000 in C of F funds to Corps of Engineers to initiate topographic surveys, subsurface investigations and in-house requirements for preparation of documents for A&E complex Beta negotiations. Pre-design conference with tentative A&E contractor is scheduled for 9-6/7-62 at Los Angeles. ✓

\* *9m* 3. APOLLO - Status of C-1 Emergency Detection System will be reviewed by MSFC and stage contractors on 9-6-62 at MSFC. ✓

*O.L. → (please take up w/ty Shepard)*  
 → *There why in h... don't we*  
*get moving ???*  
*B*

*Helen, please do not change the form. gen*

*B9/4*

1. PROGRAM SCHEDULES, OPERATING PLANS, AND BUDGET SUBMISSIONS - The Program Schedules, FY 63 Operating Plan for OMSF based on \$913.6 million in R&D funds, and the FY 64 Budget Estimates are being delivered to Washington today, along with the Institutional Budget and Input to the NASA Long Range Plan. Another version of the FY 63 Operating Plan and FY 64 Budget Estimates, using an \$801 million R&D allocation for MSFC will be delivered to headquarters on September 8th. ✓

During preparation of these submissions, Mr. Dixon of NASA headquarters stated that MSFC will have civil service ceiling of 6700 persons for FY 63. This is insufficient, so we are stating our requirement in the \$913.6 million submission as 7500 for FY 63 and 8500 for FY 64. This compares to 8250 and 8860 submitted by the MSFC elements in our recent manpower survey. We advised Don Cadle, Office of Programs, that we are doing this so that this can be put in the supplemental submission if Mr. Holmes is successful in getting Dr. Seaman's ok to go ahead. Our travel requirements are increased correspondingly, with justification based primarily on increased out-of-house management. ✓

2. SIGNATURE AND COMMITMENT AUTHORITY STUDY - At Dr. Rees' request, our Management Analysis Office is making a survey of the delegated (and assumed) authority for signing of official correspondence and making official commitments. Objective: Develop more definitized coverage of this managerial control area, and improve coordination of activities and decisions. When completed, this study will provide a documented policy and a revised procedure, including a quick-look chart and guidelines for execution of the new procedure. ✓

3. RIFT FACILITIES RESPONSIBILITY - We are investigating the problem between RIFT, TEST, and FEO mentioned in Mr. Mrazek's 8-20-62 NOTES to you. No definite statement can be made yet. ✓

4. NASA MANAGEMENT CONFERENCE AT LANGLEY - A meeting has been called for September 7 for several division directors and project office directors to make contributions to your Langley speech and the MSFC position on the field centers role versus the headquarter's role.

*Chris R  
Would like to provide a few inputs myself before your Analize talk*

*(See also my remarks on Holmes' reply to our 4-1-1 comments) gen*

*B*

Ba-4

- \* 1. BLAST HAZARDS: The Air Force has awarded a contract to the Atlantic Research Corporation (ARC), to survey fire and explosion hazards of LH<sub>2</sub> under confined volume conditions, including preventive measures and detectors. Dr. G. von Elbe and Mr. N. Scott of ARC visited on 8-27-62 to discuss these areas with members of M-P&VE and M-TEST. They were particularly interested in our blast hazard evaluation program and tests of H<sub>2</sub> detectors. ✓
2. SA-5 HYDRAULIC SYSTEM: On 8-28-62 a meeting of M-QUAL, M-ASTR, M-TEST, and M-P&VE was held to discuss a course of action to be taken to solve the problem of the Auxiliary Motor Pump failure to pump using the new SA-5 type actuators. This new actuator's leakage is greater than the present auxiliary motor pump can meet. ✓
3. GEORGIA NUCLEAR LABORATORY: Headquarters NASA concurs with us in need for Lockheed's Georgia Nuclear Laboratory for RIFT radiation testing program; however, they have asked the AEC to acquire it from the General Services Administration rather than NASA. ✓
4. RIFT ASSEMBLY FACILITY: Headquarters NASA has asked for a further evaluation of Moffett for RIFT assembly. The office of Assistant Secretary of the Navy for Installations has been informed of NASA interest and is checking availability of blimp hangar. Navy answer expected in about a week. ✓
5. KIWI B1B: The KIWI - B1B was run on 9-1-62. It was successfully started with LH<sub>2</sub> and there were no gas leaks. Some fuel modules were lost from the nozzle similar to previous incidents. Reactor was run at NERVA power levels for a short period of time. No damage to facilities. ✓
6. JOINT COMMITTEE ON ATOMIC ENERGY (JCAE) HEARINGS: The subcommittee on Research, Development, and Radiation of the JCAE has postponed open hearings on nuclear programs from 9-5/7-62 to 9-11/13-62. ✓

know -  
guess  
no o.k.

1. Integration and Evaluation of MSFC's and MSC's Manned Lunar Landing Schedules:

Dr. Shea named my staff member, Bill Sneed, "Co-Chairman" of an OMSF group to integrate and evaluate MSFC's and MSC's manned lunar landing schedules. The other "Co-chairman" is Mr. Lovejoy from Rosen's office. ✓

Reporting date to Dr. Shea: September 14, 1962. ✓

Central Planning Office ( Mr. Foster ) was briefed on the above and invited to participate in the activity, which he will do. ✓

2. Comments on OMSF Requirements:

Office of Systems is very interested to receive MSFC comments on Issue No. 1 of a statement titled: "Office of Manned Space Flight Requirements for Data in Support of Project Apollo".

The paper has been prepared to establish a common basis for coordinated activity between the unmanned and manned lunar program.

The paper was forwarded to you by Dr. Shea on June 15, 1962. \* See attached.

*(No action has been taken by M. SAT on this paper)*

Hesk, I don't know what the moon is like! Never been there!

B

B9-4

1. NASA UNIVERSITY CONFERENCE: A NASA-University Conference will be held in Chicago on November 1-3 to acquaint the top 225 U. S. universities with NASA's program. The planning for the conference is handled through Mr. Wyatt's office in Headquarters. Nineteen technical sessions have been scheduled and MSFC had been assigned responsibility for chairing and organizing two of them. Mr. Heller has been handling the MSFC coordination and has had discussions with P&VE, Test, Computation, Astrionics and Aeroballistics Divisions. In a meeting between you, Mr. Heller, and others concerned on August 31, it was decided that MSFC should withdraw from organizing the sessions. Research Projects Division therefore will discontinue its effort to coordinate MSFC's chairing of sessions, but will make recommendations for university attendance. ✓

Was Hdqrs. notified?  
Yes,  
by me  
B

2. LLS PAYLOAD STUDY: Mr. George Bucher is continuing to participate in the Lunar Logistics System Payload Study which OMSF (Dr. Shea's office) has initiated. OMSF received 13 proposals from industry; the evaluation team has selected the most favorable. Two contracts will be let (probably by September 15) as soon as negotiations are completed with the successful bidders. The studies will run for three months. The results will be used by OMSF to help formulate the LLS requirements and assignments. ✓ *Please keep me posted (1-page report)* B

3. JUNO II SUMMARY REPORTS: Research Projects Division is continuing, at a rather low level of effort, to work on technical summary reports for a number of satellites launched by the Juno II Vehicles. The reports were requested by Headquarters some time ago. We have encountered delays in obtaining contributions, in editing, and particularly in Headquarter's approval of the drafts, but progress is continuing. As you may remember, reports on the Juno II flights Explorer VII and Satellite S-46 were completed and submitted to the Office of Space Sciences in the past. ✓

4. NASA SATELLITE AND SPACE VEHICLE DATA FILE: Divisions of this Center repeatedly experienced a serious lack of easily accessible design information on MSFC and other satellites, e. g., antenna data. Compilation of a satellite data file has therefore been initiated by this Division. ✓

→ Note: I objected at being up Seivler, Hämmermann and Hoelker for organization of panels. But I do not object at MSFC sending speakers. B pm

NOTES 8-27-62 Stuhlinger

B9-9 Return for resubmission next week. Jan 7-27

C.P. where Bitts

1. UNIFIED REVIEW OF MSFC RESEARCH PROGRAMS: Earlier this year, Research Projects Division had offered assistance to Central Planning Office in the technical review of all research programs to be submitted to Headquarters by MSFC. A unified technical review and coordination of all MSFC programs (Launch Vehicle Technology, Chemical Propulsion, Nuclear Propulsion, Advanced Concepts, Tracking and Data Acquisition) appears imperative before MSFC can arrive at a consistent, well-balanced program. CPO has proposed a procedure for the implementation of this unified review. This proposal is waiting for approval or modification by your office. May we request further guidelines from you? ACTION REQUIRED.

2. SUPPORTING RESEARCH (OMSP): In my NOTES of 8-6-62 (Attachment #1), a request for funding which OMSP had prepared and submitted to Dr. Sesanski's office for approval was discussed. A total of 19 MSFC tasks were included in this submission, 15 in the Vehicle Supporting Technology area and 4 in the Propulsion Supporting Technology area. Five of the tasks in the Vehicle Supporting Technology category involving a total of 1.015M were approved by Dr. Sesanski. None of the four MSFC items in the Propulsion Technology submission were approved, but a final decision regarding the fate of these four tasks may not have been reached as yet. We are now preparing an additional list of task forms in the Vehicle Supporting Technology area which will be submitted to OMSP for consideration. Members of OMSP indicated that they plan 10.645M for the MSFC FY 1963 Supporting Research Program, and suggested that the 10.645M be broken down in the following manner:

Propulsion Technology	2.295M
Advanced Concepts	1.800M*
Vehicle Technology	6.550M

\*Mr. Koelle has been advised that he can expect additional funding in this area from a kitty which is presently being held by Dr. Shea. This money will be completely separate and in addition to the 10.645M. ✓

3. ARS-ELECTRIC PROPULSION COMMITTEE: As Chairman of the ARS Committee for Electric Propulsion, I held a meeting at the Lewis Research Center where we organized the Electric Propulsion Sessions for the ARS Annual Meeting (Nov. 1962), and for the Electric Propulsion Specialists Conference (March 1963). The Committee will establish a suggested nomenclature, and a suggested system of units, for electric propulsion, to be recommended through ARS for nationwide use. ✓

4. PRESENTATION OF TECHNICAL PAPER: Mr. Martin O. Burrell of the Nuclear and Ion Physics Branch, RPD, presented a paper, "Nuclear Radiation Transfer and Heat Deposition Rates in Liquid Hydrogen", at the American Rocket Society Nuclear Propulsion Conference, Monterey, California, August 15-17. ✓

ATTACHMENT #1, NOTES 8-6-62

Received too late for submission on 8/27/62. JH.

B 9-4

\* 1. F-1 PROGRAM: Injector development testing is continuing on test stand 2A in an attempt to isolate and eliminate the cause of the 350 CPS LOX dome pressure oscillations.

MSFC Purchasing & Contracting failed to initiate modification of the R&D contract scope of work as previously requested by the Engine Management Office. Failure to extend the letter contract with a broadened scope of work by 10-1-62 will result in delay of needed R&D Follow-on Program effort.

Hamm  
Gorman  
yan

\* 2. J-2 PROGRAM: Engine #003 was successfully run for two seconds of main-stage on 8-27-62. On 8-28-62, a test was programmed for 50 seconds of main-stage but was cut by a rough combustion cut-off device after four seconds. Preliminary inspection of the engine showed the lower three exhaust nozzle ring bands had buckled which allowed the nozzle to collapse. The cause of the damage is believed to be exhaust gas jet separation during start transient (a ground test problem only). The engine has been removed from the test stand and examination has shown no extensive damage to engine components other than the thrust chamber. Facility damage was limited to buckling the dummy engine actuator.

Air Force comments to Rocketdyne's proposal for 500 second J-2 engine run duration have not been received and the negotiations are now tentatively scheduled for the latter part of September, prior to engine procurement negotiations.

\* 3. RL-10 PROGRAM: Excessive gear box pressure has necessitated the removal of engine #1719 from the SATURN S-IV Battleship Test Stand. The turbopump will be inspected at Douglas Aircraft Company to determine the cause of excessive pressure. Spare engine #1732 will replace engine #1719 on the Battleship Stand.

