

January 7, 1963

NOTES 1-7-63 GORMAN

B<sub>1</sub>/14

Negative

NOTES 1/7/63 CONSTAN

B 1/14

Negative Report

NOTES 1/7/63 DEBUS

B<sub>1/14</sub>

No NOTES received from Dr. Debus this date.

Dr. Debus:

Negative reply  
required - Jan 1-7

NOTES 1/7/63 FORTUNE

B111A

No NOTES received from Captain Fortune this date.

Bill Fortune:

Please comply with  
procedure. Negative reply  
required if nothing to  
report. JCM-7

1. Meeting of "Guidance and Space Flight Theory" Representatives:

The 11th Technical Meeting between NASA-Marshall Center personnel and contractor representatives concerning the contract, "Guidance and Space Flight Theory" was held December 19 and 20, 1962. A high point of the meeting was a presentation by Dr. W. T. Reid of the State University of Iowa. Dr. Reid has contributed significantly to the Calculus of Variation Theory, and discussed his present research. The purpose of these contract studies is to develop theory and techniques needed for the economical implementation of the adaptive guidance mode to be used in future Saturn C-1 and C-5 missions. ✓

\*  
9/24 2. Block II Flutter Tests: Wind tunnel tests of the Saturn C-1, Block II aeroelastic model were completed December 10 in the Langley 16 ft. dynamics tunnel. Other static and dynamic tests which were scheduled at Ames have also been completed although final data is not yet available. Present indications are that a severe flutter problem does not exist i. e. the structural damping is sufficient for bending stabilization.

It is hoped that data will be available from all the aeroelastic tests (Langley and Ames) of this program during January 1963. If it is possible to correlate these data, then a reasonable prediction of the full scale aeroelastic characteristics can be made. ✓

3. OPERATIONAL Flight Control: ARINC has started investigating the validity of RCA's major conclusions in the OFC study contract. Total ARINC effort is estimated at \$35,000 and will be funded under their subcontract with GE. This task has been approved by Mr. Sloan. Preliminary ARINC results are expected on or after January 25. ✓

B 1/14

NOTES 1-7-63 GRAU

1. S-IV STAGE: All-Systems Vehicle testing is scheduled to start on January 7, 1963. Quality Assurance Division personnel at DAC to witness this testing. ✓

2. STATUS OF SA-5 INSTRUMENT UNIT: SA-5 Instrument Unit is presently located in Bldg. 4705 Test Cell. Several pressure tests have been attempted so far with no satisfactory results. Problems still exist with leakage at riveted connections and doors. Propulsion and Vehicle Engineering Division are working with Manufacturing Engineering Division on a solution to the problem. May require redesign action.

*Willy  
Mrazek*  
*Request  
comment  
B*

\*3. SA-4 CHECKOUT: Post-static electrical checkout of SA-4 was completed, except for the S-IVD Stage and for some flight hardware not yet available. These items included the Q-Ball, ST-124 gyros, control computer, three pressure gauges, and the guidance signal processors. The control accelerometers were checked out for installation on the vehicle. The S-IVD Stage measurements will be checked out in the modification area at a later date. ✓

*(Is this  
critical  
schedule-  
site?)*

\*4. SA-5 CHECKOUT: Pre-static electrical checkout of the SA-5, S-I Stage, was continued. Networks tests were partially completed. Control system tests were completed, as much as could be done with the non-flight actuators on the rocket engines. Instrumentation checkout was approximately 50% complete. Of the 691 measurements, about 317 had been completed; 175 measurements are not required for static test and in most cases will not be checked during pre-static checkout. ✓

NOTES 1-7-63 GORMAN

B1/14

Negative

\* 1. RCA-110 COMPUTER: Second RCA-110 received and installed in Quality Division on December 15. Operation began on December 18 and has been satisfactory to date. ✓

2. GSP-24 (SN-2) built at MSFC is undergoing test. Satisfactory operation to date. ✓

3. CONTRACT FOR ADVANCED TECHNOLOGY: There will be a discontinuity between present contract for advanced technology and beginning of advanced computer design and development. (IBM) *More information please on 1/13/63 NOTES JCM* ✓

4. CONTROL ACCELEROMETERS RECEIVED FOR SA-4: Acceptance test to be completed with quality personnel present January 4 and delivery to Quality expected for January 7. ✓

5. SA-4 CONTROL COMPUTER FILTER information received from Flight Dynamics December 26. Filter and new cams are being built. Control System Test to begin in Control System Section on January 7. ✓

6. VELOCITY REQUIREMENT FOR S1-C-F-1: Astrionics considers the velocity requirement for S1-C-F-1 engine actuators to be 5 degrees per second. Aeroballistics considers official requirement to be 10 degrees per second. I will discuss this further with Dr. Geissler. ✓

W.H.  
Settled?  
B

B1/14

- \* 1. S-IV GSE FOR SA-5: Much difficulty has been encountered with the Douglas swing arm couplings for SA-5. The couplings have been redesigned by Douglas as a result of our earlier tests, but couplings of the latest design still failed to disconnect satisfactorily last week in test conducted at the swing arm test facility under simulated launch conditions. It appears that further redesign may be necessary and if past performance is an indication, qualified hardware may not be available to meet the scheduled SA-5 launch date. The recent failures of the DAC couplings were witnessed by Messrs. Smith and Gordon, Chief DAC Saturn Project engineers. The Saturn Systems Office and LOC are both aware of the problem. → K.H. Suggestious? B
2. SA-D5: Test operations have started on this vehicle and the initial filling with water was accomplished over the week-end. ✓
3. STATIC TEST TOWER EAST: Modification of the existing C-1 test stand to Block II configuration continues. Initial structural load tests of the holddown hardware was started Friday, 1/4/63. ✓
4. S-IV BATTLESHIP TESTING, SACTO-DAC: Testing operations are scheduled on this stage with helium bubbling tests and turbine spin-up on A-3 engines to be run this week and first firing due this coming week-end. ✓
5. RL10-A3 ENGINE TESTING, MSFC: Next firing scheduled Thursday or Friday this week. ✓
6. H-1 ENGINE TESTING, MSFC: Testing scheduled to be resumed next week with some S-1-5 oriented objectives. ✓
7. AIR TRANSPORTATION FOR LARGE NASA CARGOES: Mr. Holmes signed a letter to Aerospace Lines. This letter is intended to provide assurances to that company of NASA interest. The company still needs to raise additional capital to permit completion and certification of their aircraft. It is not known if the OMSF letter will be sufficient support in this regard, at present, but we should find out by end of this week.
8. MTF: Appendix "F" to Contract NAS8-3444 with S&P was negotiated 1/3/63. Appendix provides for completion of criteria for S-II and S-IC test complexes, additional conceptual/feasibility studies, revised site plans, and support facilities criteria. Funds for Nova-MTF studies appear to have been cancelled. The Future Projects Office is investigating this matter at NASA Headquarters. The Mobile District Corps of Engineers has necessary funds to proceed with final design. A design contract for a support facility has been awarded. Balance of support facilities should be under design by 2/28/63. Members of MSFC-MTF Planning Board and Working Group met with the Mobile District to discuss overall design problems relating to MTF, with particular emphasis on test complexes. The Mobile District Corps of Engineers indicates that the A&E contract for S-IC and S-II should be let within 2 weeks; at the latest, by 1/25/63. ✓

B 1/14

\* 1.  
jam

CONTRACTOR FOR SLIDELL: The operating contractor for Slidell has been selected. A contract is being negotiated with Telecomputing Services, Inc. of Panorama City, California. This contract will call for some 45 people and staffing at Slidell is to commence immediately. It is expected that some two months will be necessary for the transition period and the moving back to Huntsville of Computation Division personnel who have so far operated the facility.

B 1118

1. SUMMARY REPORT, JANUARY 1963 ACTIVITIES

We have scheduled the following briefings, presentations and working sessions this month:

January 9 - 8:30 to 11:30 a.m. - Director's Conference Room: "Advanced Lunar Transportation Systems," final presentation by Lockheed Aircraft Corporation.

January 10 - as above, by General Dynamics/Astronautics.

January 22 - 1:00 to 3:00 p.m. - ~~Probably Director's~~ Director's Conference Room: "The State of the Art and Trends of Electrical Propulsion Systems for Future Manned Space Flight," presentation by Ben Pinkel, RAND Corporation.

January 22 - 9:00 to 12:00 a.m. - Director's Conference Room: "Possible Conversions of the C-5 Launch Vehicle to Reusable Configurations," final presentation by Boeing Company.

January 23 - 9:00 to 12:00 - Director's Conference Room: as above, January 22 by NAA/SID.

January 24 - 9:00 to 12:00 - Director's Conference Room: "10-Passenger Reusable Rocket-Airplane for Logistics Support of Space Stations," final presentation by NAA/SID.

January 25 - as above - by Lockheed Aircraft Corporation.

January 21 through 25 - Working sessions on NOVA with Martin and GD/A at the contractors' plants.

January 29 - 9:00 to 4:30 - P&VE Conference Room: "Advanced NOVA Design Review" with four presentations:

- "System Comparison" by RAND.
- "Sea-Launch Concepts" by STL/Aerojet
- "The NEXUS Reusable Concept" by GD/A
- "The ROMBUS Reusable Concept" by Douglas

If you desire to participate in any of these meetings, or want me to arrange summaries at a time convenient for you, please let me know.

2. NOVA

We received a call from Rosen's office informing us that Seamans had stopped the NOVA contract extension with GD/A and Martin. History: Seamans signed the Program Approval Document; Rosen approved the \$1.2M required for the extension at the second Quarterly Review; MSFC received the money and it was committed to P&C in November; the contracts were negotiated and signed by the contractors in early December; P&C sent a request for "Determination and Findings" (purely administrative) to Headquarters in early December and it was turned down by Seamans. We may need your help, in the form of a letter (which we will draft) or a telephone call. Will keep you advised.

summary  
Kselle  
MC  
d/ho

\*1. DAC S-IV Parts Shortage: Investigations on parts shortages for the All Systems Vehicle and SA-5 by ME personnel indicate that DAC has an efficient organization and system of follow-up and expediting. The underlying cause for this difficulty is over-optimistic scheduling. Present bottlenecks are found in receiving inspection and qualification testing which is, of course, typical for the early development status in such a program. A management meeting with DAC on this subject has been arranged for this week by Saturn Systems Office. ✓

2. S-IC Tooling Status for Bulkhead Fabrication at MSFC:

- a. Trim fixture for gore segments is operational. ✓
- b. Welding fixture for gore segments (apex to knuckle segment) is complete and in try-out (debugging). ✓
- c. Fixture for trimming complete gores has been received and is being erected. ✓
- d. Fixture for trimming and welding outlet fittings to gore segments is ready for try-out, waiting for delivery of outlet fittings. ✓
- e. Bulkhead welding fixture (for meridian welds) is approximately 80% complete. ✓

Note: Major problem for bulkhead fabrication is fabrication of gore segments by Boeing, Wichita. Anticipated delivery is approximately 3 to 4 weeks behind schedule. ✓

\*3. C-1 Project: (a) The structural modification of the S-IV dummy stage for SA-4 has been completed on schedule. (b) The 154" Instrument Unit for SA-5 has been structurally completed and is being pressure tested. Though this unit is presently more than two weeks behind schedule we will meet delivery date to Quality Assurance Division for final check out. ✓

Notes 1-7-63, Lange

B 1/14

\* 1. C-1: S-IV - Approval has been given to DAC for a revised test schedule at Sacramento which will allow battleship testing on Test Stand 1 to continue through March. All-systems vehicle less engines will be installed on Test Stand 2B for propellant loading tests and then removed for S-IV-5 acceptance firing which will occur the last week in April. All-systems vehicle will then be reinstalled on Test Stand 2B with the first firing scheduled for 6-25-63. S-IV-5 will have on-stand post-fire checkout and will arrive at AMR 6-7-63. S-IV-6 will be acceptance fired on Test Stand 1. ✓

\* 2. C-5: S-IC - P&C has negotiated Contract NAS8-5608 with the Boeing Company on the basis of approximately 35 million manhours. The SATURN Systems Office is still reviewing this manhour requirement as to its reasonableness as required by the NASA Management Manual. Also, the final comparison with the initial S-1B proposal is still underway. The impact for modification to Plan V is scheduled to accompany the basic NAS8-5608 Contract. ✓

S-II - The Third Quarterly Review is scheduled for 1-15-63 at MSFC. ✓

S-IVB - DAC advised that the Scope Change Proposal for S-IVB/C-1B will be submitted by 3-1-63. The preliminary date of 1-21-63 which had been furnished did not properly take into account the extent of effort necessary to determine the program costs. This extension will not delay work on the S-IVB/C-1B program. DAC is covered contractually for S-IVB/C-1B effort through approximately 3-12-63. ✓

(Better)  
for ->

B1/14

ORGANIZATION

The following documents were completed, approved, and issued during your absence.

a. Charter for Special Assignments Office.

This write up was based on your decision in the last Executive Board Meeting on December 21, 1962.

H.M.  
I'd like  
to see  
it B

b. Michoud Operations Organization.

This organization could be finalized once the decision was made to include Slidell in the Michoud Operations and to establish Mississippi Test Operations as a separate element. ✓

c. Organization Approval Request.

A letter has been transmitted to Mr. Holmes, Deputy Associate Administrator to Mr. Seaman's, requesting official approval of:

1. Reorganization of the Light and Medium Vehicles Office.
2. Establishment of Mississippi Test Operations.
3. Organization of Michoud Operations. ✓

1. RIFT: The projected FY-64 funding level for RIFT was the reason for a Lockheed Nuclear Space Programs Division reorganization. We understand that cognizance over the manufacturing group will be returned to the central manufacturing group, and the directorates for Product Assurance and Test Operations will be combined. Official notification of this rearrangement has not been received from Lockheed.

L.M.

This report is a bit thin  
considering P&V's tremendous  
tasks !! B

(Hope next time it'll be  
more, and that this is  
just New Year's we laughed)

NOTES 1-7-63 Rudolph

B 1/14

Negative

NOTES 1-7-63 Stuhlinger

B 1/19

11  
A bit  
fancy  
chr.  
B

1. MICROMETEOROID SATELLITE: The Micrometeoroid Measurement Experiment was approved by Dr. Seamans Friday, December 21, 1962. A request for proposals was released by P&C on that date. The responses to the request are due to be returned by January 17. The presentation to Mr. Webb by the Contractor Selection Board is now scheduled for 3 or 4 February, with a target date for contract execution of 28 February. As of today, things seem in good shape. I will keep you informed as the project progresses.

\* 2. RESEARCH INSTITUTE: The latest University of Alabama Research Institute proposal is under study in Headquarters. Only two difficulties exist, according to Dr. Smull: (1) Will the University of Alabama go ahead with the full degree program with \$300,000 instead of \$600,000? Dr. Hermann says yes. (2) Can we increase the graduate study contract to the amount needed by the University for its Huntsville operation? Dr. Shelton has written an affirmative letter to Dr. Newell on this second point, but our position cannot be stated too firmly because we do not have complete control of contract administration.

3. LUNAR REPORT: A technical report, MTP-RP-62-10, entitled "A Possible Program for Unmanned Lunar Technological and Scientific Missions Using Saturn Launch Vehicles", has just been distributed. It was written by Mr. George Bucher and Dr. Alfred Weber of RPD; it describes the capabilities of various Saturn vehicles to soft-land unmanned payloads on the moon and describes possible payload experiments and instrumentation. I believe that this is a small representative example of the lunar payload capabilities which exist in RPD.

ES Please let me have this report  
B

B 1/14

1. RL10 PROGRAM: This past week we discussed with Pratt and Whitney Aircraft aspects of the RL10 Program which pertain to integration of the throttling effort. These discussions were primarily in connection with the forthcoming receipt of a firm proposal and contract definitization. Preliminary discussions concerning the availability of the zero-LOX cooldown capability on the RL10A-3 engine were also held. ✓

\* 2. F-1 PROGRAM: On 12-31-62, the letter contract (Modification No. 17) to the NASw-16 F-1 engine R&D contract was extended until 1-20-63. This extension was necessary because NASA Headquarters has not signed the "Follow-on" R&D modification (No. 26). This modification was handcarried to Procurement and Supply, Office of Administration, on 11-23-62 by Mr. Paul Anderson of Procurement and Contracts Office, Marshall Space Flight Center. ✓

Three tests were conducted for a total of 12 seconds of a scheduled 210 seconds. The tests were terminated prematurely for the following reasons:

- a. Mainstage was not achieved due to failure of the fuel valves to open.
- b. Faulty thermocouple gave erroneous high reading on LOX inlet temperature.
- c. Failure of engine to reach predetermined thrust level.

Problem areas are (1) deformed thrust chamber tubes on engines 010 and 009, and (2) tube splits on engine 009.

Five injectors were tested on Test Stand 2A. Three flat face and two baffle types were included. ✓

Reference NOTES 12-17-62 WEIDNER, paragraph 1, copy attached. As was reported in the referenced notes, F-1 engine number 006 was severely damaged due to combustion instability. This was the third engine in the F-1 Development program to fail due to combustion instability. In addition to the information previously reported Rocketdyne added the following in a telephone conversation on 12-21-62:

- a. Analysis of the films revealed two black streaks in the exhaust jet about 20-milliseconds prior to instability.
- b. Several injector fuel rings were severely burned from behind, indicating that LOX may have entered the fuel passages behind the injector face.
- c. This failure appears very similar to that of engine number 007 which failed on 7-16-62.

Copies of the records from this run are presently being analyzed by the Propulsion and Mechanics Branch. A report will be issued after completion of this analysis.

The Marshall Space Flight Center Combustion Stability Ad Hoc Committee will hold a meeting with Rocketdyne on 1-9-63. This failure will be discussed in detail at this meeting.

Attachment #1: NOTES 12-17-62 WEIDNER

H.W.  
A  
was  
key  
to  
the  
comb-  
bustion  
instability  
problem?  
B

3/12/19

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

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

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

\*2. J-2 PROGRAM: The J-2 engine C of F funds for FY-63 have not been received at Marshall Space Flight Center yet. It was necessary that Rocketdyne be granted anticipatory costs of \$2,005 million by 12-15-62 to prevent engine delivery schedule slippage. Office of Manned Space Flight and the Marshall Space Flight Center Facilities Engineering Office are aware of this situation and are attempting to expedite matters.

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

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

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

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

Requires detail B

inside ERD  
line 2  
B

January 14, 1963

B 1/16

\* 1. POTENTIAL STRIKE

glen

In anticipation of a strike by the IAM Union against The Boeing Company on January 15, 1963, we have taken every precaution to limit the effects of such a strike to the Boeing area and employees. ✓

\* 2. COMPUTER CONTRACTOR

glen

The Telecomputing Services, Inc. Panorama City, California, was awarded a \$487,683 contract on January 8, 1963 for operating the Computer Facility of Michoud Operations in Slidell, La. The contract is for one year with an option to renew for two additional years. ✓

3. VOUCHER PAYMENT

Effective January 14, 1963 Michoud Operations has been authorized by the Financial Management Office to certify directly to the Regional Disbursing Office, Birmingham, Alabama for payment of all vouchers of the Boeing Company, Chrysler Corporation and Mason-Rust Company. This procedure will ensure rapid payment for these companies and decrease the amount of operating capital required. ✓

4. S-1 PRODUCTION PROGRESS

Status of operations completed and in process for Stage S1-8

Upper Thrust Ring	Completed
Lower Thrust Ring	Completed
Barrel Assembly	All 17 assemblies are completed. 11 have been accepted, 6 remain to be accepted.
Fin Support Out-Rigger	Completed
Thrust Support Out-Rigger	Completed
Tail Section	5 Assemblies are completed, parts for the balance of 22 are in process.
Second Stage Adapter Section	2 sub-assemblies are completed, parts for the balance of 30 are in process.

Detail parts of Operation 400 LOX tanks and Operation 500 fuel tanks are also in process. ✓

Status of operations completed or in process for Stage S1-10

Upper Thrust Ring	Work has started and is approximately 20% complete.
Lower Thrust Ring	3 assemblies are completed, the remaining 4 are in process, work is approximately 25% complete.
Barrel Assembly	5 assemblies are completed, work on the remaining 12 started January 7, 1963. ✓

B 1/15

1. Acoustics Support by Propulsion and Vehicle Engineering Division, MSFC. The Structure Evaluation and Dynamics Section of M-P&VE presented their current and future work plan in the area of acoustics. Planned work load includes support for LOC in the siting requirements. To gain qualified and experienced personnel in the area of acoustics, P&VE has negotiated an engineering service, test and consultant contract with Wyle Labs of Huntsville. One of the outstanding projects to be undertaken by P&VE that would benefit LOC is the development and preparation of an Acoustical Handbook for Designers. P&VE stated that support for LOC in this area could not be maintained at the desired level with existing and proposed funding. Will look into this. ✓

2. Lightning Investigation for Saturn: A review of a preliminary version of the Phase I Report (Design Criteria) of the General Electric Lightning Investigation for Saturn Complexes (on December 20) showed that General Electric is substantially meeting the requirements of the work statement. General Electric is scheduled to submit a final Phase I report shortly. ✓

3. Complex 37/GSE (Electrical): Propellant and ECS control requirements have been installed. Checkout of these systems is underway in the LH<sub>2</sub> facility. Voltage current and sequence recorders have been installed in the Blockhouse. Ground generators 3 and 4 are checked out and in use supplying the needs of other checkout operations. Monometer sensing equipment for the propellant loading system has arrived and installation begun. All electrical network preparations are on schedule to meet Wet Test dates. ✓

B 1/15

1. MTO - LEGAL PROBLEM WITH HANCOCK COUNTY SUPERVISOR

*Jan* Hancock County Supervisor, Harlon Dean, has been ripping up culverts on turn-offs from county roads, reportedly to use them elsewhere. This has now begun to interfere with Acoustic Survey. Mr. Guilian and myself are going to Bay St. Louis Monday and Tuesday of this week to meet with Corps of Engineers and Hancock County attorney in hopes of reaching settlement. ✓

2. VIST OF MESSRS. ROSEN AND SMITH TO MSFC - Milt Rosen

called last week and said he had taken on an assistant to devote full time to MTO. He was bringing this man, Jim Smith, (formerly with General Dynamics Atlas Test Facilities) to MSFC Tuesday to meet all of us; be briefed on MTO C of F status, problems, etc; then to Mississippi to see project close-hand. Presentation has been arranged for by MTO Working Group, and I will meet Smith in Mississippi when he can come down. ✓

. 20

B 4/15

escape?

\* 1. Saturn C-1/Agena: A preliminary performance study was made to determine the maximum payload that the Saturn C-1 could deliver to various circular parking orbits. Results are:

Parking Orbit	Payload with Agena	Pure Payload
100 n. m.	20,444#	4977#
125 n. m.	19,729#	4262#
150 n. m.	18,969#	3502#

energy level = 0.2

2. Wind Profile Turbulence Measurements: In continuation of our efforts to understand turbulent features of wind profiles, we conducted a special measuring program during the holidays at Cape Canaveral. This involved obtaining 18 detailed wind profile measurements on two separate days during a time period of approximately 12 hours. This data is currently being analyzed and represents the first sample of this type ever taken at Cape Canaveral or anywhere else in U. S., to our knowledge. ✓

3. Study of "Orbital Trash Returning to Earth": A proposal has been received from Lockheed Aircraft Company (Local Operation - Mr. Farrior) to study the problem of "Orbital Trash Returning to Earth." This proposal was submitted by Mr. Farrior after discussing our problem in some detail. The proposal seems to be quite reasonable in scope of work and money for the first six months of work. Mr. Reinartz of Saturn Systems Office feels that we can get the money for the go ahead on the proposed work. ✓

Note: plan would encourage.