An RL10A-3 gimbal assembly, lubricated with a lubricant developed by the Engineering Materials Branch, P&VE-Division, has completed 2500 cycles of testing and has been disassembled for inspection. The gimbal components were found to be in excellent condition.

On 8-30-62, at P&WA in Florida, NASA Headquarters chaired the first meeting of a committee on the throttlable RL-10 rocket engine. The committee consists of two members each from LeRC, MSC, MSFC, and a chairman from Headquarters. The item of prime interest was the disposition of the \$1.0M which has been approved by Dr. Seamans for expenditure in this area. Del Tischler, who attended the meeting, said he could not at that time go along with a plan agreed to the previous day by LeRC, MSFC, NASA Headquarters, and P&WA, since the plan included an expenditure of almost \$0.5M for special test equipment modification. Tischler contended, and the committee agreed, that if the effort in the throttlable RL-10 engine program was to be stopped after expending \$1.0M, the special test equipment modification was not justified.

Subsequent to the committee meeting, Tischler and Milt Rosen discussed this item. It was concluded by them that the special test equipment modification should not be funded. The significance of this decision is that throttlable engine testing will be done almost completely at LeRC, and P&WA will not start the seven months modification to enable them to do meaningful engine testing.

So, — what happens to the \$1.0M approved for this program??

B

B 9-4

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B

September 10, 1962

BJ-15

1. EDWARDS AF F-1 ACCEPTANCE TEST STAND - The Corps of Engineers Los Angeles District opened bids today for the Edwards Air Force F-1 Acceptance Test Stand Complex. The Corps of Engineers estimate was \$16.7 M. The low bid was \$16.2 M, and high \$19. The apparent low bidder was a combination of Santa Fe and Stolte and Sundt. The Corps of Engineers rated the three companies as capable to perform. The Santa Fe company has just completed the \$1 M. excavation contract at Edwards. It might be noted that the Corps of Engineers advertised and actually opened the bids without funds. This project will be funded upon receipt of FY 63 monies. ✓

2. HOME LIFE INSURANCE - Received letter from Bill Rose, Home Life Insurance Company, stating as follows: "...I would like at this time to tell you how elated we are with the job Paul Perry has done in the administration of your Group Life Program. I notice that at the start of the July 1 quarter there was over \$31,000,000 of Life Insurance in force on the lives of your people. This is certainly a tribute to a well-managed and administered program.

"As you know, plans have already been made to conduct an enrollment drive during the month of September to increase participation in your program. Paul already has made the necessary arrangements for circulating the promotional material to all uninsured employees. I hope this campaign will increase the volume of insurance even beyond its present level." ✓

1. FACILITIES

\* John a. Chrysler and Boeing have awarded 20 construction subcontracts totaling about \$2.2 Million. These contracts were for such items as building new foundations for production equipment, installing cranes, installing boring mill, modifying areas for office space, installing additional utilities, and building pressure test shelter. All of these subcontractors are now performing work in the manufacturing areas. ✓

b. A contract (\$135,000) was awarded to Pittman Construction Company by MSFC on September 7, 1962 for Phase I Modification to Michoud Computer Facility. Scheduled completion date is November 4, 1962. ✓

2. CONSTRUCTION INDUSTRY ASSOCIATION VISIT

Representatives of the Construction Industry Association of New Orleans visited MSFC to discuss the possible award of a "Construction Manager" type contract to the Mason-Rust Company at Michoud for the MSFC construction projects. They were expressing concern that New Orleans construction firms would not be performing the construction work. They were informed that one of the ground rules established by MSFC was that all the construction work would be subcontracted and if competition and capability was available among New Orleans firms they would be given preference. This organization had previously contacted Louisiana Congressional Members relative to this proposed contract. After the ground rules were explained to the Association on subcontracting, all agreed that the MSFC proposed contract with Mason-Rust, is an effective, economical and efficient way of doing business. ✓

Received 2:30 PM — 2 1/2 hr part  
deadline.

George Constan: How about sending  
the original direct to us with  
a copy simultaneously to Mr. Holman?  
It will help on getting the  
TWX out to Holman as early as  
possible. Jan 9-10

NOTES 9/10/62 DEBUS

Bg-12

No NOTES received this week from Dr. Debus.

REVISED SATURN C-5 IN-FLIGHT WIND CRITERIA: Due to selection of the Lunar Orbital Rendezvous Mode as the primary mission operation for Saturn C-5 manned-lunar missions, the necessity for accommodating flight missions with relatively small launch windows is relieved. Aeroballistics Division, therefore, recommends that the wind profile envelope, plus the associated vertical wind shear spectrum and gust value given with the 95 per cent probability-of-occurrence in-flight wind criteria (based on wind speed only, regardless of direction), be employed in control and structural design of the Saturn C-5 Vehicle. These criteria reflect the results of analysis of special detail wind measurements from Spherical Balloon/FPS-16 Radar and Smoke Trail/Photographic techniques. This is a reduction in the probability-of-occurrence level from the previously stated 99 per cent level for the in-flight wind profile envelope. However, with the restricted flight azimuths available for launch and considering the flight path angle through the high dynamic pressure region at Cape Canaveral, Florida, this in-flight wind profile envelope still produces a minimum monthly launch capability of approximately 98 per cent with respect to wind statistics only. ✓

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B3-15

Who is he?  
gcm

1. MANPOWER FOR THE QUALITY ASSURANCE EFFORT: Upon my phone call, Mr. Myers advised that the request for authorization of the funds was on Mr. Holmes' desk, Friday, September 7, 1962. It is expected that Dr. Seamans will make the final (hopefully favorable) decision this week. ✓

2. MICHLOUD OPERATIONS SUPPORT: Mr. Klauss (Saturn Project Engineer) and I visited Michoud Operations last week for clarification of the working relationship between the Quality Assurance Group at Michoud and the Quality Assurance Division. Complete agreement was reached. An immediate problem exists in the amount of support in selected areas which Michoud Operations requires from the Quality Assurance Division since no additional spaces have as yet been made available by NASA Headquarters (see para. 1 above). The Quality Assurance Division will hire, where possible, some more contractor personnel to supplement the in-house effort while we reinforce the Michoud Quality effort with Civil Service personnel made available this way. Where this method cannot be applied, an attempt will be made to cover the pressing needs with TDY. ✓

\* 3. FIELD DEPLOYMENT OF QUALITY ASSURANCE DIVISION PERSONNEL: Presently 43 Quality Assurance Division personnel are permanently assigned outside the Huntsville area in support of stage and component contracts. In addition to this effort we have three personnel on extended TDY and maintain an average of 20 people on TDY. ✓  
gcm

4. SOUTHEASTERN AREA FIELD REPRESENTATIVE: The Quality Assurance Division has established an office at Orlando Air Force Base, Orlando, Florida for the implementation of our programs in this area. Mr. Donald R. Oswald is in charge of this office. He was transferred for this purpose from our office in WOO, Santa Monica. (Mr. Camomilli, the second member of our office in WOO, will now direct our activities in this area; he will be supported, upon my agreement with Mr. Mulholland, WOO, by an assistant furnished by WOO on a permanent basis.) ✓

\* 5. S-II/TULSA OPERATION: In view of the proposed NAA effort at Tulsa, in-process inspection is considered necessary there. The Quality Assurance Division has no indication that this effort will or can be limited to simple parts which do not require attention, particularly since programs involved at the Tulsa plant include S-IV, S-IVB, and Apollo in addition to S-II. An exploratory meeting attended by personnel of the Air Force, NASA-O (Downey), and this Division disclosed deficiencies in the Air Force inspection capabilities which cannot be overcome fast. NASA-O (Downey) could supplement the Air Force in the quality assurance efforts until the Air Force builds up its strength. Since NASA-O (Downey) is limited in its jurisdiction to the area "west of Denver", some redirection is necessary which should be executed promptly. ✓  
OK  
gcm

*gem*  
\* 1. MTE:

Modification to S&P contract to include S-II test facility partial design criteria was finalized 9/7/62. Preliminary design criteria for S-IC test stands are in review by MTF Planning Office and will be returned to contractor for final submittal by 9/14/62. Preliminary design criteria for support facilities including warehouse and S-IC stage support building has also been submitted by the A-E Contractor. ✓

*gem*  
\* 2. MARINE ACTIVITIES:

Barge PROMISE departed MSFC Harbor, 2 a.m., 9/9/62, with SA-3 stages aboard. Vessel cleared Florence Bridge obstruction at approximately 1:50 p.m., without incident. Estimated time of arrival at Cape Canaveral Dock, noon, 9/21/62. ✓

3. S-1-4 ACCEPTANCE FIRING:

A safety firing of 30 seconds duration is scheduled for President's visit tomorrow. No problems to date. ✓ ✓

*gem*  
\* 4. S-IV BATTLESHIP TESTING, DAC:

A planned 60 seconds, six-engine firing was cut automatically at 13.6 seconds from an unknown electrical signal. "Feeling" is that this was given by diffuser pressure transducer; however, because the cut-off circuits are not recorded individually, there is no way of knowing which component initiated cut-off. Steps will be taken to rectify this situation as soon as possible. ✓

5. CENTAUR STATIC FIRING:

Dual cold flow planned on F-2 (second flight stage) this week at Sycamore. Hot firing depends on results of short tank fatigue tests at Point Loma and low tank pressure firing tests at Edwards on propulsion test vehicle. ✓

6. RL-10 FIRING, MSFC:

The second firing test of an A-1 engine for 20 seconds duration was successfully made at MSFC, Saturday, 9/8/62. ✓

Bg-15

NOTES 9-10-62 HOELZER

No report.

UNFO. ASW

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UNFO. ASW

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UNFO. ASW

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1. CENTAUR:

a. Centaur Evaluation: GD/A's response to MSFC evaluation of Centaur will be discussed at MSFC on Tues., 9-11. This meeting was previously set for 9-5. ✓

b. F-2 Status: The MSFC divisions have approved the plan to conduct cold flow tests with reduced ullage pressures. In view of the reduced pressure, MSFC approval has been granted to conduct cold flow and hot firings at Sycamore prior to running bulkhead plug weld tests at Pt. Loma. The present schedule for Run O-B, (cold flow) for the F-2 vehicle is Tues., 9-11. ✓

c. F-3 Status: The Centaur Project Office is presently coordinating with the MSFC divisions on a manufacturing plan for F-3 and subsequent vehicles. All division comments have not been received but are expected today. Coordination with the MSFC divisions is also in process on a tank development program presented by GD/A. Final approval of the program is expected within 4 weeks. ✓

d. Plug Weld Tests: The full scale bulkhead plug weld testing to simulate F-2 forward bulkhead conditions has been delayed. This delay was due to GD/A's inability to incorporate plug welds in the selected stub tank that would simulate the F-2 conditions. A new bulkhead has been selected for testing. Test results will be available in approximately four weeks. ✓

e. C-1/Agena FDP: The Saturn C-1/Agena program development plan is progressing. It is tentatively planned to review this plan with you on Fri., 9-14. ✓

2. AGENA:

\*  
Jhm  
a. Agena Ad Hoc Committee Meeting: The 2nd meeting of a NASA Agena Program Ad Hoc Committee (Mr. Flemming, Dr. Morrison, Dr. Debus and Mr. Hueter) was convened at Hq 9-7-62. The purpose of this committee is to determine what is wrong with the Agena program and what should be done to improve the program. At this meeting, an Agena Management Study, prepared by MSFC, was discussed. Generally, the study pointed out that NASA must have a more direct approach and greater voice and influence in the program, and proposed some measures by which this could be achieved. Based on the Ad Hoc meeting, MSFC will prepare a briefing to be given Dr. Seamans on or about 9-25-62. ✓

b. S-27 Topside Souder Project: Checkout of the Thor booster, Agena vehicle and the S-27 payload is proceeding as scheduled at PMR. A mock countdown is set for this week. No delay in launch date is expected. ✓

c. Ranger 5: All flight items for RA-5 are at AMR in preparation for the next Ranger Lunar mission. The Atlas booster arrived last Fri. and will be erected today. Checkout of the Agena vehicle and the spacecraft are proceeding as scheduled. No delay in launch date is anticipated. ✓

d. Atlas 179D (Mariner R-2): A presentation by GD/A on the performance of Atlas booster 179D will be given at AFSSD on Tues. of this week. Personnel from M-L&M-A will attend. ✓

e. Agena 6902 (Mariner R-2): A meeting is scheduled for 9-20 in which LMSC will present the final performance reports on the Agena vehicle used for the Mariner R-2 mission. Personnel from M-L&M-A will also attend this meeting. ✓

1. LUNAR LOGISTICS SYSTEMShea*Please make arrangements. URGENT*

I need your guidance on how to make arrangements with Lewis Research Center. Dr. Shea expects us to get in touch with them. You told me a few weeks ago not to do anything at this time; that you wanted to talk to Dr. Silverstein first. As far as I know Lewis has already submitted to Mr. Holmes a preliminary development plan on a lunar logistics stage (with three RL-10 engines), suggesting that they get responsibility for project management. What shall I do?