Then let's go! B

4. Operational Flight Control: RCA repeated the OFC presentation to Dr. Shea in Washington on Jan. 4. Dr. Shea appeared very interested and promised a thorough study of the RCA report. He requested the forthcoming ARINC study results. Since the latter are expected by end of January, we recommend scheduling the internal MSFC discussion for that time. ✓

o.k. B (lay on)

\* 5. Retro Rocket Roll Moment: Investigations into the roll problem associated with retro rocket firing during the SA-3 flight have revealed that the problem is structural response to the rocket thrust load rather than an alignment problem. Further investigations into C-1 Block II configuration are under way. DAC has been notified of the problem and has been requested to conduct a study on possible effects from ullage rocket firing for the S-IV stage. (Note that only 15° roll angle is required to abort the S-IV flight.) ✓

6. Flight Evaluation Working Group: The Integrated SA-3 Flight Evaluation Report has been completed and was signed on January 10. Dr. Speer is scheduled to give an oral presentation to the Board of Directors on Jan. 18.

A meeting was held with Chrysler Corporation to discuss the basic approach on the C-1 Flight Evaluation for vehicles 111 and subsequent. CCSD's proposal to set up a duplicate Evaluation Working Group under their direction was not accepted. CCSD will submit a revised formal plan for our comments. ✓

CONFIDENTIAL

NOTES 1-14-63 GORMAN

B 1/15

Negative

NOTES 1-14-63 GRAU

2/1/63

1. SA-4: The S-I stage, SA-4 vehicle, was received for final "cleanups" on pressure-testing prior to shipment to the Cape. As reported last period, 8 of the 14 systems required partial retests and should have been accomplished in just a few days. However, extensive rework in the Lox tanks, such as welding of the destruct tube and installation of new bracketry caused delay. ✓

\* 2. SA-5: Properly modified actuators and servo valves for SA-5 are still not available with the booster scheduled to be released to Test Division on January 21. The policy of this Division remains as before, and is supported by the Test Division, that is, to deliver the booster with the proper hydraulic components installed. ✓  
Prestatic electrical checkout is continuing. G&C checkout, networks tests, and RF tests are completed. Instrumentation tests are continuing, with 421 measurements completely tested and 50 more to be completed during prestatic checkout here. ✓

3. SA-5 INSTRUMENT UNIT: Pressure leakage at rivets and doors have been repaired, and this unit was finally pressure tested and accepted for further assembly. The schedule of this assembly has been affected by these repairs and retests, and will probably be reflected in the final stages of testing of the SA-5 vehicle. ✓✓

4. RIFT: Lockheed Missiles and Space Company (LMSC) has started fabrication of the 9-foot tank. The purpose of the tank is to verify insulation materials and to verify procedures for design, manufacturing, and inspection. Testing of this container will be performed at the cold-flow facility. Fabrication of the Rift stage is not contemplated until FY 65 money is available. Lockheed's primary objective during FY 64 will be design and research; however, money is available to take over Moffett Hangar for assembly of the Rift stage and for cold-flow facilities. ✓

5. S-IV STAGE: All Systems Vehicle progress has been unsatisfactory because of shortage of parts. Efforts are underway to insure requirements to complete the assembly and checkout in proper order before shipment. Similar effort is required for the first S-IV flight vehicle (S-IV-5). ✓

\*6. AIR FORCE WESTERN CONTRACTS MANAGEMENT REGION (WCMR): We have been informed by the Air Force WCMR that recruitment should be completed by January 11, 1963, on the 94 quality control positions recently received by that Headquarters for NASA support. This will include commitments to cover MSFC contracts at Douglas Aircraft Company, Santa Monica, Calif.; Rocketdyne, Canoga Park, Calif.; and Los Angeles area coverage. ✓✓

\* 1. S-IV GSE: A meeting was held between LOC, Saturn Systems Office, Test and DAC to develop a plan of action to solve the difficulties concerning the DAC S-IV Swing Arm propellant couplings. It was decided to take three courses of action as follows: modify the present Arm #2 release housing by the addition of a torque tube to make both propellant couplings come off at the same time, LOC and DAC were to design new release housings with new couplings on an independent basis.

For the wet test on VLF-37"B", DAC couplings will be used that are leak tight but will not release under launch conditions.

Due to the time required for re-designs, new designs, and the qualification of these designs, qualified hardware may still not be available to meet the scheduled SA-5 launch date.

2. GSE-Block II Hold Down Arms: Testing was successfully completed and the arms are scheduled to be shipped to the Cape on 1/17/63. ✓

3. Static Test Tower East: Modification to Block II configuration and structural tests of hold down hardware completed. SA-5 scheduled to arrive week of 21 January 1963. ✓

4. S-IV Battleship Testing SACTO-DAC: Schedule delayed to complete helium bubbling tests. Spin-up due on Wednesday and first firing last of week. ✓

5. RL10-A3: Ninety seconds firing successfully completed 1/11/63. Next firing scheduled 1/18/63. Object to investigate various S-IV instrumentation configurations and transducer types. ✓

6. H-1 Engine Testing - MSFC: Firing series to start Wednesday, 1/16/63. ✓

\* 7. MTF: All brick and mortar criteria for the S-II complex has been received and transmitted to Mobile District Corps of Engineers and it is anticipated that the final design contract for this phase of work will be let on or before 1/25/63. No information yet available from Future Projects Office relative to status of funds for Nova-MTF studies.

Capt. Fortune's notes 12/14/62 (Attachment No. 1) concerning Corps of Engineers participation in East Pearl River/Interstate Highway 10 bridge discussions.

The Mobile District Corps of Engineers was first informed of the waterway crossing problem on 11/13/61 approximately three weeks prior to initial conference between NASA and Bureau of Public Roads on 12/5/61. On a frequent basis MDE was informally advised of the conferences and other developments.

As a result of this information, on 4/2/62, the Mobile District Engineer attempted to remove advance approval previously given to Bureau of Public Roads for a low level bridge crossing between Logtown, Mississippi, and Gainesville, Mississippi. This was protested by the Bureau of Roads and the advance approval was allowed to stand.

On 5/21/62 a conference was held in Washington, D. C., at the offices of BuRoads to attempt to arrive at a final decision for the solution to the problem. In addition to personnel from NASA and BuRoads, the following Corps of Engineers personnel were in attendance: Col. Joe Clema, Chief of Engineers Office, Mr. Joe Higgs, Mobile District Engineers, Mr. J. G. Wardlaw, Mobile District Engineers.

The MDE has been informally advised since that date of developments which, of course, have not been extensive. In addition, MDE has assisted this Center by furnishing river dredging, canal, and lock cost estimates for the various crossing schemes considered. ✓

Attachment No. 1: Notes 12/14/62, Fortune

NOTES-HAEUSSERMANN, 1/14/63

B 1/15

- \* *you* 1. C-1 AUTOMATION DEVELOPMENT FACILITY (BREADBOARD): The I. U. and S-1 GETS (Ground Equipment Test Set) checks were satisfactorily completed this week in the Automation Development Facility. The DDAS system has been installed and checked out. Plans are to start systems integration 1/14. ✓
2. AUTOMATIC CHECKOUT CONCEPT MEETING WITH NASA HEADQUARTERS REPRESENTATIVES: Ten people from OMSF, representing Dr. Shea, met with representatives of MSFC at M-ASTR on 1/7. This meeting was to familiarize the NASA Headquarters personnel of our Automatic Checkout Concepts for Saturn C-1 and C-5. ✓
- \* *you* 3. GUIDANCE SIGNAL PROCESSOR (GSP): The IBM GSP-24 design has recently been modified, resulting in the inclusion of more circuitry to correct the differences with the RCA-110 grounding and to provide telemetry amplifiers for the accelerometer encoder outputs. The GSP-24 schedule is extremely tight and the plans to fly an IBM-GSP-24 in SA-6 may have to be re-evaluated with possibility of flying MSFC version on SA-6. ✓
4. CONTRACT FOR ADVANCED TECHNOLOGY: Reference Item No. 3, Notes of 1/7/63. A new contract covering the continued efforts for design and development is being negotiated and will require approval by Headquarters. Due to past experience, it is expected that it will not be signed by 1/30. Therefore, a 60-day extension to the existing contract is also being negotiated for the purpose of permitting time to obtain Headquarters approval and assuring continuity in the contractor's efforts. ✓

1 Enc:  
Notes of 1/7/63

NOTES 1-14-63 HOELZER

B 11/5

No Report

NOTES 1-14-63 HUETER

B 1115

1. GEMINI TRANSFER: A transfer meeting took place on 1-11-63. Mr. Chamberlin approached me about 10 days ago on the possibility of hiring MSFC Gemini personnel. I told him I have no objections if he talks with the people in Sunnyvale; as to Huntsville people, I said no. ✓
2. AGENA TRANSFER: A meeting took place between Dr. Silverstein, Mr. Lundin, and Dr. Himmel (the LeRC, Agena Project Manager), from LeRC, and myself from MSFC, as to a mutually acceptable transfer of the Agena project. The following items were agreed upon:
  - a. Ten to 15 LeRC people will be here during the week of 1-14-63 for instruction and familiarization with the program. At the end of that week, Dr. Himmel and myself will agree upon how the familiarization should be continued. My suggestion to LeRC was that with the move of our Agena Office to Cleveland, the responsibility for the Agena Project should transfer simultaneously to LeRC. This seems to be agreeable with Dr. Silverstein and Mr. Lundin. LeRC requested that our Agena Offices at Sunnyvale, at PMR, and at SSD should be transferred as a whole to LeRC. I consider this acceptable to us with regard to a smooth transfer of the Agena project and to avoid personnel difficulties. ✓
  - b. Quite some confusion seems to exist in the launch area. As far as my information goes, Bob Gray, the Delta Project Manager of Goddard, is supposed to take over launch responsibility at AMR for Centaur and Agena besides his present job of Thor-Delta. No changes are indicated as to the PMR operations. ✓
3. ATLAS AGENA/MARINER R: The Atlas Agena/Mariner R project for 1964 Venus has been cancelled in view of the success of Mariner II. The necessary steps have already been taken. ✓
4. C-1/AGENA: The C-1/Agena contract negotiation took place last week with LMSC. The contract sum for Phase I will be around \$660,000. Considering our own efforts, the C-1/Agena study is quite an expenditure for the expected results. I received a TWX from OSS, Dr. Morrison, on 1-10-63, to delay the signing of the contract and consider whether we could not reduce the total amount by more in-house work utilizing the already available information. This Hq. step is apparently caused by the fact that they do not have enough money to initiate the C-1B three stage study at MSFC which they estimate also as \$1 million. I told Dr. Morrison by phone that a larger in-house effort by MSFC would be out of the question in view of our other commitments. ✓ Furthermore, to do such a study, which goes into funding and scheduling, without LMSC would not make much sense; however, I told him that I agree with them that the scope of Phase I might be set too high and we will try to cut it down by 30 to 40%. A meeting on the subject will take place in Washington on Wednesday, January 16. ✓
5. OSS THREE STAGER: OSS Hq. is still in the throes of getting the project approval document across Dr. Newell's and Dr. Seaman's desks. I told Dr. Morrison that we feel that the requirements of the S-1B/LLV, and the OSS three stager should be matched as much as possible. However, they are still thinking of growth potentials like a later change of the propulsion system from H2/O2 to H2/F1. ✓
6. LUNAR LOGISTICS SYSTEM: The past weeks were essentially used for familiarization of our people with the projects and preparing to take the program part of the effort over from FPO as fast as possible. Approximately 13 people were temporarily assigned to the Divisions at the beginning of last week. ✓