2. MARQUARDT "TRIBRID" PROPELLANTS

You requested information on this subject in a recent note. The old idea of adding a third component to a two-component propellant (already tested at Trauen by Dr. Saenger) has recently stirred up some interest again in various companies. Lithium and beryllium are typical candidates. These additives are, however, difficult to engineer and to handle - furthermore, they are expensive. They promise a 10 percent increase in specific impulse. Nobody yet has come up with a practical solution to the problem. We will try to get details on the Marquardt approach. An ARS Journal paper (April 1962; pp. 600) summarized the thermodynamic performance capabilities of tri-propellant systems.

B9-15

NOTES 9-10-62 KUERS

1. SA-3: SA-3 was turned over September 7, 1962 to Test Division for shipment to LOC. ✓

2. C-1 Gantry Cranes: Two of the gantry cranes of our S-I assembly stations in 4705 have been dismantled and are being shipped to CCSD, Michoud, as scheduled and agreed upon with Mr. Lowery. ✓

\*3. Facilities: The request for approval of additional funds for the Hydrostatic Test Tower will, according to our latest information, be forwarded to Dr. Seamans' Office for signature on Monday, September 10, 1962. After approval by Dr. Seamans this request has still to be processed through a Congressional Committee for release of funds which will take, I am told, another 10-14 days. I have read the letter which Mr. Canright had written August 23, 1962 to Mr. Rosen on our Hydrostatic Test Facility and was appalled to notice that people in this level make completely wrong statements to their superiors based on half-understood facts. From our Program Schedules and Flow Charts (which are in the OMSF Office) it can be seen that this facility will be utilized for 18-24 months - most of the time in two 10 hour shifts.

4. S-1C Mock-Up Gore Segments: Gore Segments for a full scale, 33 ft. diameter, mock-up bulkhead, made by Boeing, Wichita, have arrived and will be assembled for President Kennedy's visit. These gores are made according to ME Division specifications from fiberglass cloth with impregnated paper honeycomb. ✓

Dr. von Braun,

Mr. Rees, Mr. Rosen, and I all agreed that occasionally these NOTES should contain complaints such as this one. On this basis I have included item 3. qcma-10

D.K. B

1. C-3 SA-3 - Launch date is under study, ✓

S-I-7 - short duration static test is scheduled for 9-11-62.

\* | S-IV Battleship testing - planned 60 sec. run was aborted after 13.6 sec on 9-7-62. No reason has been determined yet, why cut-off occurred. No damage to engine or facilities, just a normal cut-off. ✓

S-IV All Systems Vehicle - is in insulation area. ✓

S-IV Hydrostatic Vehicle - will be used for dynamic testing at MSFC, thus permitting the SA-5 dynamic test program to start on schedule and allow second stage testing while S-I-SD is at AMP. ✓

A-3 Engine - by end of Oct 62 P&W will deliver to DAC only 13 engines instead of 46. This could cause slippage in SA-5 and the All Syst. Vehicle. Efforts are being made to re-allocate ground test engines for SA-5. ✓

2. C-5 - S-IC - Upon P&VE's request M-SAT has made study on feasibility of a back-up source for flexible hardware. Memo is being prepared outlining the recommendations. ✓

\* | Michoud Boeing - non-availability of FY-63 C of F funds is beginning to interfere with plant modification schedule. If Congressional action is not forthcoming soon, slippage in plant activation schedule will have adverse impact on Plan IV. ✓

\* | S-II - WOO is still negotiating with NAA to obtain reduction in fee. It is anticipated that negotiation will be finished this week. ✓

\* | Supplement to All Systems waiver, defining facility blast effects at Santa Susana, has been reviewed by S&ID and MSFC and was presented to Mr. Ackermann on 9-7-62. ✓

S-IVB - Headquarters has approved a 90-day 2 1/2 Mill go-ahead on S-IVB for C-1B. ✓

On 9-7-62 the S-IVB attitude control system was reviewed at DAC with MSFC. ✓

Preliminary draft of DAC proposed reliability program will be reviewed on 9-18/19-62 at MSFC.

\* | S-IVB program review is planned for 9-12-62 at MSFC. ✓

MSFC requested from OMSF authority and C of F funds for re-roofing the Manufacturing Building (\$955,000) and the storm drainage construction (\$700,000). M-SAT understands that appropriate authorization and funds are available from FY-62 supplemental budget.

O, L → (please take up w/ Shepard)  
→ There why are we ... don't we  
get moving ???  
B

-- The Project Request for reroofing the Michoud Manufacturing Building (\$955,000) was sent to Headquarters, Mr. Ulmer. It is anticipated that approval of the request and C of F dollars will be forwarded to MSFC approximately 9-24-62. The design package will be sent to MSFC, P&C on 9-7-62. The package will be advertised on 9-10-62 and bids opened on 9-24-62. Therefore, it is anticipated that construction on the roof can proceed prior to 9-30-62. Actual construction will be scheduled to preclude any interference with work being performed within the plant.

B

B-15

1. CENTAUR: General Dynamics/Astronautics attempts to duplicate (in a test bulkhead) the repair welds in the F-2 LH<sub>2</sub> tank forward bulkhead have been unsuccessful. As a result of this, a minimum of 4 to 5 weeks will be required to either prepare another test bulkhead or replace the F-2 bulkhead. ✓
2. RIPT: Preliminary indication from the Department of the Navy on the RIPT assembly facility is that they are willing to release Hangar #1 (Steel Hangar) at Moffett to NASA. MSFC and Lockheed had recommended use of Hangar #3 (closest to Lockheed property). The Navy has said that major relocation costs to them (\$3.0 million) would be involved if NASA were to insist on Hangar #3. Up-to-date cost data has been submitted to NASA Headquarters to aid in the preparation of a recommendation for the Assembly Site. ✓ (Action  
The  
Tuesday?)
3. FACILITIES: The first phase of the contract for Structural Loads Annex to Building 4619 has begun (excavation and foundation). ✓
4. NERVA ENGINE CYCLE: On 9-4-62, the final cycle selection was made for the NERVA nuclear engine. It was decided that the hot bleed cycle will be used. In this design, hot gas is bled from the thrust chamber and used to drive the turbine. This cycle should give the highest performance of all the cycles considered. ✓
- \* 5. MICROMETEOROID DAMAGE: Subsequent to the letter from Dr. von Braun of 8-9-62 to Mr. B. Holmes recommending micrometeoroid damage investigation of the MERCURY capsules, a telephone call was received 8-17-62 from Mr. Abernathy, NASA Headquarters, who indicated that the request will be acted upon. Possible investigators were discussed, including other NASA Centers, Utah Research and Development Company, and General Dynamics/Astronautics. No additional information has been received since 8-17-62. ✓

1. CENTAUR: General Dynamics/Astronautics attempts to duplicate (in a test bulkhead) the repair welds in the F-2 LH<sub>2</sub> tank forward bulkhead have been unsuccessful. As a result of this, a minimum of 4 to 5 weeks will be required to either prepare another test bulkhead or replace the F-2 bulkhead. ✓

2. RIFT: Preliminary indication from the Department of the Navy on the RIFT assembly facility is that they are willing to release Hangar #1 (Steel Hangar) at Moffett to NASA. MSFC and Lockheed had recommended use of Hangar #3 (closest to Lockheed property). The Navy has said that major relocation costs to them (\$3.0 million) would be involved if NASA were to insist on Hangar #3. Up-to-date cost data has been submitted to NASA Headquarters to aid in the preparation of a recommendation for the Assembly Site. ✓

(Action  
The  
Mercury?)

3. FACILITIES: The first phase of the contract for Structural Loads Annex to Building 4619 has begun (excavation and foundation). ✓

4. NERVA ENGINE CYCLE: On 9-4-62, the final cycle selection was made for the NERVA nuclear engine. It was decided that the hot bleed cycle will be used. In this design, hot gas is bled from the thrust chamber and used to drive the turbine. This cycle should give the highest performance of all the cycles considered. ✓

\* 5. MICROMETEOROID DAMAGE: Subsequent to the letter from Dr. von Braun of 8-9-62 to Mr. B. Holmes recommending micrometeoroid damage investigation of the MERCURY capsules, a telephone call was received 8-17-62 from Mr. Abernathy, NASA Headquarters, who indicated that the request will be acted upon. Possible investigators were discussed, including other NASA Centers, Utah Research and Development Company, and General Dynamics/Astronautics. No additional information has been received since 8-17-62. ✓

gm

1. Ground Test Requirements in Conjunction with Schedule Review by Shea:

Representatives of my office are contacting your people in regard to Ground Testing of Launch Vehicle & Spacecraft and the associated interfaces. This is in conjunction with the schedule review requested by Shea on 14 September. ✓

2. Distribution of Observation & Recommendation Reports: (See my notes of 6-18-62 inclosed)

At my last meeting with Dr. Shea we agreed on wider distribution of our "Observation & Recommendation Reports" of panel and working group meetings.

I discussed above briefly by phone with Mr. Neubert on Friday, September 7. I have asked John Marsh of my office to discuss it further with Neubert, so that we can make the report useful to all concerned. ✓

3. I will be out of town until Friday, 14 October. I have a Space Electronics & Telemetry Executive Committee Meeting prior to Symposium in early October. ✓

1. NASA SPACE SCIENCES SUMMER STUDY: As you may recall, I attended the final two days of the Summer Study at the State University of Iowa where the Working Group chairmen gave their final reports in a condensed form. One and one-half weeks ago Dr. Harvey Hall sent the written versions of the final reports to me for evaluation and comments to GMSF so that they might in turn make comments to Dr. Newell. Last week I sent my comments as requested. Would you like to have copies of the comments? ACTION REQUIRED. *Mr. Newell called w/ papers B*
2. LIQUID HYDROGEN TECHNOLOGY: During my presentation in the Board Meeting of August 17, it was decided that a total of two million of FY-1963 SATURN funding should immediately be set aside to cover high priority tasks proposed under the LH<sub>2</sub> Technology Program. By September 13 we plan to have Procurement Requests covering about half of this funding in process and the balance of the 2M earmarked for particular tasks. We have been working quite closely with Mr. Hurd and Mr. Lombardo of PSVE in establishing task priority, etc. In accordance with your handwritten note, Mr. Krazak, Mr. Weidner, Dr. Lange and I will meet at an early date to define further the requirements of our LH<sub>2</sub> Technology Program. ✓
3. VISIT TO DR. BISPLINGHOFF: On September 7, I visited Dr. R. Bisplinghoff to introduce myself, and to discuss some of the problems which we face in connection with the MSFC research program. My impression of the new OART Director was excellent. If Dr. Bisplinghoff succeeds in introducing his research philosophy in the Office of Advanced Research and Technology, we should have much better research program conditions in the future than we ever had in the past. Dr. Bisplinghoff will visit this Center on October 8 and 9. ✓ *See Newell's record*
4. ARS DIRECTORS MEETING: On Saturday, September 8, I attended an ARS Directors Meeting in New York which had the IAS-ARS merger as its main objective. The discussions were long and even heated at times, but no final decision could be reached. It was decided, though, that merger negotiations should be continued. ✓
5. NASA UNIVERSITY CONFERENCE: In response to your comment on the NOTES of 9-4-62 (Attachment #1), everyone concerned at MSFC understands that there is no objection to MSFC's sending speakers. Mr. Matthews of Ames Research Center, who is the new Chairman for the Guidance, Navigation and Control Session, has already made arrangements with Mr. Kroeger for Mr. Schneider to speak. Dr. C. R. Gates of JPL, the new chairman for Mathematics and Celestial Mechanics, is to call Dr. Hoelker today to advise him if MSFC speakers should participate in this session. ✓

B9/15

1. M-1 PROGRAM: The letter contracts have been extended to 10-31-62. The revised M-1 Scope of Work has been officially transmitted to Aerojet. The revised scope does not change the program intent, but includes the latest applicable documents and has made reliability an integral part, rather than a separate part, of the program. ✓

\*2. F-1 PROGRAM: In an effort to approach the full thrust level in a number of increasing thrust steps a test of engine #003 was run on 9-1-62 at 1100K thrust level for the programmed seven-seconds duration. Also, we conducted a meeting assessing the progress of the F-1 program at Rocketdyne last week. The one item which was found to be the most critical problem is combustion instability. The present injector design and its variations, as tested today, promise an instability rate as high as 4-5% (5 out of 100 will go unstable). As a comparison, the Jupiter-type engines and early H-1 had only 1 to 1½%. The present "baffled" H-1 injector is "dynamically stable," which means that instabilities dampen out within 20 msec even if triggered by explosive charges. For early F-1 engine deliveries it appears that we will have to live with this kind of "unstable" injector as it stands now. Due to lead-time requirements, any improvements (?) will be felt only after PFRT. We now have in support of this problem all the talent Lewis Research Center can offer and some Princeton support. Any suggestions coming out of this Ad Hoc Group will be incorporated into the development and experimental effort. But, due to the nature of the problem, at best long-range improvement can be had from this. Under the circumstances, we agreed with Rocketdyne's immediate experimental approach.

3. RL-10 PROGRAM: (Ref. Notes 9-4-62 Weidner, copy attached.) As of this date, NASA Headquarters has provided no alternate guidance as to the expenditure of the \$1.0 Million approved by Dr. Seamans for the throttleable RL10 engine. An attempt will be made to get some clarification from Del Tischler early this week. It is presumed that a small part of the \$1.0 Million would be used by P&WA for bench and rig testing of components to support an expanded engine test program at Lewis Research Center. ✓

H.W.

This means a 25% probability that  
1 engine in the SIC will go rough!!  
Absolutely unacceptable!

Attachment: Notes 9-4-62 Weidner

What do you  
suggest to do?

B

September. 17, 1962

NOTES 9-17-62 GORMAN

Bg/12

He said this. I made no comment (just shook my head) B O.K. I'll sign it. B

1. WESTERN OPERATIONS OFFICE - As a result of an agreement between Lee Belew and Wilbur Davis, I signed a letter to WOO transferring the H-1 contract from WOO to Marshall, effective September 30, 1962. Bob Kamm called to protest this action, saying that he did not agree and further that the timeliness of the transfer presented certain problems. He added that during your visit to the West Coast he had told you that he would act only when he had received a personal request from you, Wernher von Braun. Immediately after our telephone conversation I called Siepert (Kamm reports to Siepert). Kamm has protested to Siepert to the effect that there is a power play within Marshall between myself and the technical side of the house, and that he (Kamm) could not afford to get mixed-up in this power play. This is the first time I have heard of such a thing. I have talked to Eberhard and we propose to prepare a letter for your signature which will clarify this situation once and for all. Unless you instruct me otherwise, I will proceed to take-over the WOO responsibility for negotiation and primary administration of our major contracts on the West Coast --- with deliberate speed.

2. BOEING CONTRACT- Negotiations with the Boeing Company commenced on September 11, for the follow-on contract to NAS8-2577 for the S-IC Saturn Stage. The initial phase of the conference will be concerned with the negotiation of a definitive Technical Work Statement which Boeing can then use to submit a revised cost proposal. It is estimated that this first phase will require approximately two weeks to complete. Stoner has been participating. He is concerned about the GE role. Eberhard Rees has been briefed. Harry, get the results of today's mtg with Sloan, Lange, Rahn, etc. gen

3. MASON-RUST CONTRACT - Negotiations were completed on a Supplemental Agreement to the Mason-Rust contract (NAS8-4004) to add construction management services to subject contract. Agreement has been reached on costs and fee, but certain contractual language is being formulated between the parties as to a specific aspect of reimbursement. ✓

4. NORTH AMERICAN - Complete agreement has not been reached between NAA Space and Information Systems Division and WOO to definitize Letter Contract NAS7-80 for S-II Stages. A summary on fee negotiations is known to have been sent by WOO to MSFC (Attn: Saturn Systems Office), but it is not clear whether or not WOO altered Headquarters/OMSF's guidance for a \$16.770 million fee by making a counter-offer of \$18.500 million. NAA's last known offer was \$19.500 million, which is a decrease from the \$20.192 million concluded in NAA/WOO negotiations on August 7.

H.F. Lange informed me in writing today, that Holmes had approved NAA's final fee offer. I forgot what the amount was. Please verify (I think it was 6.5% on 300M level of effort)

see attachment (just found it) B H.F. (attached)

H.F.

All of 'em? What's Siepert's reaction to that? B

Suggest Fichtner brief our negotiating team on this! B (He has latest dope)

5/18  
Let's take that  
and have a  
ball!

1. DISPOSAL OF FOUNDRY EQUIPMENT

General Services Administration has received several responses to the invitations to bid for the removal of foundry equipment and some supporting structures from Michoud Operations. Contractor cost proposals range from plus \$30,500 to minus \$100,000 and are being presently evaluated. Award should be made within the next week. Equipment is to be removed and foundry area renovated by 1/31/63. ✓

\* 2. DOCKING FACILITIES

gpm

Negotiations for a joint use agreement between the Army and NASA will be completed in about one week. The joint use agreement will permit NASA use of the docking facility to be constructed in the Army docking area on a priority basis. This docking area is adjacent to the west boundary of Michoud. ✓

\* 3. OFFICE SPACE

gpm

Leases for about one year should be executed for Chrysler and Boeing by 10/1/62. These leases will provide adequate temporary space until the proposed office buildings for Chrysler and Boeing are constructed near Michoud. ✓

4. NASA/NEW ORLEANS COORDINATION COMMITTEE

The mayor of New Orleans has dissolved the NASA/New Orleans Coordination Committee. This action was taken because the main objective of the committee was to assist NASA and its contractors to get established and/or "in business" in New Orleans. This objective has been accomplished. The establishment of a New Orleans advisory group similar to the one in Huntsville is presently being considered. ✓

J.C.  
We've  
sent them  
a thank  
you letter  
haven't we  
B

5. "Y" RING TOOLING

The 42 ft. boring mill for the fabrication of the S-IC "Y" rings was installed at Michoud. On September 15, 1962, this machine was operated and final checkout was initiated. ✓

NOTES 9/17/62 DEBUS

Bg-18

No NOTES received from Dr. Debus this date.

32/12

\*  
gm 1. SUBCOMMITTEE FOR CONTROL DYNAMICS AND STRUCTURAL  
FEEDBACK OF SATURN DYNAMICS AND CONTROL WORKING GROUP:

Members of this subcommittee attended a conference at Langley Research Center on August 31, to discuss Langley support of C-5 dynamic model tests. Agreement was reached to support a strongly modified proposal by Langley to build and test the following three models: (1) A simplified 1/10th scale C-5 replica, (2) an alternate first stage for this model with scalloped tanks and (3) 1/40th scale C-5 model. Purpose of this program is to determine trends and trade-offs for different design concepts and scale factors. It is hoped that this will prepare us better for "exotic" structures for future projects. ✓

2. OPERATIONAL FLIGHT CONTROL: On September 12, RCA gave the last technical progress report about Operational Flight Control prior to preparation of the final report. A summary oral report by RCA will be presented to the top managements of AMR, LOC and MSFC as soon as all preparations are complete. At that time a decision about continuation of these studies and possible implementation will be required. ✓

B9/12

He said this. I made no comment just shook my head. B o.k. I'll sign it. B

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see attachment (just found it) B H.F. (Lange)

H.F.

Are of 'em? What's Siepert's reaction to that? B

Suggest Fichtner brief our negotiating team on this! B (He has latest dope)

NOTES 9-17-62 GRAU

Bg-18

Nothing of importance to report this week.

B 9/18

MTF:

\* gm Preliminary design criteria for S-1C test stands and initially-required support facilities have been reviewed and returned to the AE Contractor for preparation of final submittal anticipated by 10/8/62. Contractor began preparation of partial design criteria for the S-11 Complex, 9/10/62. ✓

Preliminary discussions were held with NASA Headquarters relative to feasible methods of obtaining propellants at MTF. ✓

Initial NASA-PERT printout covering AE Contract with S&P was received, 9/13/62. ✓

2. S-1-4 ACCEPTANCE FIRING:

To make the firing date coincide with the President's visit, a compromise was made where several test stand items in the high pressure system were not cleaned of possible contaminants prior to the short-duration firing. These items are now being cleaned prior to the long-duration firing; thereby causing the firing date to be delayed until 9/25/62. ✓

\* 3. gm BATTLESHIP S-IV TESTING DAC:

Static firing Saturday afternoon was cut off by observer at 30 seconds ✓ of an intended 60 seconds duration. Cutoff was caused by the diffuser water temperature exceeding the redline value of 165°F. Exact trouble not known at this time. Helium heater again failed to work properly on this test. ✓

\* 4. gm RL10 ENGINE TEST MSFC:

*K.H. L → What's the problem? I thought DAC had that one licked! B*

An 85-second static firing was successfully performed on A-1 engine, 9/14/62. Engine and facility appear to be in good condition. ✓

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NOTES 9-17-62 HOELZER

B<sub>g</sub>/12

No Report.

CENTAUR:

a. AD Hoc Evaluation: A joint GD/A-MSFC meeting was held on Tuesday and Wednesday, September 12-13, to make the final review of the AD Hoc Evaluation. Numerous problem areas were resolved and those requiring further resolution were established as follow-up action items for either MSFC or GD/A. A Status Summary of the final review is being prepared.

b. F-2 Status: The cold flow test of F-2 was completed on Tuesday, September 11. Evaluation of test data indicates all objectives were met. Preparations are being made for the first hot firing in approximately two weeks. Firm data for hot firing is dependent upon receipt of reworked vent valves from the PTV article.

c. F-3 Status: Authorization has been given to GD/A to proceed with a new design proofing tank for heavier tank skin gages. Based upon design evaluation, new flight tanks commencing with F-3 will be manufactured. ✓

Francis Evans

Please give it to me  
at your earliest convenience

B

Bg/18

1. NOVA CLASS VEHICLE

In our advanced NOVA study Krafft Ehrlicke presented a new approach to the problem. He proposed to study in detail a single stage reusable vehicle compatible with very voluminous payloads, such as nuclear propelled Mars ships. His design is the first launch vehicle I have seen which has a larger diameter than length. It looks like one of the better approaches to the problem. I will give you some more details occasionally. ✓

2. ROTHROCK TASK GROUP

We had a two-day meeting early last week in Washington reviewing all NASA advanced vehicle and systems studies. We seem to be making some progress to get organized in this area. MSC is concentrating in their studies on the space station, and probably will break the project down into seven individual tasks. Approximately 1.7 million dollars is expected to become available for space station studies. We expect to get close to five (5) million dollars from OMSF and OART. This will keep us busy. ✓

3. FINAL PRESENTATIONS

We have two studies which will be completed early in December: Advanced Lunar Transportation Systems and Early Manned Planetary Expeditions. We have scheduled six (6) presentations by six (6) companies (half a day each) from December 3 to 6, 1962. In each case we will have a 30-minute summary for you and hope you will be able to attend. Suggest you make a note on your calendar now. ✓

4. NOVA STUDY CONTRACTS

Meetings were held with GD/A and Martin on September 12 and 13 at MSFC. During the meetings mission and payload requirements (desirements) were selected as "Assumptions for the Purpose of the Study." The supporting hardware experimental activities were established for the first three (3) months of the contracts. ✓

O.K.