Work  
B

Jan

*B 1/15*

1. TRANSFER OF LLS

We have essentially completed the transfer of our functions (program development, schedule, funding, manpower, etc.) to Dr. Hueter's office. We will, however, continue mission analysis studies including lunar base build-up and logistic supply in support of the LLS. ✓

*gem*  
\* 2. NUCLEAR LUNAR LOGISTICS VEHICLE

All of our studies, as well as contractor studies, indicate that it will be highly desirable to make use of the RIFT stage, or any derivative of it, for an advanced nuclear lunar logistics vehicle as the key element for lunar base build-up in the years 1970 to 1975. Thereafter, nuclear ferry vehicles look very promising. — *if nuclear engines are re-usable by them!*

The nuclear logistics vehicle, based on the RIFT stage and APOLLO hardware, will be capable of transporting 45,000 lb to 55,000 lb to the Moon or, for mixed cargo, a crew of five and 20,000 lb of cargo. We will follow this development potential very closely as this appears to be a probable course of action. ✓

*(gra-  
phite  
vs metal  
reactors!)  
B*

3. AIR FORCE REUSABLE BOOSTER STUDIES

The Air Force has issued RFQ's for three follow-on studies for the Aerospace Plane at \$500,000 each. The three different approaches studied are as follows:

- a. Two stages - first stage with air cycle engine and second stage rocket.
- b. One or two stages with hypersonic refueling.
- c. Two stages - all propellants on board at take-off.

We, MSFC, supplement these studies with a 10-passenger rocket airplane to earth orbit. The first phase of these studies was just completed. The final presentations by Lockheed and NAA will be January 24 and 25, Director's Conference Room, at 9:00 a.m. ✓

We have asked for more study funds (FY 1963) but Dr. Seamans has not yet approved.

4. SPACE MAINTENANCE AND REPAIR IN-HOUSE TESTS

Because of shortage of manpower and funds, MSC voluntarily dropped completely our in-house space M&R testing. Consequently, we have agreed with the USAF (6570 Aerospace Medical Research Laboratories, Dayton, Ohio) to continue the program and substitute for MSC. First ground-based tests will be in early March. Zero-g flight tests will start in May or June. OART agrees with this. MSC is somewhat skeptical since they want a 6-degree-of-freedom simulator, but they have not really thought about the problem.

*Request detail  
briefing. B*

B 1/15

\* 1. S-II Common Bulkhead Problems: Fabrication processes for the common bulkhead, as proposed by S&ID, using explosive sizing or hot rock-die sizing for complete upper and lower bulkhead shells and hand fitting operations, have been thoroughly analysed by ME personnel and discussed in detail with S&ID manufacturing engineers. We feel that we are now near a solution to this problem. A new technique has been proposed by us, based on the original S&ID design, which eliminates the above mentioned operations and has received conceptual approval of key personnel of S&ID. Close fit-up in the glue line will be achieved by introduction of a creep or age-forming operation of the upper bulkhead shell, carried out on a heated aluminum mandrel. This shell will here be transformed from the T-4 to the T-6 condition and will at the same time be sized to the correct contour on the mandrel. No quenching will be required.

*Request detailed briefing*

W.K.

B

2. S-I Program: Clustering of SA-7 has been started 2 weeks ahead of schedule time. ✓

3. S-IC Program: The "C" Frame, first of two transporter and hoisting units for the S-IC program has been delivered on schedule and is presently being erected at the West end of Building 4707. This "C" Frame will be able to hoist and transport S-IC components and tooling between shops; capacity: up to 100,000 lbs weight and over 33 feet in size. ✓

B 1/15

- \* 1. C-1: C-1B - The initial submission of scheduling charts has been prepared. One set of viewgraphs, master charts, and 50 printed copies will be sent to OMSF by 1-15-63. The number of charts to be furnished are as follows:

	<u>C-1</u>	<u>C-1B</u>
Level 2 (Project)	10	6
Level 3 (Deposit Accounting)	29	26
Level 4 (Backup for Level 3)	98	56
	<u>137</u>	<u>88</u>

2. C-5: S-IC - Michoud - TWX was received by M-FMO from NASA Hqs on 12-31-62 indicating approval of the 9.6 M C of F for general plant modification. On 1-3-63, a work order was issued to furnish Michoud with \$435,000 for equipment foundations and A/E service. ✓

- \* S-II - On 1-10-63, \$15 Million was forwarded to NAA/S&ID to fund the S-II effort through February 1963. ✓

- \* S-IVB - The lease agreement with DAC for the Sacramento Test Site has been reached. It is understood that the lease fee would be \$75,000 per year for the first five years, \$100,000 per year for the next five year period, and the annual amount for the 10 years thereafter to be determined as a result of an appraisal of land values in the Sacramento area at that time. Also, it is understood that in the event of termination, the Government can remove the facilities. ✓

3. APOLLO: Systems Review Meeting in Houston - (Dr. Shea) - There was general agreement between all parties on C-1. On C-5, Shea made a tentative decision to fly manned already on 505. MSFC expressed its reservations. ✓

Emergency Detection System - Preliminary specifications for C-1 (SA-9) have been completed and an MSFC position was accepted 1-11-63. The results are being presented to the joint Crew Safety Panel of MSC and MSFC on 1-14-63. MSC will study the classification in automatic and manual abort. ✓

We'll take this up  
in Jan 63  
Man Council Meeting.  
B

NOTES 1-14-63 MAUS

B 1/15

1. OMSF PROGRAM SCHEDULING AND REVIEW PROCEDURE - The MSFC submission of schedules and funding information in compliance with the "OMSF Program Scheduling Review Procedure" is completed except for portions of Level 4 and contractor manpower and cost information. The balance of Level 4 charts will be forwarded to OMSF by the end of this month per your agreement with Mr. Holmes on Dec 13, 1962. The data prepared is based upon the Launch Schedules approved by Mr. Holmes on Oct 15, 1962 and the OMSF FY-64 control ceiling for approved programs of \$1,161.700 million RD&O (Direct) for MSFC. (Reference MSFC FY-64 Budget Estimates dated Oct 25, 1962.) ✓

2. ALLOCATION OF PERSONNEL SPACES - Twenty-five civil service spaces have been allocated to us for the Micrometeoroid Satellite Project (SA-8 and SA-9). This brings our present ceiling to 6987. Cadel informed that we can expect 7150 for 6/30/63. He also indicated that categories now under ceiling must be reported in the future. He indicated a 6/30/63 ceiling of 210 for these categories. We now have 320 and expect 840 by 6/30/63.

in lieu of 8800?

3. NASA BRIEFING TO AEROSPACE INDUSTRY ON FUTURE PROGRAMS - To the Aerospace Industry a presentation of NASA's future plans is scheduled for Feb 11-12, 1963, in Washington. It will consist of briefings by the program offices covering programs for which FY-64 funding has been requested. As follow-up to this briefing, the Office of Program Development has planned detailed briefings by the Field Centers. MSFC's briefing is presently scheduled for March 4. ✓

4. MEETING WITH HEADQUARTERS ON PROPELLANTS - A proposal for additional LH<sub>2</sub> capacity has been advanced to Headquarters. It includes a 60 Kips per day LH<sub>2</sub> plant with storage capacity of 600 Kips at MTF and 600 Kips additional storage capacity at West Coast Plants. Also proposed was a LOX-LN plant of 300 Kips capacity each in MTF area. Hdqs suggested that the LOX plant at MTF be part of a package RFQ with the LH<sub>2</sub> plant with various alternates. (A proposal will be presented to you within two weeks.) ✓

5. INITIATION OF FY-65 BUDGET REQUIREMENTS - All elements of MSFC have been notified to initiate their internal planning for the FY-65 budget cycle. The notification includes a proposed schedule of events leading up to the March 28 target date for submission of the FY-65 Preliminary Budget requirements. Mr. Lilly is to put OMSF FY-65 Budget Guidelines on the management council agenda for 1/29/63. Office of Programs plans to have guidelines out 1/25/63. ✓

H.M.  
What's  
that?  
B

B115

1. SA-6, SA-7: It has been determined that the full length spacecraft must be carried on SA-6 and SA-7. This came out of the Houston meeting this past week. We must tell Dr. Shea how much this will cost in time, effort and money. *also will*

\* 2. LH<sub>2</sub> TECHNOLOGY: The technical evaluation for the structures-insulation integration study was completed and the result was forwarded to the Procurement and Contracts Office. Primarily, the objective of the study was to provide insulation schemes for cryogenic tankages for launch vehicles and long time storage containers in space. ✓

\* 3. S-IV STAGE DISCONNECT COUPLINGS: Hydrogen and oxygen fill and drain disconnect couplings, designed by Douglas Aircraft for the S-IV Stage, failed to disconnect during the development testing. In a meeting on 1-4-63, attended by Douglas Aircraft, Saturn Systems Office, Launch Vehicle Operations Division, Test Division, and Propulsion and Vehicle Engineering Division personnel, modifications to be made by Douglas Aircraft were discussed. It was decided that an in-house back-up system would be designed by Launch Vehicle Operations Division and tested by Test Division. ✓

4. GENERAL: Mr. Braunlich of Aeroballistics Division has urged this division to expedite early publishing of a report by Dr. H. G. L. Krause, entitled, "On a Consistent System of Astrodynamic Constants." The prediction is that this report will have a wide acceptance. (Copy attached.) ✓

5. RIFT: Due to a redirection of the ROVER program by Space Nuclear Propulsion Office, the first flight date of the RIFT Stage has been extended. Program plans are being prepared to establish new dates. The Space Nuclear Propulsion Office redirection has placed primary emphasis on component development in the KIWI program prior to full power tests. This division is participating in evaluation of structural and materials problems of the KIWI B, respectively, NERVA Reactor. ✓

Attachment #1: MTP-P&VE-F-62-12

NOTES 1-14-63 Rudolph

No Notes.

NOTES 1-14-63 Stuhlinger

1. OMSF SUPPORTING TECHNOLOGY: Funding authorization has been received from OMSF for the Launch Vehicle Supporting Technology Program. The portion managed by Research Projects Division totals 6.050 M. One disappointing factor, however, is the lack of re-programming authority. Contrary to the promises made previously to us, we are now required to report to Headquarters on an individual task level. This requirement entails much more administrative detail than was previously anticipated. We will attempt to implement the program under the new set of ground rules.

For TWX  
to Holman?  
on Tuesday?  
Jan 1-14  
Mac  
Yes  
B 1/14  
was on  
1-15-63  
TWX  
BB

*John* 1. J-2 PROGRAM: The Ontario, California, Hydrogen Plant shutdown was caused by breaks in the two-inch hydrogen line in the purifier assembly. Inspection revealed many of these two-inch lines to be sagging due to excessive insulation loading. Western Operations Office has requested that an "Ad Hoc" committee be formed to investigate the repairs and judge whether these repairs are of sufficient nature to eliminate subsequent trouble spots. A total of 15 trailers and three tank cars are being sent to Rocketdyne from the West Palm Beach Plant to help alleviate the hydrogen shortage. ✓

Meetings are planned for 1-17-63 and 1-22-63 to finalize the decision whether or not to go to the J-2 Engine Nozzle Extension. The decision was made in the last nozzle extension meeting to study a conical extension with a maximum expansion ratio of 45:1. The meeting on 1-17-63 will be for Marshall Space Flight Center personnel. The meeting on 1-22-63 will include the engine and stage contractors. ✓

The J-2 altitude test stand (VTS-3A) is experiencing what Rocketdyne terms minor difficulties in its attempt to become operational. The current difficulty is leakage in the stand's 24-inch steam valve. The effect of this leakage is a reduction of "run time" capability of the test stand. Without the leakage, the facility has sufficient steam to permit engine test runs of 40-seconds duration at simulated altitudes up to 60,000 feet (approximately one psi ambient pressure). ✓

2. RL10 PROGRAM: A draft for a letter to Dr. Seamans establishing the RL10 Engine/Vehicle Integration Panel and the RL10 Engine Design and Development Panel was forwarded to Lewis Research Center, Dr. Silverstein, for comments on 12-27-62. Comments have not been received as yet. ✓

3. F-1 PROGRAM: On 1-5-63, F-1 Engine 003 went unstable at 116.5 seconds of a scheduled 150-second test causing considerable damage to the thrust chamber.

The F-1 Engine Combustion Stability Ad Hoc Committee met at the Rocketdyne, Canoga Park, Plant on 1-8/9-63 to review the engine 006-1 incident and the engine 003 incident. Both of these combustion instability incidents caused extensive engine damage. A complete report will be published by the Ad Hoc Committee. ✓

*Sumner*

**NOTES TO HOLMES 1-22-63 DEBUS**

1. Orsino Causeway: Readvertised bids for Orsino-Banana River Causeway were opened on 13 December 62 by Jax District. Apparent low bidder was Houdaille-Duval of Jacksonville, Fla. in the amount of \$2,303,201.12. Readvertising was decided upon because the original bids all exceeded the government estimate by more than 15% and it was believed that monies could be saved by readvertising with a longer construction period. By relaxing the completion date requirement, the readvertising bids fell closer to the government estimate with savings of approximately \$59,000 under the original low bid. The original, apparent, low-bidder was not the final, apparent, low-bidder.

As a result of rejecting the original bids, Congressional inquiries were made by Senator Humphries and Congressman Karth. We forwarded a TWX on 17 January to Diaz with all the details involved so that he could reply to these inquiries.

2. Florida East Coast Railway Agreement: Official receipt of program approval and fund allocation has enabled me to sign the agreement with the FEC Railway as of 19 January. Preliminary design criteria was forwarded to AMR and the Corps of Engineers on 14 January.

3. NASA Emergency Disaster Plan: Major Learmonth of LOC attended a meeting of the OMSF Emergency Planning Committee held in Washington on 9 January 63 with Roadman and representatives of MSFC, MSC and Headquarters Administrative offices. The main points of the meeting were (a) The three Centers are to continue their efforts on basic planning for survival and protection of resources; and (b) Additional guidance has been requested of OMSF who will in turn request guidance from the Administrator in the areas of mission definition, funding for fallout shelters, communications requirements and extent of NASA personnel and equipment availability to DOD in time of emergency.

4. Centaur and Agena Launch Operations: Glahn informed LOC that the letter assigning launch operations responsibility to LeRC was signed on 15 January for these projects. Several meetings have taken place with Bob Gray at LOC to brief his people on the current status of the programs, problems, etc. Arrangements will be made to transfer all files and data in the near future.

5. LOC Light and Medium Vehicle Systems Office: In view of the transfer of the Centaur and Agena launch operations responsibilities, I am abolishing the L&MVSO and transferring all personnel to the Heavy Systems Office in LOC.



6. Other Reorganization: A total of 17 personnel from the Program Coordination and Scheduling Branches were transferred to the Heavy Systems Office. Both this transfer as well as the one above are in line with our discussion.

7. Visit of Al Siepert: On 19, 20 and 21 January, Al Siepert visited LOC. Two main subjects were discussed: (a) We investigated the pros and cons of various types of possibilities to procure the general support function services that LOC will have to carry out in the MILA area. Al Siepert feels, and I agree, that the final approval of a procurement plan will probably rest with you, Dr. Seamans, and Mr. Webb due to the policy aspect of this matter. I will prepare a recommended procurement plan based on a discussion and evaluation of all possible procurement schemes. Recent Congressional recommendations regarding the Pan Am contract with the AFMTC and other considerations will make it most likely that we will recommend multiple contracts in perhaps 7 to 10 functional areas (security guards, motor pool, cafeteria, etc.). (b) We discussed the basic organizational structure for LOC and the mechanics of obtaining organizational approval by Mr. Webb. We will submit shortly for your approval the organizational outline and functional descriptions of the main elements.

8. IBM Clearance Roster: LOC now has an IBM security clearance roster which is being distributed to all NASA Centers. After distribution is complete, there will be no further need to forward security clearances to other NASA Centers being visited by LOC personnel. Notification to the person being contacted (who will in turn inform the local Security Office) will suffice. Understand this will be NASA-wide in the near future.

9. Crawler-Transporter Status, January 16, 1963: Proposals were received on January 15, 1963, from the Marion Power Shovel Company and Bucyrus-Erie Company. The proposals were opened, recorded and given to the recorder of the Source Evaluation Board for further action. Next target date is February 1, for presentation to Administrator in your and my presence.

10. Lt. Colonel Rocco Petrone: Effective 15 January, Rocco received his promotion to Lt. Colonel.

11. New Personnel Ceilings: Otis Redfield of NASA Hqs (Cagle's office) provided the following information: (1) LOC has been given a new Personnel Ceiling of 840 persons, (2) All of the total shall be permanent types, (3) Eight shall be for the advance hiring of college students, (4) 21 shall be for all temporary, including co-op, summer students, and temporary assignments. I understand that you have signed a document to the above effect and I should have it in the near future.

12. Lightning Investigation for Saturn: A planned meeting on 23 January at LOC will be held to determine which approaches or solutions are most preferable for lightning protection of LC 39, and to decide whether the General Electric Company study should be continued or terminated. Personnel from OMSF, MSC, MSFC and LOC have been invited to attend.

13. NOVA Launch Facilities Study: Martin-Marietta presented a status report on 11 January at Huntsville on this study. (Progress, satisfactory). On 30-31 January, a meeting will be held in Denver with the NOVA Management team.

14. Launcher Arms for LC 34 and LC 37 (Pad B): Sequence testing, of the first set of Block II type cast steel launcher arms for LC 37 was completed on January 10, 1963 by Test Division, MSFC. The second set of arms was delivered to Test Division on January 8, for testing prior to delivery to LC 34. A third set of arms is being fabricated, and upon completion and testing, will be used as spares. All work is scheduled for completion by February 1963.

15. Tanking of LH<sub>2</sub>: The contractor (Air Products) for the Liquid Hydrogen Facility on Complex 37 has started filling the facility tank with hydrogen. This is to complete his checks for heat leaks, etc.



\*  
7pm 1. GRUMMAN GULFSTREAM - Contract for operation and maintenance of the Grumman Gulfstream Aircraft was awarded to Rocket City Air Activities on January 17, 1963. ✓

2. SPACE MUSEUM - Modification of Building 4471 for the Space Museum is complete. ✓

\* 1. BOEING-IAM

*gen* The Boeing Company and the International Association of Machinists have postponed their decision to strike until Wednesday, January 23, 1963, when the Boeing employees will vote as to whether they will accept the company's new proposal or not. ✓

2. ETS HOKIN AND GALVAN - IBW

Ets Hokin and Galvan is involved in a dispute with the International Brotherhood of Electrical Workers concerning use of hydrolifts as opposed to block and tackle. The union wants the company to use block and tackle in order to "slow down" and featherbed the job. The company has fired the electricians refusing to work on the hydrolifts. A meeting is scheduled with the International representatives on Tuesday, January 22, 1963. ✓

3. S-1 QUARTERLY REVIEW

The S-1 Quarterly Review scheduled to begin today has been postponed because of bad weather in Huntsville. The review will be held at a later date. ✓

4. PERSONNEL STATUS

Michoud Operations presently has 140 people on board and 24 spaces committed. ✓

\* 5. CONSTRUCTION OF FACILITIES

*gen* a. Shipping and Receiving Docks: A shipping and receiving docks for both Chrysler and Boeing will be completed by January 31, 1963. ✓

b. The Phase 2 modification of the Computer Facility in Slidell is 44% completed and will be completely finished by March 13, 1963. ✓

c. Phase 1 (foundations) of the Vertical Assembly and Hydrostatic Test Facility is 37% completed and is scheduled to be completely finished by March 22, 1963. Phase 2, which is the construction of the building, is scheduled to begin on March 25, 1963; completion date is November 4, 1963. ✓

d. Plant Roof Repair: The 40 acre roof of the manufacturing area is scheduled for completion on March 25, 1963. ✓

e. The following projects are all scheduled for completion on or before March 28, 1963: plant air conditioning, phase 2 (dehumidification system); cooling water; plant lighting and power distribution; truss modification (Chrysler). ✓

Bravo!  
B

f. Barge Dock and Load: Final design review will be held on January 23, 1963. Completion of this facility is scheduled for the first week of August, 1963. ✓

NOTES 1-21-63 DEBUS

B 1/22

Negative report.

B 1/22

\* 1. PERSONNEL ON BOARD MTO

gen.

A Facilities Engineer, Batson, and an Administrative Officer, Winterstein, have reported on board in Mississippi. This will provide on-scene capability when VIP's come aboard, troubles arise with county supervisors, greater support is requested for operations there, or other local problems demand immediate attention. They will come up here for indoctrination with MTF Working Group and appropriate MSFC Divisions soon. ✓

Attains  
Col. (or Maj)  
Sunderlin?  
Let me  
say hello  
to him!

B \* 2. GROUND-BREAKING CEREMONY AT MTF

gen.

Recent prediction by Col. Raymond is that construction will not start on sufficient scale to warrant a ground-breaking ceremony until late spring. This may affect your library dedication at Picayune. ✓

O.K. B

3. MOTION PICTURE-"STAIRWAY TO THE STARS"

Audio Productions, Inc. of New York has submitted a good script for this fifteen minute movie on the Advanced Saturn, the Mississippi Test Facility and the Lunar Probe. It opens with an interview with Sen. Stennis in Washington, moves to Cape Canaveral, then to Mississippi where a local young engineer narrates the happenings to come. With more emphasis on MSFC, it should be a good movie. ✓

Suggest  
you get  
Bat  
into this B

4. J-II TEST STAND FOR MTF?

Last week Milt Rosen pointed out that he had been able to reclaim the F-I Test Stand for MTF, but that his arguments to the Bureau of the Budget were somewhat weakened because we didn't show any need for a J-II stand there. There will be F-I and J-II stands here and I think the greater ease with which we can transport J-II back to MSFC if necessary may negate this consideration. ✓

Agree B

B/1/22

1. LLS Tracking Studies: Continuation and review of the tracking studies for the Lunar Logistics System have shown that the early estimates for the influence of celestial constants on the final landing and ephemeris accuracy were far too high due to systematic computational errors. With present constant uncertainties, the 3 direct mode landing error is now found to be 10 to 20 km. Improvements by simultaneous solution for constants could decrease errors by a factor of 2 with range rate and a factor of 20 with range measurements. In the lunar orbit mode, the initial periselenium error is at present in the order of 30 km. Simultaneous solution for the constants would yield similar improvement factors as above. In deviation from the earlier presentation, it is now concluded that all basic LLS tracking requirements can be met with existing systems even without spectacular improvements in tracking techniques or our knowledge of celestial constants. Headquarters has been notified about this revision. ✓

\* Jan 2. Flight Evaluation Working Group: A Working Group meeting with DAC and LOC representatives was held on January 16. Items discussed included DAC data reduction, data transmission between Cape, Huntsville and Santa Monica, and the integration of DAC flight evaluation efforts with MSFC's. ✓

\* Jan 3. Saturn Ground Wind Loads: Ground wind load tests on three Saturn models are scheduled to start at Langley's wind tunnel on February 11, 1963. Testing order is: (1) SA-5 with Jupiter nose cone, (2) SA-6 with Apollo payload, (3) C-5 LOR model. Since results are of vital importance to Marshall's stage contractors, they were invited to observe. Data analysis will be handled by Langley, and results made available to stage contractors. ✓

not confidential as pressure ✓ B

4. Saturn C-1/Agena: In reply to your question re: Item 1, on Notes - 1/14/63 - Geissler (Copy Attached): Column 3 (Pure payload) is merely the difference between column 2 (Payload with Agena) and a fully loaded Agena (wgt. 15, 467#). Hence, column 3 is independent of the mission and merely indicates how much of the total weight delivered to the parking orbit would be payload, if a fully loaded Agena were used. A 500# contingency has been included in the Agena weight. Since the 1/14/63 submission, calculations of energy levels have been completed and are noted for your information. The attached table and graphs summarize the preliminary performance studies to date on C-1/Agena.