I.H.K.

all to  
MSC or  
not for  
us?  
B

Broune

s

Bg/18

- \*1. S-I Status: SA-5: Vehicle assembly is on schedule. SA-6: Fabrication of Thrust Structure and Upper Stage Adapter (in-house) is approximately on schedule. Containers from Chance Vought are again 3 weeks late. Reason for delay is a redesign of the Gox standpipe of the 105" container and bad spot welds at Z-ring of 70" containers. ✓
2. Facilities: The request for additional funds for the Hydrostatic Test Tower was approved by Dr. Seamans Friday, September 14, 1962. Contract cannot be let before funds have been released. → When will they? B
3. Personnel: I have hired a top grade (GS-15) Industrial Engineer, Mr. Paul Maurer. He has held an executive position for five years with Calumet and Hecla, Inc., Calumet, Michigan. My plan is to utilize Mr. Maurer in the working group area and eventually to assign to him the Chairmanship of the Assembly (or better, Manufacturing Engineering) Working Group. ✓✓

- 1. C-5 S-IV - launch is scheduled for middle of November 62. ✓
- S-IV - Full duration static firing is scheduled for 9-20-62. ✓
- \* S-IV - Battleship testing - premature cutoff during 9-7-62 firing was caused by excessive vibration of Diffuser #5 Pressure Switch. Switches have been relocated and shock mounted. - Test on 9-15-62 see attachment. 1. ✓
- Hydrostatic/Dynamics Vehicle - Former hydrostatic vehicle, in structural tower for installation of flight type interstages, will be shipped to MSFC 10-29-62. Start of Phase I dynamic testing scheduled 11-12-62. ✓
- Dynamics/Facility Checkout Vehicle - Former Dynamics Vehicle was re-allocated to AMR facility checkout, because insulation process caused schedule slippage. Forecast shipping date to AMR is end of December 62. ✓
- All Systems Vehicle - Internal insulation started 9-14-62. ✓

2. C-5: S-IC - Technical Work Statement negotiations with Boeing for the long term definitive contract commenced 9-11-62. Agreeable Work Statement will be available approx. 9-28-62. ✓

Vertical Assy Facility at MSFC - project request for construction was supposed to have been signed by Dr. Seaman 9-14-62. ✓

F-1 Combustion Instability - Test results of Rocketdyne indicate that problem is related to a LOR dome resonance. Tests continue to locate the exciting mode. ✓

Dual Plane Separation Mode - for S-IC/S-II will be used with retro rockets located in the S-IC boattail area. ✓ ✓

Flexible Hardware - Decision was made to activate second source. ✓

\* Michoud-Boeing - Impact on Plan IV slippage caused by non-availability of FY-63 C of P funds for plant activation will be determined in meeting 9-18-62 at Michoud. Congressional action to release funds is expected by 9-24-62. ✓

Approved Facilities Equipment Contract (NAB 8-5606) with certain contingencies was handcarried to MSFC 9-12-62. Extent and nature of contingencies are not known to M-SAT at this time; however, no problems are anticipated. ✓

S-II - PERT and Financial reporting clauses of contract, rewritten according to HQ's guidelines, are being negotiated with NAA. ✓

\* FY-63 Facilities money - if not received within the next two weeks, some facilities contracts will be held up. ✓

\* Explosive hazards - Mr. Ackermann (AF) reacted favorably to the supplement of the All Systems waiver presented on 9-7-62, but recommends provisions of adequate protecting measures for personnel during loading and testing and insuring non-habiting the adjoining land. ✓

S-II Engineering Review at MSFC is scheduled for 9-20-62. ✓

S-IVB - DAC was authorized to proceed with the 90-day 2 1/4 Mill go-ahead on S-IVB for C-1B application. ✓

3. Guidance Systems - Efforts continue to prepare C-1, C-1B & C-5 Instrument Unit Schedules to support scheduled vehicle firing dates. ✓

C-5 Instrument Unit portion of recent FY-63 budget submission is being up-dated and amplified. ✓

Astrionics cost of including an EOR capability in addition to LOR capability is being investigated. ✓

Estimated FY-64 astrionics budget is being prepared. ✓

Dr. Lange: You can be still more generous in marking items, if you want to, and still stay within bounds, gen

(If you prefer: in writing, 2 pages or so) B

O.L.  
Problem is getting Red hot. B

O.L.  
Request a joint SAT  
ASTR briefing on status of IBM "slice" contract.

B 9/18

NOTES 8-17-62 MAUS

1. LONG RANGE PLAN - Jack Waite of M-CP and Bill Huber of M-FPO worked with Dr. Shea's Office Sept 10-12 preparing individual portions of OMSF input to NASA Long Range Plan. Waite will informally review total OMSF input prior to submission to Mr. Hyatt's office. Also, Mr. Hyatt's office has promised Waite an opportunity to review completed NASA Plan prior to submission to Mr. Webb. We were very pleased with Abe Hyatt's attitude as expressed in his letter of appreciation to you concerning our Long Range Plan submission. ✓✓

2. NASA MANAGEMENT CONFERENCE AT LANGLEY - We have obtained thoughts and opinions from divisions and project offices for use in preparing your talk on NASA organization and management philosophy. An appointment to obtain your input is set for 2:45 pm, Wednesday, Sep 19. ✓

\*3. HEADQUARTERS VISIT - *and theirs, (hope to me) B*  
Walter Hahn and Leonard Carulli, NASA Mgmt Anal Div, were briefed on MSFC activities and operating policies. Here to discuss 4-1-1 and other organization and procedure matters, they seemed open minded and very constructive in their approach. *let's discuss this next staff luncheon B*

4. VISIT BY MR. DIXON - Prior to Mr. Dixon's visit Sept 27, we will brief you on the NASA Five Year Plan. We will also have background available on their other expressed areas of interest (Manpower and Dollars, and Center Institutional Reporting Plan). ✓

5. LARGE ROCKET ALTITUDE TEST REQUIREMENTS - The Arnold Engineering Development Center at Tullahoma has asked our support in obtaining approval for modifications of their J-4 facility to accommodate up to 1-1/2 million pound thrust capability. NASA Director of Facilities reportedly has not supported this modification. We are investigating MSFC interest in increasing the facility beyond current limitation (engines of 500,000 lb thrust) and will prepare reply to AEDC. ✓ *Who would pay?? B*

6. KEY PERSONNEL SURVEY - We are making a survey at Mr. Rees' request to determine (1) Who are the key personnel at Marshall, and (2) What are they working on. The latter will include tasks of all types - not just officially approved projects. We furnished listing of projects, and guidelines, to each division and office. Goodrum is in personal contact with directors/chiefs to promote consistency of interpretation. ✓ *This is important. Agree B*

\*7. PROPELLANTS MANAGEMENT (Liquid hydrogen) - Air Force Plant Nr 74 was out of production from Sep 10-14. Tests at P&W were limited to RL10 production engine tests and critical development tests. Now producing at 48% capacity; normal testing is resumed today. ✓

B 3/18

For Board  
mtg? q/c  
Yes B

1. RECOVERABLE MOVIE CAMERA PROJECT: Color films from the two recovered movie camera capsules, taken during an Atlas-F flight, have been received. The films are spectacular. Clips from them and from films taken with the movie camera capsules, during vacuum tests and drop tests at the Cape, will be featured in the quarterly SATURN Progress Film Report. ✓

2. RIFT MANUFACTURING FACILITY: Indications from the Navy are that Moffett blimp hangar #1, the steel hangar on opposite side of runway from Lockheed, will be made available to NASA for RIFT manufacturing. Hangar #3 is closer to Lockheed but is wooden (fire hazard) and relocation costs will be much greater than for hangar #1. Navy answer expected at NASA Headquarters within several weeks. ✓

3. SECOND S-IV BATTLESHIP FIRING: The second firing of the S-IV Battleship was conducted on 9-7-62. Intended duration was 60 seconds. Premature cutoff was experienced after 13.6 seconds. At this time it is believed that cutoff was caused by the diffuser pressure switch monitor that was activated by vibration of the diffuser. A secondary objective, helium heater operation for LOX tank pressurization, was not achieved due to failure of the LOX valve to open. Another scheduled 60 second test was run on 9-15-62 but was manually aborted at 30 seconds. Further information will be made available. ✓

\* 4. METEOROID HAZARDS: Further telephone conversations have indicated that Manned Spacecraft Center personnel are about to start their own in-house examinations of Carpenter's capsule and are trying to arrange for supplementary examinations by a local university. These should indicate definitely whether or not any information can be salvaged from the previous capsules and facilitate development of techniques for examination of future capsules. A tentative arrangement has been made for MSFC personnel to visit MSC during the week of 9-24-62, for detailed discussions of this problem. However, it was suggested that some difficulties still are being encountered relative to future capsules because of the many groups wanting to examine them for other purposes. ✓

Dr. Stuhlinger  
for info  
B

WM ✓  
Hasn't  
seen  
the  
last  
2  
either!  
Please  
arrange  
B

NOTES 9-17-62 Rudolph

Bg/18

Negative

1. RADIATION BELT SYMPOSIUM: On August 10 and 11, Mr. Stern attended a symposium at Goddard Space Flight Center on the artificial trapped radiation belt. The symposium, sponsored jointly by Defense Atomic Support Agency and NASA, comprised six sessions: (1) Satellite Measurements and Damage, (2) Synchrotron Noise, (3) Indirect Indications of Trapped Radiation, (4) Models of Trapped Radiation, (5) Manned Flight Problems, and (6) Implications of Future Testing. The proceedings of the symposium will be published in a classified volume and an unclassified volume, hopefully in about three weeks. ✓
2. HIRING EFFORT: Dr. Shelton spent the better part of last week on a hiring campaign in California with members of the Personnel Branch of Management Services Office. ✓
3. MARSHALL FILM: I saw an excellent film on electric propulsion, made for the Air Force by an advertising company in California. The film received an "honorary mention" on a European film show for technical excellence. I believe that a film on Marshall projects and activities, made by the same company, could be a very valuable and successful prop in our effort to attract more people to MSFC. If you wish, RFD could discuss this possibility with FIG. ACTION REQUIRED. *Good idea, fine*  
*o.k. go ahead B*
4. RESEARCH SUPPORT FROM OFFICE OF SPACE SCIENCES: Mr. Downey spent one day with Mr. T. Miles, the new research program coordinator at the Office of Space Sciences. Mr. Miles cannot help us with our "homeless" tasks; however, he wishes MSFC to initiate in-house and contracted work in a number of areas, such as high-temperature electronic components, sponge metals, lunar and planetary instrumentation, satellite payload components, and system studies for electrically propelled probes. RFD invited the divisions to establish tasks in these areas. However, before indulging in a substantial effort, I would like to assure ourselves of Dr. Newell's and Mr. Cortright's firm and continuing backing in this effort. Do you approve of this approach? ACTION REQUIRED.
5. CONTRACTOR STUDY OF LUNAR LOGISTIC VEHICLE: Mr. G. Bucher, as MSFC's member of the NASA panel for the Lunar Logistic Vehicle Study contract evaluation, spent one day at Northrop Space Laboratories (under R. E. Horner) where a study on LLV payload problems is presently underway. He will participate in a similar meeting this week at Grumman Aircraft Company where another such study is underway. ✓
6. LH<sub>2</sub> TECHNOLOGY: In the Board Meeting on September 14, I gave a brief status report on the 2M LH<sub>2</sub> Technology Program which you authorized on August 17 for funding out of Saturn money. At present, contract actions totaling .404M are in Saturn Systems Office, waiting for release of funds. In your absence, Dr. Rees requested Dr. Lenge to release the funds by Monday, September 16, 12:00 noon. Further contract actions are underway to Saturn Systems Office. ✓

→ E.S. I think it would be wise to first see how the Centaur issue will be resolved. It will have much bearing on all this. Will be glad to brief you on overall situation. B

B9/18

1. GENERAL: Action has been initiated with the MSFC Security Branch to officially establish a "Need to Know" for the Aerojet General Corporation, Pratt and Whitney Aircraft, and Rocketdyne to enable these three companies to exchange information on Liquid Hydrogen/Liquid Oxygen Rocket Engines. NASA's engine contractors must be able to benefit from the experience gained by others in order to provide NASA with engines developed on a timely basis with as small a duplication of cost as possible. ✓

The F-1 and J-2 programs are not exactly proceeding according to forecast schedules. As expected, we encountered all sorts of problems. In order to bring you up to date, I suggest that a half-day briefing for you and MSFC management be set up and that I invite Rocketdyne. I feel this would be very important.

2. J-2 PROGRAM: Rocketdyne has stopped testing with LN<sub>2</sub> due to poor lubricating properties of LN<sub>2</sub>. It was determined that testing with LN<sub>2</sub> with high (actual operating loads at full pump output) loads was causing bearing failures. Rocketdyne will continue using LN<sub>2</sub> for calibration with low loads. Rocketdyne has also stopped gaseous nitrogen purge and gone to gaseous helium purge. It was determined that the N<sub>2</sub> was freezing on the inlet screens and causing pump cavitation. No pump cavitation has been experienced using gaseous helium.

A gas generator blew up earlier in the week due to Rocketdyne "human" error. Someone on stand inadvertently pushed the "propellant" button instead of the "purge" button following a run. Stand damage was such that the test stand is expected to be down until 9-17-62.

3. RL-10 PROGRAM: The second firing (20 seconds) of an RL-10 engine was successfully completed at the Marshall Space Flight Center test facility on 9-8-62. The third firing (40 seconds) was accomplished on 9-13-62. All test objectives were attained. The development of a hydrogen recirculation system is planned for future tests. ✓

4. H-1 PROGRAM: In a meeting at MSFC, approval was given to go ahead on the stainless steel thrust chamber development. It is planned to assemble and test approximately eight to ten engines with the new chamber for the purpose of component development and qualification.

A turbopump explosion occurred during green run at Rocketdyne, Neosho. The explosion took place at approximately 450 msec and 6140 RPM during start. Preliminary investigation does not indicate bearing or gear failure, but actual cause of the failure is not yet known. The facility will be out of operation approximately one week. ✓

Oswald Lange

If "Need to Know" must be formally establish to enable companies to discuss their secrets with one another how about our family of Saturn Stage contractors? B

\* 9a

H.W.  
Agree, please say so with Bonnie B

That's an inhuman goof! B

\* 9pm

SEPTEMBER 24, 1962



NOTES 9-24-62 GORMAN

B 9/23

1. WOO AGAIN: Bill Davis and Dave Newby were on the West Coast last week. They called on Bob Kamm to iron out some details on the transfer of the H-1 contract. Kamm is still adamant in his position that he must receive his instructions from you personally before he takes any action at all.

*I'll call him tomorrow, B*

2. F-1 NEGOTIATIONS: We have deferred undertaking negotiations with Rocketdyne for the F-1 pending further clarification from Belew. Understand you are familiar with the issue between the engine management people and Tischler's office.

3. HANNES LUEHRSEN: Luehrsen should be released from the hospital in Mexico City in about a week. He will be flown to New Orleans via commercial airlines. Wible will meet the plane in New Orleans and make arrangements for continuation to Huntsville. Luehrsen has been in touch with his office almost daily. It is my understanding that he has two secretaries taking care of his correspondence. The secretaries are being furnished by the hospital; don't know if we will get a bill for this service or not. His insurance covers his hospital bill. ✓

4. ENGINEERING SUPPORT: With the Washington Office's approval of our long term plan to provide engineering support to our divisions through independent engineering contracts, we are proceeding as follows:

(a) Bill Davis' people are working with the divisions to scope the effort for purposes of contract negotiation.

(b) Ted Hardeman is working with the Saturn Systems Office and Central Planning Office to develop the 1963 budget for each of the divisions concerned. (On the assumption that we will receive the \$913 million R&D budget for FY 63).

(c) We have a target of 90 days to get the new contract plan into effect, including phasing Chrysler out of the general support area. ✓

5. NEGOTIATIONS ON THE BOEING CONTRACT The negotiations on the statement of work with Boeing were interrupted last week because the Saturn personnel participating had a priority assignment. I'm not satisfied that we are moving fast enough on the Boeing negotiations. There is much to be done, and we have to meet a November 1 deadline for a definitive contract.

*Harry*  
*Suggestions? Large complaints about the same thing. See his Notes of 9-24.*

B

B  
9/241. NASA/ARMY "USE AGREEMENT"

The Army signed and submitted to NASA Headquarters on September 21, 1962, a proposed agreement between the NASA and the Army for the joint use of the Army Michoud Storage Area (located adjacent to the western boundary of MSFC Michoud Operations). The proposed "use agreement" is for a period of 25 years. It is contemplated that NASA Headquarters will sign the agreement this week. The MSFC Michoud Operations docking facility will be constructed in this area. ✓

\* 2. MICHOUD CONSTRUCTION MANAGER  
gcm

The representatives of Procurement & Contracts Office, Facilities Engineering Office and Michoud Operations are today establishing the general policies to be used by the Mason-Rust Company who is to act as the NASA Marshall Construction Manager for projects at Michoud. The Mason-Rust Company is presently preparing to accomplish the requirements of their proposed contract modification to be Construction Manager and will be sufficiently staffed and oriented to actively perform these requirements by October 1, 1962. ✓

NOTES 9/24/62 DEBUS

B  
9/24

No NOTES received from Dr. Debus this date.

B 9/24

1. C-1 DYNAMIC TESTS EQUIPMENT: Two supports for the water bearing support system for C-1 dynamic tests have been built by Test Division and are presently at P&VE awaiting preliminary dynamic testing in a "head to head" arrangement. One of the supports is mounted in its normal position, the other one is upside down working against it within a frame. This arrangement allows dynamic motion in the expected frequency range and uses loads up to the maximum occurring in actual tests. Purpose of tests is to determine proper functioning and internal damping of the piston support and the sliding water bearings under loads. It is hoped that any deficiencies can be revealed and necessary modifications incorporated prior to building all eight supports. ✓

*I presume this principle will also be used on the C-5 dynamic test stand? B*

2. GEMINI-CIRCUMLUNAR MISSION: According to Mr. Jim Rose of MSC, Dr. Gilruth is considering making another pitch for a Gemini circumlunar mission by an earth rendezvous between a three-stage C-1 and a Gemini capsule carried up by Titan II (1964); also a direct version with C-1B three-stage is considered (1966). We are looking into performance of first version. According to MSC estimates the Gemini spacecraft with docking structure and propellants for midcourse corrections would weigh between 7700 pounds and 9300 pounds at injection. About 7000 pounds of this (present capsule alone) would be carried up by the Titan II. If an SV stage is used on top of C-1 to burn into a 100 n. m. orbit, it could deliver after rendezvous with Gemini between 8100 pounds and 9300 pounds to local escape speed, depending on the weight of the guidance system. Even if performance would prove to be satisfactory, this mission will certainly put severe requirements on Gemini capsule, require earth rendezvous (which was rejected in the Apollo system selection) and would most certainly have an impact upon the Apollo program. *I think it'll wreck the Apollo program. I'll call Gilruth again about it. He was lukewarm to the whole idea a few days ago. B*

3. DUPLICATION OF EFFORT: The attached report is an illustration of the duplication of effort which I mentioned in our recent discussion. This report was produced by members of P&VE Division and represents a considerable investment in manpower and machine time. It can hardly be claimed that this type of effort is needed for a rough cut type of performance analysis. The distribution of such reports to outside agencies also creates confusion and awareness of apparent lack of coordination of our efforts at MSFC. I would strongly suggest considering a transfer of the authors to Aeroballistics Division where their talents and interests could be incorporated more efficiently into an organized team effort, rather than duplicating work which is done by Aeroballistics Division personnel also.

*couldn't agree more! B*

E.G.

*\* See left side of folder! I thought you had tried but were unable to reach agreement with Dr. Krause over some trivial matter involving his scientific file index. I would be quite in favor of such a transfer. Have you discussed this with the 2411 project?*

B 9/23

1. WOO AGAIN: Bill Davis and Dave Newby were on the West Coast last week. They called on Bob Kamm to iron out some details on the transfer of the H-1 contract. Kamm is still adamant in his position that he must receive his instructions from you personally before he takes any action at all.

*I'll call him tomorrow, 3*

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*Hannes*

*Suggestions? Large complaints about the same thing. See his Notes of 9-24.*

*B*

B 9/23

1. 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 August.

Analysis Record Tags	2185 ✓
Defect Reports	682 ✓
Inspection and Acceptance Request	30 ✓
Final Disposition Cards	508 ✓

An ANALYSIS RECORD TAG is attached to a component or to a lot of similar components prior to inspection and when completed serves as a record of acceptance of that component. ✓

A DEFECT REPORT serves as a record of components which do not meet specifications. It consists of several copies; one is retained by the inspector for his records, one is sent for insertion into the computer file system and the third, or "hard" copy is attached to the defective component. ✓

INSPECTION AND ACCEPTANCE REQUESTS are initiated by the receiving MSFC organization and are used for requesting special inspection on stock items such as transistors, resistors, fasteners, screws, bolts, etc. ✓

The FINAL DISPOSITION CARD is in reality the "hard" card of the Defect Report which "closes" the case on the defective component when returned to the Quality Assurance Division. ✓

2. TRAINING: A total of 859 personnel are on the Soldering Certification List as of August 31, 1962. These people were qualified since Jan. 1, 1962. ✓

\* 3. ROCKETDYNE QUALITY ASSURANCE DIVISION OFFICE: The Quality Assurance Division Office is now firmly established at Rocketdyne and is operating in an effective manner. The working relationship within the MSFC resident office is very good with Quality problems being referred to the resident Quality personnel.

The relationship with Air Force, Rocketdyne and MSFC Quality personnel is more difficult to define in terms of who is responsible for what. To define this area, a procedure for Air Force Quality Control on NASA contracts was established on November 29, 1961 and signed off by Air Force, Propulsion and Vehicle Engineering Division and Quality Assurance Division. This procedure has never been followed by the Air Force, partially due to lack of personnel, a difference in Air Force and MSFC philosophy, and the general nature of the R&D program. Also, the Air Force did not appear to accept the fact that prime responsibility for Quality Assurance rests with MSFC. This problem has been partially alleviated by the negotiations with the Air Force for Quality Assurance implementation under NPC-200-1 as supplemented by a recent Quality Assurance Division letter. After official request from Procurement and Contracts to the Air Force Plant Representative for field service support in the Quality Assurance area, there should be a more definitive line of responsibility established, and the working relationship should improve. ✓

30124

NOTES - HAEUSSERMANN 9/24/62

1. ST-124P IN SATURN SA-4 STATIC TEST: An ST-124P stabilized platform was operated in SA-4 during the last static test. Normal performance of the platform was indicated by measurement from the 29 telemetry channels used to monitor its behavior. An unexpectedly high 4g peak vibration measured on this platform inertial gimbal yaw axis was double the peak vibration on either the longitudinal or pitch axes. Corresponding measurements on the platform mounting frame indicated nearly equal inputs for all axes at 4g to 6.5 g peaks.

W.H. Sounds very good. Congrats.  
B.