Not very meaningful, but then! ✓ B

<u>Parking Orbit</u>	<u>Energy Level</u>
100 n. m.	-5.04 km <sup>2</sup> /sec <sup>2</sup>
125 n. m.	- .48 km <sup>2</sup> /sec <sup>2</sup>
150 n. m.	5.18 km <sup>2</sup> /sec <sup>2</sup>

✓

\*  
jam 1. GRUMMAN GULFSTREAM - Contract for operation and maintenance of the Grumman Gulfstream Aircraft was awarded to Rocket City Air Activities on January 17, 1963. ✓

2. SPACE MUSEUM - Modification of Building 4471 for the Space Museum is complete. ✓

B 1/22

1. SA-4 POST STATIC CHECKOUT: Pressure and instrumentation tests were performed on the dummy S-IV and S-V stages of SA-4 and mating of all stages was successfully accomplished. The vehicle was released for transfer to the launch site on January 19, 1963. ✓

2. SA-5 PRE-STATIC CHECKOUT: Pre-static electrical tests have been completed on the S-I stage of SA-5, and the vehicle has been transferred to the pressure test cell. Twelve pressure systems require recertification prior to static tests, and the modified actuators and servo valves must be installed. ✓

3. VISIT BY NASA HEADQUARTERS PERSONNEL: Mr. Howard Weiss of the Office of Reliability and Quality Assurance, NASA Headquarters, was here January 15 and 16 to discuss a variety of items concerning the Quality Assurance program here and at other NASA Centers. Initiation and implementation of the NASA Quality Publications has established precedence which enables us to furnish valuable guidelines to other NASA Centers. Drafts of other appropriate quality documents are now being prepared. Mr. Weiss was accompanied by a job analyst (Mr. Baker) who, in cooperation with the Personnel Branch of the Management Services Office, is working with the Civil Service Commission to establish job requirements for Quality Assurance Specialists for space work. He was also accompanied by a training expert (Mr. Manning) who was briefed on our proposed training program. Since this program is not directly project-oriented and could be beneficial to other NASA Centers, it is felt that funding support by NASA Headquarters would be appropriate.

D.F. What action do you recommend? ✓

B

B 1/22

\* 1. ACTUATORS FOR F-1: In my notes of 10/8/62, we informed you that we would have to go to one source (Moog) for the F1 actuators. It was our intention to proceed with the conventional electrical feedback scheme and introduce at a later time a mechanical feedback scheme. The mechanical feedback scheme simplifies the control computer and eliminates 48 electrical lines between the computer and the S-II and S-1C stages. In the meantime, we had Moog-Valve and Hydraulic Research both studying the mechanical feedback method which is very similar to that used by Moog for the Titan engine actuators and by Hydraulics Research for the Titan vernier engine. Both studies have convinced us that we can start immediately with the mechanical feedback. We are, therefore, proceeding to develop 24 actuators at Moog (requiring approximately \$356,000) and, considering Dr. Rees's concern for a second source, we are proceeding with Hydraulic Research with a quantity of 4 actuators (requiring approximately \$150,000). Allocation of S-1C actuators: Total of 28 actuators (24 Moog and 4 Hydraulic Research). S-1C-T - 10 Moog Units. Rocketdyne - 6 Moog Units. Qualification Tests - 4 Moog and 2 HR). M-ASTR Lab Test - 2 Moog and 2 HR). M-TEST (Single Engine) - 2 Moog. ✓✓

2. GUIDANCE SIGNAL PROCESSOR IBM CONTRACT: Negotiations were attended on the "Increased Scope" amendment to the IBM-GSP-24 contract. This amendment was due to design changes and additions to correct interface problems, allow for vacuum operation, and give better malfunction isolation. Most points have been resolved except schedules. ✓

3. GUIDANCE SIGNAL PROCESSOR VIBRATION TESTS: A table has been scheduled at Qualify Division for 2/7 - 2/10 for conducting vibration tests on the MSFC-built GSP-24. A program is being written to be used in conjunction with the tests; the computer will be connected to the GSP-24 during these tests. ✓

4. DELIVERY STATUS OF GUIDANCE COMPUTER AND TEST EQUIPMENT. The first Test Set for the IBM ASC-15 Guidance Computer and the second IBM ASC-15 computer arrived from IBM/Owego. IBM personnel are here to put the equipment into operation and to instruct our operators. ✓

5. SATURN C-1/AGENA ELECTRICAL INTERFACE PANEL: The establishment of such a panel has not been accomplished as requested by Special Assignments Office for monitoring the Lockheed preliminary design contract. Mr. Fichtner plans to handle this through the Saturn Working Group. We believe that projects of this type and the Micrometeorite Satellite project should be handled by the existing Saturn Working group rather than establish new panels for each project.

6. GENERAL ELECTRIC'S MANPOWER BUILDUP: Considerable effort has been exerted on G. E. to man the NASA Headquarters, G. E. contract NASw 410. Mr. R. L. Shetler, General Manager of G. E.'s Command Systems Division and Mr. James Sloan of NASA Headquarters will be at MSFC on January 24, 1963 to discuss the anticipated G. E. manpower buildup to accomplish the assigned MSFC tasks.

Enc:  
Notes of 10/8/62

H. Huetter  
request  
flow  
comments.  
includes  
a very  
easy man  
and I feel  
they have  
good  
point  
see B

W.H.  
Would  
like  
to sit  
in,  
part  
time  
B

B 1/22

# 1. MTF:  
gem

Criteria for RP-1 Central Storage and Distribution and technical systems criteria for the S-1C Complex have been received. Brick and mortar final design contract for S-1C and S-1I Complexes is scheduled to be finalized by 1/25/63. ✓

2. MARINE ACTIVITIES:

The barge PROMISE with SA-4 aboard departed MSFC at 5 a.m., Sunday, 1/20/63. Estimated time of arrival at the Cape is 11 a.m., 1/31/63. The barge PALAEMON is standing by to transport the dummy S-V to Michoud later this week. ✓

3. GSE - BLOCK II HOLDDOWN ARMS:

The eight arms to be installed on VLF-37B were shipped to the Cape and should arrive there today. ✓

4. SA-5:

Delivery of S-1-5 for static firing was postponed from today until Friday, 1/25/63, due to late delivery of actuators. ✓

5. S-IV:

First Static Firing Working Group meeting scheduled at SACTO-DAC today and tomorrow. ✓

6. RL10-A3:

A cold flow spin-up test was successfully completed last Friday at ambient pressure (without pulling a vacuum on the diffuser). Object of test was to check feasibility of running without diffuser evacuated. ✓

Now, wouldn't that be fine! B

7. H-1 ENGINE TESTING, MSFC:

A 10-second firing was successfully completed on Thursday, 1/17/63. Object of test is to checkout facility after rebuild. ✓

\*1. *gem* AUDIT OF THE CURRENT GENERAL ELECTRIC CONTRACT: We are undergoing a partial audit by the General Accounting Office on our General Electric Contract and on our selection of GE 225 Computers to replace the Burroughs Datatron 205's. There is one GAO Auditor in our division now, Mr. Robert Lind. He is interested in our use of peak-load people and in certain types of travel by the GE people in our service type GE Contract. On the computers he is interested in the basis for the selection of the General Electric computer and what influence the large group of GE people here may have had on the selection. Mr. Lind's investigation is only partially complete but everything seems to be satisfactory, so far. ✓

B 1/22

NOTES 1-21-63 HUETER

1. AGENA TRANSFER: The Lewis Agena Program Manager, Dr. S. C. Himmel, and 18 of his people were at MSFC Tues. through noon on Fri. for familiarization with the Agena vehicle system and its operation. All aspects of the program were reviewed in considerable detail in group and individual discussions and presentations. In addition to the above 18, two people were here on 1-16 only for trajectory discussions with Aeroballistics Division; and 2 people from budget and fiscal offices on 1-16 and 17. ✓

By agreement, 1-28 is the date LeRC will assume official operating responsibility. NASA Hq. will officially notify all interested agencies and contractors. Agena record and working files will leave on 1-27 and arrive at LeRC on the morning of 1/28. Approximately 27 people from the Agena Office (including one from M-AERO) will be on TDY to LeRC commencing on 1-28. Period of TDY will be determined by mutual agreement between MSFC and LeRC on individual basis. ✓

Transfer of field office personnel will also be effective on 1-28. Indications are that the offices at LMSC and AF/SSD will transfer intact with the exception of Mr. A. B. Triche at LMSC, who has accepted a job as MSC Representative at LMSC. Maj. Murphy in the PMR Office by choice will remain with MSFC. ✓

H.H.  
What functions?

LeRC is currently negotiating with GSFC for GSFC/Field Projects Branch to provide launch operations service for Agena and Centaur at AMR. PMR will probably follow suit. ✓

By agreement between Dr. Gruene and Mr. Duerr, the LVOD activities will be transferred through Mr. Cope's office with the LOC activities. ✓

\*2. C-1/AGENA: I was in Washington on 1-16 and 17 and discussed with OSS personnel the status and future of the C-1/Agena study. While OSS would like to have a detailed C-1/Agena design as backup for Surveyor missions, they do not have adequate funding either in FY 63 or FY 64. I advised that there was no possibility of such design activity being accomplished with in-house Marshall personnel. Consequently, OSS, Mr. Cortright, must make a decision (he promised such decision by 1-21) as to whether C-1/Agena study effort should commence immediately as previously planned or should be delayed until July or later. The July date was selected as a milestone in that this is the next scheduled launch for Centaur and there is no chance for an adverse Centaur decision prior to this date. Depending upon the success or failure of the F-2 launch, further decisions can be made and additional funding obtained if needed. I will forward to you minutes of my discussions at OSS which will cover in more detail the C-1/Agena and the C-1B third stage for OSS missions.

H.H.  
Yes, please  
B

(If possible prior to next Man. Council meeting)

B 1/22

1. NOVA

As you know Mr. Holmes and Dr. Seamans have approved the \$1.2M for extension of the NOVA contracts with GD/A and Martin. Thanks for your call and support. Mr. Holmes requested that we review the statement of work. We have done so and will probably make a few minor revisions. Frank Williams will discuss these changes with the contractors this week and the contract extensions should be signed (with revisions) about February 1. A major review of activities is being held at both companies this week (January 21 - 25) and starting January 21, there will be a MSFC-man at the contractor's plant (NOVA Liaison Office) at all times. We are planning on a series of briefings on NOVA status and results (in MSFC, Headquarters, etc.) for the April 1 time period.