NOTES 9/24/62 Heimbürg

B 9/24

\* 1. S-1-4 ACCEPTANCE FIRING:

Delays in component cleaning have caused duration firing to be slipped one day, to Wednesday, 9/26/62. ✓

2. BATTLESHIP 5-IV TESTING DAC (Reference NOTES 9/17/62 Heimbürg):

Helium heater troubles have been concerned with failure of the valves to function. Helium heater main LOX valve failed to open on the last two tests. This valve, manufactured by Clary, checks out OK at cryogenic temperatures during bench tests. Changes are in progress. Next static test due today, 9/24/62. ✓

\* 3. RL10 ENGINE TEST MSFC:

A 30-second firing was made on A-1 engine, Friday, 9/21/62. Engine OK, but some buckling noted in inner diffuser jacket, downstream end. ✓

4. CENTAUR:

Static firing of battleship at EAFB was scrubbed last week during countdown due to the hydraulic vent valve freezing closed. A successful 60-second battleship firing was performed Saturday, 9/22/62 with reduced tank pressures. Based on this, a static firing of the F-2 (second flight stage) with reduced tank pressures is tentatively planned for the latter part of this week. ✓

5. MARINE ACTIVITIES:

Barge PROMISE with SA-3 stages aboard arrived at Cape Canaveral, 9/19/62. Voyage from Huntsville required approximately 10½ days and was made without incident. Unloading was delayed due to heavy rains and high winds. Documentation of our research regarding vessel availability for ocean shipments will be completed by 10/10/62. ✓

1 enclosure

NOTES 9/17/62 Heimbürg

B9/29

No Report

e.g.  
How is the new construction  
coming along -- especially  
the high bay -- How is the  
simulator coming along to  
go in there -- let us know  
if you are still alive --  
JCM 9-24

This doesn't have to be just  
a problem area report. We  
would also like general status --  
money, machines, people, etc.

CONFIDENTIAL

NOTES 9-24-62 HUETER

B 9/24

1. CENTAUR:

a. Centaur Evaluation:

An over-all review of the Saturn C-1/Agema Development Plan was presented members of NASA Hdqrs, OSS, and JPL on 9/17/62. The approach to the development was preceded by a current status review of the Centaur program. Plans for a similar presentation to NASA Hdqrs remains indefinite. ✓

b. F-2 Status:

Test run 1-1, a ten-second hot firing on Vehicle F-2 is now planned for 9/26/62 pending receipt of the modified vent valves and successful completion of the 60-second hot firing on the PTV at ERS 1-1. ✓

c. F-3 Status:

Fabrication of detail parts of the heavier tank skin vehicle F-3 and the cutting of the cylindrical skins is now in progress. ✓

2. AGENA:

a. Mariner 2:

As of 2400 GMT 9/19/62, the spacecraft was 3.8 million statute miles from Earth and traveling at an Earth reference velocity of 6,451 statute MPH. JPL reports all spacecraft functions and scientific instruments are functioning properly. ✓

b. S-27 Topside Sounder:

Launch is set for early Thursday morning (9/27/62) between the hours of 0015 and 0145 CST. All pre-launch checks are proceeding as scheduled. No delay in launch is anticipated. The countdown can be monitored in the L&M conference room. ✓

c. (C) Ranger 5:

(C) The next lunar probe is scheduled for 10/16/62. RA-5 spacecraft arrived at AMR on 8/20/62; Agema 6005 arrived on 8/30/62; and, Atlas 215D arrived on 9/7/62. Checkout is proceeding without major difficulty. The Atlas was erected on Pad 12 on 9/12/62; the Agema mated on 9/18/62; J-FACT is set for 9/26/62. The launch period extends through 10/19/62 with a window of approximately two hours each date. ✓

d. (C) Echo A-12:

(C) Echo A-12 communication satellite launch scheduled for December has been postponed until February 1963. Reasons are the Thor booster was borrowed by the Air Force for a special radiation belt probe and also the last "big shot" balloon, when expanding, left wrinkles in the skin that require further investigation before another launch. ✓

CONFIDENTIAL

B 9/24

? ? ? ? ? I don't understand

1. PRESENTATION ON INFORMATION PROCESSING AND COSTING PROCEDURES

I gave a presentation on this subject last Friday to Dr. Seamans, and, upon his request, also to Mr. Lingle, a management consultant to Mr. Webb. Dr. Seamans' reaction was, in general, positive and some action can be expected in the near future. We expect the formation of one or two working groups who will try to get to the roots of the problem. The same presentation was also given, on the same day, to Mr. Hyatt's staff. I have suggested that this be placed on the agenda of the board meeting sometime, if there is room for it.

O.K.  
Let's do that B

2. LUNAR LOGISTICS SYSTEM

In our schedule study we found the following attractive procedure: The lunar landing and braking stage (3 RL-10 engines and 50,000 lb of propellants) will first be tested as a third stage on the C-1B for an escape-type mission. The timing will be such (December 1966, January 1967) that a planetary mission (Mars) can be attempted with a simple Mariner-type spacecraft. This would not only give us a good chance to get to ignition of the braking stage (because of the reliability of the C-1B) but also it saves about 50 million dollars by substituting two C-1B's for the more costly C-5's. Furthermore, it gives Bill Pickering two free rides or he can add a little to the kitty. This three-stage C-1B, with about 8,000 lb to escape, will also be of interest to JPL for the rest of the decade. Would you go along with such an approach?

H.H.H. Let's discuss this  
in view of the  
"New turn of events"  
discussed 24 Sept B

Bg/29

1. S-I Status: SA-6: The Thrust Structure and Spider Beam have been completed and are waiting for 105" container from Chance Vought which arrived Saturday and is going through receiving inspection now. SA-D-5: Completed Instrument Unit Structure for the Dynamic Test Vehicle. ✓

2. Facilities: Release of additional funds for the Hydrostatic Test Facility by Congressional Committee are not expected before October 1. Opening of bids took place August 7; these bids are legally binding for the contractor for a period of 60 days, until October 7, 1962.

3. S-IC: We experience serious delays in fabrication of tools at Wichita because of controversy on quality control requirements. The contract provides for the stringent quality control measures which are written for flight hardware and are not applicable to fabrication of tools and fixtures. Quality Assurance Division refuses to change the quality control specifications in the contract, and Boeing refuses to accept directions for deviations from their contractual obligations other than through contractual channels. There are thousands of individual inspection operations and waivers of very minor deviations involved. The situation is really confusing, and Boeing is right in insisting on having the contract changed. We have lost at least 50 days in delivery of many tools and fixtures for our in-house work. We discussed this matter again with Mr. Grau and Mr. Godfrey last Friday, however, the discussion was negative. The situation seemingly demands flexibility! Further time delays could be dangerously detrimental to our in-house work.

cut  
P2C  
lose this  
have  
extended  
in other  
10 days?  
nobody  
can  
push  
express  
to act  
faster!  
B

Brouie

RUSH

Please lay on a meeting in my office with Messrs. Grau + Kuers, tomorrow 9/25

Bg/29

B2/24

- \* 1. C-1: S-1-3 - arrived AMR 9-19. Erected 9-21. ✓  
S-1-4 - full duration firing delayed to 9-26, due to cleaning of contamination from engine and LOX lines caused by purge. (oil vapor in N<sub>2</sub>) ✓  
S-1-5 - assembly continues - to M-QUAL on 11-5-62. ✓  
S-IV - Battleship - 9-22 test cancelled at T-4 hours due to electrical short in pneumatic console - fourth run re-scheduled for 9-24. ✓  
All systems - insulation installed by 10-1 -- tank cleaned by 10-3-62. ✓  
 \* Engine - Inspection started at Santa Monica of first A-3 engine. ✓
2. C-5: S-IC - Contract negotiations - proceeding slowly - only 3 of the 10 parts of Technical Work Statement completed - without speedup, negotiations will take 2 additional weeks, and will severely hamper program management, Michoud facilities work. Boeing direction during critical buildup phase (Boeing manpower was 2129 on 9-14) ✓  
 Vertical Assembly Facility at M-ME - M-SAT understands that project request for construction is still in Dr. Seaman's Office. Fabrication schedule impact not known. Start of construction has slipped 37 days. "Urgent action" by M-FEO is recommended. ✓ *I think Congress just hasn't released funds. It's clear w/ Republicans*  
 Vertical Assembly Building at Michoud is pacing Boeing effort to meet Plan IV. Due to late approval of equipment contract and to expected delays in '63 C of F funds, the best outlook is that Plan IV schedule of C-5 (i.e. dynamics vehicle) may have one month's slippage. ✓  
S-II - Program Review - conducted at MSFC on 9-20. MSFC authorized NAA to proceed with their common bulkhead design, back-up design to be investigated. ✓  
Dual Plane Separation - contractor re-directed to proceed. engine-out to be retained if feasible. ✓  
S-IVB - Complex Beta - Meeting at MSFC with DAC and Corps of Engineers to discuss contract planning for instrumentation design. ✓
3. Guidance System - Effort continued on preparation of C-1, C-1B, and C-5 Instrument Unit (and astronics equipment) schedules to support vehicle schedules. ✓
- \* 4. APOLLO - Payload Capabilities - Joint MSFC-NSC meeting arrived at mutually accepted figures: C-1 = 22,500 lbs; C-1B = 32,500 lbs; (72° az., 105 NM) ✓  
Emergency Detection System - MSFC-NSC meeting on 9-26 at MSFC. (crew safety panel) ✓  
GEMINI - C-1 - Centaur Circumlunar proposal - MSFC informal preliminary discussions with Mr. Rose (MSC) on feasibility - M-AERO running a trajectory outlook: not impossible. ✓  
Michoud - M-SAT feels it imperative that Director, M-NICH have authority to direct Chrysler on all required contract changes pending formal negotiation. This authority has not been delegated at this time.

Harry

Harry  
request  
comment  
B

B 8/29

1. PRESIDENTIAL INQUIRY ON OVERTIME - In response to a request (relayed by NASA hdqs to Mr. Gorman) from the office of the President, we compiled data showing percentage of overtime and regularly scheduled multiple shifts worked by civil service personnel in MSFC divisions. This info, with similar data prepared by P&C on contractor personnel, was sent to Office of Programs last week. An info copy was later requested by OMSF, which we furnished. ✓

FM  
But clear  
any  
changes  
with  
Mr. Attek,  
Feissler  
& Koelle  
to we  
won't start  
all over again. ✓

2. RESPONSIBILITIES AND AUTHORITIES IN ADVANCED SYSTEMS PLANNING - Per your request, Chris Andressen met with Digesu regarding the Sept 5 memo on this subject. No definite conclusions were reached. When Mr. Maus returns Oct 1, we will discuss this again and consider a rewrite of the memo to incorporate some of the M-ASTR points. O.K. B

3. GUIDELINES FOR FY 64 BUDGET ESTIMATES - We received supplementary guidelines Friday for preparation of Detailed FY 64 Institutional Budget Estimates. Manpower forecasts for MSFC are:

FY 63	6700
64	8800
65	9400
66	9600
67, 68, 69	9700 ✓

4. LARGE ROCKET ALTITUDE TEST REQUIREMENTS - On my 9-17-62 NOTES (copy attached), you inquired who would pay for increasing capacity of Arnold Engineering Development Center. Design of liquid hydrogen fuel system for Test Cell J-4 (initial construction provides only LOX and RP-1 propellant systems) was approved in the FY 63 Military Construction Program (MCP). The detailed design is being accomplished by Aetron. AEDC submitted request for funds in the FY 64 MCP to increase size of the J-4 exhaust diffuser and propellant systems for 1-1/2 million pound thrust capability. According to AEDC, this was based primarily on MSFC tentative requirements. In justifying the facility to Congress, Dept of Defense must lean heavily on NASA requirement. This could have resonating effect on funding of NASA projects.