H.H.K.  
Major!  
ref. our  
meeting  
today  
B 1/22

I thought you said old scopes will run till April 1. Here you speak of new contracts signed Feb 2. When will that

2. Contractor and Other Briefings to You

In the interest of conserving your time, we will in the future summarize for you recent results of our studies in a very condensed form. During the rest of the month, we will have eight presentations on reusable systems which we will summarize for you and Dr. Rees in the afternoon on February 28 (coordinated with Bonnie), one hour each on "Reusable Boosters and Rocket-Airplanes in the C-1 and C-5 Class," and "Reusable NOVA Class Launch Vehicles." The only other presentation we have scheduled for you in this quarter is a briefing on "ORION" for early February, which you requested. We are still waiting for an appointment.

new broadened task begins to be implemented  
2  
B

→ Bonnie will arrange time \* B

3. Justification for LLS

We will, as you requested, spend more time in the next few months studying the impact of the selection of a particular type lunar logistics vehicle on the immediate APOLLO follow-on activities on the moon. We already have an analog model operational on a 7090 computer which will assist us in studying all the possibilities in an efficient manner. We are now in the process of incorporating the money aspects into this model.

\*  
Feb. 8, 10:00 am. for Orion briefing.  
BHW  
1/23/63

B 1/22

1. C-1 Project: (a) The S-I Stage, Dummy S-IV Stage, Dummy S-V Stage and Payload for SA-4 were delivered on schedule for shipment to LOC. (b) Delivery of SA-5 to Test Division will suffer a delay if Quality Assurance Division insists that the modified actuators, which have not been delivered from contractor, must be installed in assembly hangar rather than on the test stand. ✓ (c) 154" Instrument Unit for SA-5 is on schedule. (d) Modification and build-up of engines for SA-8 will not be made by ME Division as suggested by Quality Assurance Division, but will be accomplished by Chrysler at Michoud. ✓

\* 2. Facilities: (a) Vertical Assembly and Hydrostatic Building for S-IC is on schedule. ✓ (b) Honeycomb Facility is in delay mainly because of delay of autoclave. One steel head of autoclave has been rejected because of cracks developed during forming. Completion of facility will be approximately March 1, 1963. ✓

\* 3. C-5 Project: (a) Manufacturing Plan for the S-IC has been issued. This document includes a rough outline of sequence of assembly operations at Michoud by Boeing. ✓ (b) Mr. J. Orr, the former Manager of the Manufacturing Research and Development of Ryan Astronautics, has now joined our Division. He is being considered an authority in explosive forming in this country and will be the ME Resident Engineer at Los Angeles. ✓

1. G. E. Contract: In the Program Review on 1-16-63 at Daytona, G. E. presented the utilization of their 500 people of whom a large number are still stationed at Daytona. Since G. E., under the direction of Mr. Sloan, is in the process of locating as many people as possible to the Centers, Dr. Shettler and Mr. Records of G. E. with Mr. Sloan will visit M-SAT on 1-24-63, to discuss the possibilities for speeding up the most urgent need of G. E. support at MSFC.

It was learned that G. E. is trying to get permission for establishing a manufacturing shop for prototype equipment in Huntsville. M-SAT is discouraging these efforts because it is believed that sufficient facilities are already available. Therefore, it should be tried to establish contractual arrangements to tie together the G. E. engineering effort with existing local facilities.

Reliability - In the Reliability Assessment Policy Review Board Meeting on 1-8-63, in Washington, M-SAT was requested to furnish extensive funding data for the existing and the desired efforts broken down into the areas of reliability, quality control, and testing. The data for desired funding increases for FY-63 of \$43 M and for FY-64 of some \$80 M has been forwarded with backup material to identify the purpose of this additional work. The cost estimates for the existing efforts have not been furnished to OMSF because under present reporting procedures it is very difficult to obtain these estimates from existing contractors. This subject may come up in the next Management Council Meeting and M-SAT is preparing briefing material on this for your information.

2. C-1: Astrionics Funding - A review with M-ASTR on 1-15-63 revealed that an additional \$6.200 M is required for FY-63 procurement of components. Present funding will buy items necessary for SA-5, SA-6, and part of SA-7. Direction was given to M-ASTR to procure for the above only. This funding shortage could cause a 3-6 month slip in SA-9 and subsequent.

3. Mission: In agreement with the Special Assignment Office, M-SAT has prepared a proposal for a Charter of a "Planetary Program Coordination Panel" as a mechanism to assure complete coordination and cooperation of NASA Planetary and Deep Space Programs between all levels of management of OSS, JPL, LOC and MSFC. The proposal is being discussed in Washington between OSS and Mr. Hueter with the intention to establish the Panel sometime in February.

O.L.  
Let's discuss this. URGENT. Prior to Sloan visit here on 24 Jan !!  
B  
Mr Sloan did not come \* 1-24

By all means, yes!  
B  
!!

B1122

NOTES 1-21-63 MAUS

1. ALLOCATION OF PERSONNEL SPACES (Reference Par. 2 of NOTES 1-14-63, copy attached). ✓

MSFC Personnel Requirements (see "urgent action" teletype dated December 17, 1962 to Mr. Holmes attached).

7300 (excluding temporary employees) by end of FY 63

8300 (excluding temporary employees) by end of FY 64

The ceilings reported in NOTES 1-14-63 (7150 permanent and 210 temporary) were tentative and were received by telephone by Mr. Andressen from Mr. Cadel. Firm ceilings received later, also by telephone, are:

Latest Headquarters Guidance - FY 63 Ceiling

7059 permanent employees

80 advance hires (against FY 64 ceiling)

210 temporary employees

Temporary (consultants and experts, co-op students, temporary appointees, and summer) employees have not previously been under ceiling. Cadel indicated these must be reported in the future against a ceiling (210 for 6-30-63) for these categories.

2. OMSF PROGRAM SCHEDULING AND REVIEW PROCEDURE - The initial MSFC submission of schedules, in accordance with the OMSF scheduling and review procedure, was delivered to OMSF on January 15. A first OMSF review, with representatives of Central Planning Office, Saturn Systems Office and Engine Management Office participating, resulted in the request for certain revisions (mainly for reasons of uniformity among projects). Revised schedules "Edition A" including Cost and Manpower information and "Edition B" (schedules only) will be delivered to Headquarters today. The presentation of total package to Mr. Holmes is scheduled to occur on January 26. ✓

\* 3. PREPARATION FOR FY-65 BUDGET - Latest contacts with the various program offices indicate that the FY 65 Budget guidelines will probably not be received by MSFC until sometime in February. Our analysis of MSFC's budget cycle indicates a need for MSFC elements to begin their internal preparation no later than February 5. To avoid delay in beginning this cycle, MSFC elements are drafting their best estimates of budget guidelines for FY 65 for all programs. These draft guidelines are expected to be complete this week. ✓

H.M.  
Let's discuss this next staff luncheon  
B

B 1122

1. SA-5 INSTRUMENT UNIT: (Reference NOTES 1-7-63 GRAU, paragraph 2, copy attached.) No redesign will be involved. The unit was "re-gunked." ✓

2. SA-6, SA-7: (Reference NOTES 1-14-63 MRAZEK, paragraph 1, copy attached.) Mr. Hans Palaoro is gathering the information for reply. ✓  
Wind restrictions, limiting the angle of attack to  $5^\circ$  at the  $q_{max}$  time point, will be necessary. This was caused by increased length of the payload and resulting increased moments and shearloads. Manned Spacecraft Center has accepted these restrictions. ✓

\*3. S-IV BULKHEAD AND LH<sub>2</sub> WALL INSULATION: The test plans prepared by Douglas Aircraft Company for evaluation of the integrity of the S-IV bulkhead and LH<sub>2</sub> wall insulation were revised drastically and streamlined by a team consisting of representatives of this Division and Douglas Aircraft Company, at Douglas last week. Heavy Center input and direction was essential in preparing a reasonable program with respect to the technical approach, scheduling, and costs. We expect cost data today. ✓

\*4. S-IC FUEL TANK VORTEXING: Initial tests in the vortex model tanks have shown that suction line arrangement in the fuel tank and routing of LOX suction tunnel through fuel tank provide sufficient damping to eliminate vortexing. This can result in a weight savings of approximately 1,000 pounds. ✓✓

5. VEHICLE MECHANICAL DESIGN INTEGRATION WORKING GROUP: See attachment #3.

\*6. CORROSION EFFECTS AT MICHLOUD: In order to evaluate the effects of the semi-tropical climate and the atmosphere from the industrialized areas surrounding Michoud on the various metals, alloys, and surfaces finishes expected to be used on S-1C, S-I Instrument Unit, appropriate samples were mounted on exposure racks both inside the main building and outside the building at the plant. The samples have been exposed for six months. A recent inspection of the samples has shown significantly more corrosion on silver, gold (electrical circuitry), and bare aluminum than that which occurred in the Huntsville environment in a corresponding time. The corrosion indoors at Michoud was equivalent to that which occurs outdoors at Huntsville. This condition will improve when the renovations are completed and the humidity control and air conditioning equipment is operational at Michoud. The 2219-T87 aluminum alloy is seriously affected by the Michoud environment. Optimum surface treatment will be required. ✓

W.M.  
That must  
be the  
French  
Quarters!  
B

- Attachment #1: NOTES 1-7-63 GRAU  
Attachment #2: NOTES 1-14-63 MRAZEK  
Attachment #3: Working Group Activities

B 1/22

1. Systems Review Meeting

- a. While I am sure you have been briefed on the meeting by Dr. McCall, I want to specifically call to your attention the most significant highlights involving the flight mission assignments inasmuch as my office had the lead role for Dr. Shea in this area.

Much progress was made in the definition of flight mission assignments for C-1, C-1B and C-5. The major outstanding discussions centered around:

- (1) SA-6 and SA-7 spacecraft configuration, i.e., (increased) length of spacecraft to be flown. While this appeared as a major problem at the time of the meeting, it has subsequently been essentially solved by MSFC's ability to make minor modification to the C-1 launch vehicle which permits flying MSC's desired spacecraft length (761"). ✓
- (2) Manning of SA-10 vs SA-111. It was concluded that SA-111 should be first manned C-1 flight (consistent with Mr. Holmes' schedule of October 15, 1962). ✓
- (3) Manning of SA-204 vs SA-205. MSC desires manning SA-204. MSFC and MSC to study. This item could possibly be an item of discussion at the next Management Council Meeting. ✓

- (4) Flying live S-IVB on SA-502. MSFC (Dr. Mrazek) strongly discouraged this proposal. While this problem was not resolved, the prospects appear to be in favor of flying inert S-IVB on SA-502.

- (5) Manning of SA-505 and SA-506 for earth orbital flights prior to lunar landing attempt on SA-507. MSC proposed manning as early as SA-504. It was concluded that SA-501 and SA-502 would strictly be for launch vehicle development and that SA-503 and SA-504 be for combined launch vehicle development and spacecraft re-entry. Manning of SA-505 and SA-506 was unresolved. This item could possibly be an item of discussion at the next Management Council Meeting.

o.k. whatever that is  
 Maybe just a dummy  
 B  
 !!  
 gcm

- b. Minutes to the meeting are to be available approximately Tuesday, January 22, 1963. *Would like to have them prior to Man Council Meetg.*
- c. The next Systems Review Meeting is tentatively scheduled for late February 1963.

acceptable,  
 formula)  
 B

2. Chrysler Corporation presentation to Office of Systems

Chrysler Corp. is going to make a presentation to Office of Systems (Douglas Lord, Asst Dir. for Program Planning, etc.) on the Chrysler Lunar Vehicle R&D Program. The introduction will be made by L. Lawrence, Jr. - Director of Chrysler's Advanced Projects Organization.

A.R. Would be interested in short briefing, too. B  
 Surface?

B 1122

\* Jcm 1. MICROMETEOROID MEASUREMENT EXPERIMENT: The proposals submitted in response to the RFP have now been received and are being evaluated. Thirteen firms (such that the list reads like Who's Who of the space industry) replied.