Endorsed  
by  
Whome  
in MSFC?  
B

M-SAT and the divisions feel MSFC should remove our support for this increased testing capability; a letter to this effect is being prepared for your signature. ✓

5. SUPPORTING RESEARCH AND TECHNOLOGY - On Sep 7, OMSF requested task descriptions for all FY 63 OMSF funded Supporting Research and Technology. MSFC has previously furnished Task Area Forms and preliminary task descriptions to Norman Rafel in support of the \$10.6 M SRT program. We have contacted Rafel and he agreed that MSFC should withhold action pending meeting between Rafel and Lilly. We feel that headquarters has sufficient information. ✓

1. RIFT: The first RIFT tank has been scheduled for delivery in 8-64 for engine testing in Engine Test Stand #2 at Nuclear Rocket Development Station, Nuclear Vehicle Project Office; Space Nuclear Propulsion Office-Cleveland; Lockheed; Aerojet and Aetron, after a thorough technical analysis, find that the tank is not suitable for use as a facility run tank. The major technical problems which affected this decision are:

a. Flight insulation unproven in radiation and cryogenic cycling environments. ✓

2. b. Engine Test Stand #2 neutron shield designed for 21 foot diameter tank (versus 33 foot RIFT stage).

c. Firm date for flight-type "close-coupled" engine-stage testing not established by Space Nuclear Propulsion Office-Aerojet. ✓

Nuclear Vehicle Project Office and Space Nuclear Propulsion Office-Cleveland will recommend to Harry Finger that the tank be deleted from the RIFT Program. ✓

2. RIFT-GEORGIA NUCLEAR LABORATORIES: It looks as if Atomic Energy Commission General Manager, General Luedecke, will recommend that the Atomic Energy Commission pick up Georgia Nuclear Laboratories under a lease arrangement for operation. ✓

3. RIFT-NUCLEAR ROCKET DEVELOPMENT STATION FACILITIES DESIGN: A Marshall Space Flight Center design team composed of members from Facilities Engineering Office and Test Division was formed to compile a complete package for design of the Nuclear Rocket Development Station Complex by an architect-engineer. The team members are displaying the cooperation necessary to produce an architect-engineer contract negotiation document by mid-October 1962. ✓

4. RIFT-MOFFETT HANGAR: (Ref. para 2 Notes 9-10-62 Mrazek, Attachment #1) Hangar #1 is located across the runway at Moffett. ✓

5. LUNAR-LANDING VEHICLE: The Dynamics Section completed a preliminary study of lunar landing dynamics in order to supply guide lines to early design of the lunar landing vehicle. A parameter study was made, including elasticity of the legs, to arrive at overturning criteria. ✓

6. FIBERGLAS CASE FOR SOLID MOTORS: The present bid extensions expire about 10-1-62. It is hoped that a reply will be received soon to your letter of 9-5-62 to Dr. Seamans requesting a decision on the project so that one of these bids may be accepted.

7. SA-8/SURVEYOR: A preliminary dynamic study has been performed on the SURVEYOR Spacecraft proposed for the SATURN SA-8 vehicle. These studies indicate no significant vibration problems associated with the SATURN-SURVEYOR, providing the SURVEYOR meets its design requirements. However, in order that a confidence indicative of the SATURN program be incorporated into the SURVEYOR it is deemed necessary that vibration and acoustic tests be performed on the Spacecraft. ✓

8. MOVIES: (Ref. para 1 Notes 9-17-62 Mrazek, Attachment #2) The recoverable camera movie in the referenced notes will be shown at the board meeting on 9-28-62. Time available will determine whether both SATURN quarterly reports will also be shown. ✓

Attachment #1: Notes 9-10-62 Mrazek

Attachment #2: Notes 9-17-62 Mrazek

*Ronnie* Please call Dr. Seamans' secretary about status of this reply  
B

NOTES 9-24-62 Rudolph

B 5/24

Negative

39/24

1. ADVANCED RESEARCH AND TECHNOLOGY: The table below indicates present commitments under the FY-1963 OART program. To date, 2.9 M has been authorized for the 1st Quarter requirements. The overall MSFC program for FY-1963 has not yet been made firm or approved by OART. The table does not cover the OART program areas of Chemical Propulsion and Nuclear Systems Technology, or the OART-sponsored work being handled by the Future Projects Office.

Division	1st Quarter OART Program		
	Authorized	Committed	Balance
Aero	600,000	221,730	378,270
Astr	750,000	488,270	261,730
Comp	33,000	32,918	82
ME	453,000	427,845	25,155
P&VE	469,000	190,025	278,975
Qual	60,000	4,248	55,752
RPD	535,000	135,771	399,229
Test	0	0	0
TOTAL	2,900,000	1,500,807	1,399,193

In the past, approval by Headquarters has been required in order for P6C to negotiate supporting research and technology contracts in excess of 100K, even after the tasks for these contracts had been approved by the Program Offices. Arrangements have been made so that this approval is no longer required. This blanket approval will save three or four weeks in the processing of Procurement Requests for the larger contracts in our Advanced Research and Technology Program. ✓

We have received information that Dr. Seamans has proposed to cut the overall OART budget for FY-1963 by about 28%. We have also heard that Dr. Bisplinghoff is trying to prevent this cut. Mr. Warren Keller, who now works for Mr. Milton Ames in OART, visited MSFC on September 17 and 18. At this time we discussed the funding reductions that would be necessary in Mr. Keller's subprogram, Space Vehicle Environmental Factors, if the cut proposed by Dr. Seamans goes through. The funding available to MSFC in this Subprogram would be reduced from 1.8 M to about 1.25 M. Mr. Keller is very hopeful that this reduction will not be necessary. He feels that the final reduction may be around 15% or so, not 28%, if Dr. Bisplinghoff can develop very persuasive arguments. ✓

During a visit to Goddard last week, Mr. Thompson learned that GSFC management apparently shares our feeling that some OART Program Managers go too far into technical details of the centers' programs. Dr. Goett will probably bring this subject up at one of the Management Council Meetings. ✓

2. SPUR-SNAP 50: The AirResearch Manufacturing Division of the Garrett Corporation gave Research Projects Division a briefing on the SPUR program. The objective of this program is to produce a space power system in the range of .35 to 1 MW electric power. The system will have a primary loop with lithium, and a secondary loop with potassium. The conversion system will be of the turbogenerator type. Development time is estimated at about eight years. ✓

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B9/24

\* 1. RL-10 PROGRAM: Approval of Modification #34 to Contract NAS8-2690 (R&D follow-on program for one year, approximately \$19.5 million) which was forwarded to NASA Headquarters on 8-27-62 has not been received. Information received from Pratt and Whitney stated that as of 9-15-62 action was being taken to reduce their exposure by stopping the placement of orders for the development program, reassignment of personnel, curtailment of tests on two test stands (E-5 and E-6), and the reduction of development effort in all possible areas. Pratt and Whitney stated that they could not predict the delay in the development and delivery program as a result of the above. On 9-17-62 the Contracting Officer of Marshall Space Flight Center authorized Pratt and Whitney to recognize anticipatory costs up to \$1.8 million for the procurement of long lead hardware items and commitments, pending approval of Modification #34 from NASA Headquarters. ✓

2. F-1 PROGRAM: Testing this week has been concentrated in the injector area. Engine 009 is in the test stand and should be ready for the initial calibration run on 9-21-62. Engine 003 was fired 9-15-62 for seven seconds at 1390K. The engine performed satisfactorily but a facility problem developed and something in the LOX tank vent valve failed and foreign material entered the tank. A couple of days will be necessary to return the stand to active duty. ✓

Stability investigations with varying injector configurations continued. A divergent ring injector with propellant impingement distances very close to the injector face was unable to dampen out the combustion instability initiated by a 50 grain bomb charge.

Reference paragraph 2 Notes 9-10-62 Weidner, attached. Your comment with regard to present instability rating will be discussed in the forthcoming (9-26-62) briefing for you. Sam Hoffman will participate. I have asked for a realistic appraisal of the F-1 and J-2 development status and the future outlook. We also have invited Del Tischler. ✓

3. J-2 PROGRAM: Late last week we had our first engine test in a long time. Approximately 50 seconds duration. The exhaust nozzle was tied down firmly to the stand in order to counteract the tremendous spike of sideloading during start-up. ✓

Attachment: Notes 9-10-62 Weidner

Mr. Deussen  
H

NOTES - 9-25-62 - PRESTON (DEBUS) (TO HOLMES)

1. SA-3 Schedule. Because of inclement weather conditions, the erection preparation and erection operations were delayed. The Saturn booster was erected late Friday and as of Monday the schedule is one-half day behind. The present planning date for launch of SA-3 is around the middle of November.

2. Range Support Requirements for SA-3. All known Range support requirements for launch of SA-3 and Block II vehicles have been submitted to the AMR. Further, all Saturn Operational Requirements Documents for SA-3 have been revised and submitted to the Range.

3. Crawler-Transporter for LC 39. September 13, 1962, Mr. Buchanan visited NASA Headquarters to finalize the Crawler-Transporter procurement package for Dr. Seamans' signature.

4. Siting of LC 39. Formal siting plan for Launch Complex 39 has been concurred in by LOC and AFMTC.

5. Barge Waterway System, LC 39. Criteria for LC 39, Barge Waterway System MILA were transmitted to the Corps of Engineers, Jacksonville District Office.

Barge Utilization. Provision of additional office space by modification of a Navy APL quarter boat is being studied. Barge would be moored next to Saturn Unloading Facility. A barge would provide space for approximately 250 employees.

6. Program Coordination & Management Office. The 63 Operating Plan and 64 Budget were submitted to Headquarters. Additional guidance has been received as to cuts in personnel, institutional support, and some parts of R&D. Holcomb was here Monday, 24 September and representatives from Lilly's shop will be here on the 25th and 26th to review the 64 Budget submission.

7. Ranger RA-5. Difficulties have arisen with the Range concerning trajectory data submitted in support of the RA-5 launch. The Range attitude is that insufficient data has been submitted. RA-5 trajectory generating effort has been completed by Lockheed. Additional RA-5 data will require delay in RA-6 trajectory generation. Coordination with Range, MSFC and Lockheed indicates solution can be reached that will not require undue delay in the Ranger program and no launch schedules will be slipped.

8. S-27 Launch - PMR. No range safety problems anticipated. Approval to launch S-27 without second stage independent destruct system has been granted.

9. Atlas Agena-B. Ranger V is on schedule.

10. Centaur:

- a. First C-1/Agena (A-1) would be SA-8.
- b. Capability for a Surveyor mission would be 4600 lbs (2500 presently required - Centaur capability with all improvements now estimated as 2200 lbs).
- c. There would be an overall savings of funds of over \$100,000,000 if the C-1/Agena is used rather than 9 additional Centaur R&D vehicles plus 8 operational vehicles.

11. The Proposed Apollo Reliability Assessment Implementation Plan. Phase II of the GE contract was sent to us for review by Sloan. Meyers (Sloan's reliability man) will visit LOC either next week or the week after to discuss this.

12. Property and Supply Management Conference. A tentative schedule for the Property and Supply Management Conference to be held October 2, 3 and 4, 1962 has been received from NASA Headquarters - Mr. L. S. Hanson. A firm schedule and list of conferees will be forwarded from NASA Headquarters this coming week. Mr. W. N. McClintock has been designated as conference coordinator and all arrangements are being made to make the conference a success.

Mr. Preston has been requested to address the conference on the opening day, at 9:00, and has accepted.

Mr. Siepert, NASA Headquarters, is tentatively scheduled to speak at 9:00 a. m. Wednesday, October 3, 1962.

13. Emergency Detection System. A meeting of the EDS committee convened on September 18, for the purpose of assembling information to be presented to an equivalent MSC committee on September 20, 1962. LOC presented a summary of abort problems during the first 10 seconds of launch which concluded that:

- a. Collision with umbilical tower is possible under specific failure conditions at liftoff due to drift.
- b. The contemplated design of the EDS will not sense this condition.

c. Further investigation for solution of this problem is necessary.

d. LVO and LOC will investigate the feasibility of ground instrumentation to adequately sense a pending collision.

14. Advanced Studies Review Team. LOC participated (von Tiesenhausen) at NASA Headquarters, as a member of the Advanced Studies Review Team.

a. Members learned about the study subjects of the other Field Centers and Offices of NASA Headquarters.

b. Certain duplication of efforts was acknowledged, but deemed desirable.

c. Gaps in study efforts were discovered.

15. Meeting with Reynolds, Smith and Hills. September 11, 1962, a meeting was held at this office with four representatives of Reynolds, Smith and Hills to discuss all phases of design and schedule for the LC-39 Launcher-Umbilical Tower. This information was given to assist the prospective contractor in preparing a proposal due September 24, 1962.

16. Visit of Skifter. Full day's briefing and tour accomplished on 25 September.

17. Union Problems. Five-day restraining order issued in Tampa 25 September. Hearing set for 3 October. Will keep you posted on status by TWX.

18. Return of Dr. Debus. Present plans for return remain as October 3rd and then direct to Langley for the Management Conference.