A management structure, sufficient to assure firm control of the project, was established in its final form last week. Mr. Fikes, SSO, will join Dr. Johnson's staff as "Operations Manager." Drs. Mrazek, Haeussermann and Lange have been most cooperative in nominating lead men to coordinate their support efforts. We are presently preparing a "briefing folder" for you as requested. We would appreciate it if Dr. Johnson, Mr. Thompson (Chairman of Source Selection Board) and I could also brief you verbally before Dr. Bisplinghoff's visit on January 31. ✓  
ACTION REQUIRED.

2. MICROMETEOROID CONTRACT PROCEDURES: In reply to your question on my NOTES of 1-7-63 (copy attached) we had to strike a compromise between the time allotted for proposal writing, and the time allotted the winner to accomplish the project. The sum of both periods, dictated by the Saturn schedule is constant. - At least one hopeful contractor (STL) assured us that our compromise was reasonable and acceptable. ✓

3. MR. FRICK'S REACTION TO MICROMETEOROID PROJECT: I asked Chuck Frick, MSC, last Thursday whether we could furnish him any further information or data on our Micrometeoroid Project. He replied that this was not necessary, that he was satisfied with what was furnished him, that he has no particular concern about the project, and that he would like to have a briefing by Dr. Johnson at Houston as soon as the project was a little further along. He remarked that apparently communications to or within MSC regarding this project had been less than perfect. ✓ *and B*

4. LOAN OF MSFC PERSONNEL TO OMSF FOR LLS PLANNING: RPD was approached recently by Joe Shea and Doug Lord with the request for a temporary loan of personnel who could assist OMSF in the planning of the LLS project. Obviously, there are two problem areas: first, definition of the project, its schedules, cost, requirements, and impact on other programs; second, specification of the payloads, and coordination of payload components. RPD could contribute to the second area. We would appreciate it if this could be discussed with Shea during his forthcoming visit. *A will B* ✓

\* Jcm 5. OMSF RESEARCH PROGRAM: Bill Lovejoy, who is now responsible for the OMSF portion of our research program, informed us that single task approval by Dr. Seamans is still required, and that Milt Rosen's promise of MSFC reprogramming authority was without foundation. Funding authorization for \$6,450,000, specified by task titles and task objectives, was received at MSFC on January 2, 1963 (Mr. Koelle's program is not yet authorized). ✓

B 1/22

\* 1. J-2 NOZZLE EXTENSION: It appears to be more certain now that we will not suggest this program at this time. The complications added to the basic programs as they exist (S-IVB Stage and J-2 Engine) would make it even more difficult to deliver within the given time frame. Engine supports and activation hardware (on both Stages S-III and S-IVB) have to be definitely laid out for the starting kick in ground testing. ✓

2. F-1 INSTABILITY BRIEFING: During the recent Quarterly Review Meeting, Milt Rosen instructed us to prepare such a briefing for Dr. Seamans. Mr. Tischler is trying to obtain a time slot of about two hours for the near future. It is planned for me to bring the general problem into focus and for Rocketdyne to give the technical package. I will keep you posted as to exact time and further details so that you or Dr. Reas can decide whether you wish to participate. (Latest info: B. Holmes wants private one-hour briefing by us and Rocketdyne January 31, 1963.) → *Let us participate in that one*

\* 3. F-1 PROGRAM: F-1 engine system testing has been limited to 15-second tests until the analysis of the last two combustion instability incidents is more complete. *B*

Two engine tests on engine 010 have been conducted, bringing the total number of engine tests during January to five with approximately 48 seconds total duration. Test 004 was aborted after 14.4 seconds when a portion of the honeycomb seal dislodged in the turbine, scarred the blades, and necessitated replacement of the turbine.

A 6.9 grain charge failed to cause instability during test of 5U flat-faced injector; however, a 13.5 grain charge caused instability with no recovery. ✓

4. FLUORINE MEETING: The first meeting of this group (See NOTES 12-17-62 WEIDNER, copy attached) took place last week. Our representative was instructed to maintain that Marshall Space Flight Center has no immediate needs for fluorine-based propulsion. It appears that enough interest existed within this group, however, to justify a somewhat stronger emphasis on fluorine technology work out of Sloop's corner for the coming year. ✓

\* 5. RL10 PROGRAM: An RL10 Engine/Vehicle Integration meeting was held last week at Huntsville with Lewis Research Center, the stage contractors, and the engine contractor represented. It is apparent that a major effort of the engine project management for the RL10 Program will be expended in the future for mating the changing engine delivery requirements of vehicle programs to a "contracted-for" delivery schedule which is relatively inflexible to last minute changes. The requirement fluctuates widely with vehicle program testing philosophy, engine spare requirements, and actual vehicle schedules. During this meeting, Lewis Research Center representatives stated that it is their intention not to subject any flight stages (ATLAS booster nor CENTAUR Stage) to check out static firings.

\* 6. J-2 PROGRAM: The Ontario, California, Hydrogen Plant is now producing. The Ad Hoc Committee, formed by the Western Operations Office, included personnel of this Division--a welding engineer and a metallurgist. They have generally determined that one of the primary causes of facility breakdown has been material failures due to corrosion, erosion and weld failures. ✓

January 28 1963

NOTES 1-28-63 GORMAN

B 1/31

\*  
Jlm

1. E & A BUILDING: A contract was awarded to Pearce and Gresham in the amount of \$2,021,564 for construction of the engineering and administration building. Construction time is 420 calendar days.

here at MSFC? Clarify for TWX  
(cycle - MSFC 98.)

1. BOEING-IAM (INTERNATIONAL ASSOCIATION OF MACHINISTS)

On January 26, 1963 President Kennedy obtained an 80 day injunction under the Taft-Hartley Law in the Boeing-IAM situation. ✓

2. ETS HOKIN & GALVAN VS IBW

The IBW Union Personnel returned to work on Thursday, January 24. They agreed to perform the work as before using the hydrolift in lieu of block and tackle. ✓ *slide they used to build the pyramids. What a breakthrough! B*

\* 3. STATUS OF S-I ASSEMBLY

gam

The following is the status of S-1 assembly area:

- a. Barrel Assembly: SA-8 - 90% Complete
- b. Thrust Out-Rigger Assembly: SA-8 - Complete, 4 each
- c. Fin Out-Rigger Assembly: SA-8 - Complete, 4 each
- d. Upper Thrust Ring Assembly: SA-10, 60% Complete
- e. Lower Thrust Ring Assembly: SA-10, 60% Complete
- f. Thrust Structure Assembly: SA-8, 60% Complete ✓

NOTES 1-28-63 DEBUS

B<sub>1/31</sub>

Negative report.

B 1/31

1. MTO OFFICES IN BUILDING 4331-Wednesday, 30 January, 1963, we will establish temporary offices for MTO administrative staff at MSFC in Rooms 8, 9, 10, Building 4331. Telephone numbers will be: 876-3672, 876-3776, 876-3862 ✓
2. ARMY ENGINEERS CERTIFICATE OF ACHIEVEMENT FOR WINTERSTEIN-Certificate has been forwarded from Corps of Engineers Ballistic Missile Construction Office for presentation to Bill Winterstein. Would you like to do this?
3. COMMUNITY RELATION PROBLEMS IN MISSISSIPPI-Recent newspaper articles that Slattery, Kent and I are concerned about indicate we must clarify many misunderstandings of local personnel about MTO. Have taken on Mack Herring from Slattery's office to handle PIO duties. Kent and I are screening applicants for community development job and hope to make selection this week. Will brief you whenever you desire about situation.

B.F.

Will be glad to!

B

↳ Greatly interested.  
Please settle exact  
date with Bonnie  
(for whom I work)

B

1. High Altitude Environment Measurements at Atlantic Missile Range: In accordance with your suggestion (Notes - 12/10/62 - Geissler) that we contact Dr. Shea's office informally on the status of our request for the above stated measurements, Mr. Vaughan of Aeroballistics talked to Mr. Idomir in Dr. Shea's office. Mr. Idomir is formulating a recommendation to Dr. Shea that either the Office of Applications or the Office of Space Sciences take action on our November 1, 1962 request. He stated that sufficient funds are available in either office. We feel that our request is now understood at Headquarters level and that satisfactory action is being taken. ✓

*Jim* \* 2. Aeroballistics Division Participation in Mississippi Test Facility's Atmospheric Problems: On January 23, Aeroballistics Division personnel met with Mr. Heimburg and Mr. Tessman of Test Division to discuss our participation in the MTF atmospheric problem areas. Mr. Heimburg pointed out that he wanted us to continue in our capacity as technical supervisor of atmospheric programs (meteorology) associated with the MTF.) We intend to continue the contract with U. S. Weather Bureau for necessary routine atmospheric support. Our technical personnel will then be able to devote their time to overall technical supervision and guidance and be intimately involved with R&D problem areas. ✓

3. SA-5D Dynamic Test Program: Testing at the 10 second flight time fill condition is now being conducted and is expected to be completed today (January 25, 1963). The planned schedule calls for boost phase of program to be completed in 30 working days. This phase is scheduled for completion prior to March 1, 1963 at which time the S-1 stage will be removed from the tower and sent to the Cape for propellant loading tests. Since the schedule incorporates overtime and week-end work, any further difficulties will result in schedule slippage. ✓

→ on Complex 37 B

4. LLS Situation in Washington: The enclosed note by J. de Fries is based on information we obtained informally in Washington January 21, 22. On January 24, Dr. Shea was to get his briefing and may have made a decision on either plan (or a continuation of both). We will meet with Dr. Stuhlinger and Dr. Hueter to discuss details of Washington representation, tomorrow (January 29, 1963). ✓

NOTES 1-28-63 GORMAN

B 1/31

\*  
Jlm

1. E & A BUILDING: A contract was awarded to Pearce and Gresham in the amount of \$2,021,564 for construction of the engineering and administration building. Construction time is 420 calendar days.

here at MSFC? Clarify for TWX  
(copy - MSFC 98.)

- \* 1. SA-5 PRE-STATIC CHECKOUT: The S-I Stage is presently undergoing final "clean-up" in the pressure test cell prior to release for static firing. Modified Block II Actuators were installed on all four engines. Three of the four hydraulic systems have been filled, purged, analyzed for contamination and accepted. Yaw actuator for position three was rejected and the booster will be transferred to Test Division without this actuator. Installation and checkout will be accomplished on the test stand. ✓
2. SA-6 PRE-STATIC CHECKOUT: The S-I Stage was transferred to the Quality Assurance Division on January 21 for pre-static checkout. ✓
3. VISIT BY NASA HEADQUARTERS PERSONNEL: Reference last week's NOTES (see attached copy). The purpose of the visit by the NASA Headquarters training expert (Mr. Manning) was to receive a briefing on our proposed training program. Since this program would not be project-oriented, funding support to this effort may be provided by NASA Headquarters, after further study of this program. No budgetary submittal from this Center will be necessary to obtain FY 63/64 funds for this effort if Headquarters agrees to support it as defined. ✓
4. SYSTEMS CHECKOUT WORKING GROUP ACTIVITIES: Members of the Systems Checkout Working Group have worked with Saturn Systems Office, members of the Static Firing Working Group, and DAC to establish checkout criteria for S-IV/SA-5 checkout at Sacramento. At this time it appears that the post-static test operation will be identical to the pre-static tests, and will require the same time, about two weeks. The work to be accomplished in these tests appears to be adequate, with possible exception of three areas: instrumentation calibration, engine thrust vector check, and weight and center of gravity check. DAC proposes to do this work at AMR. Cognizant MSFC personnel are presently considering this proposal and will provide an answer to DAC in about one week. ✓
- Preliminary copies of procedures for all proposed Sacramento tests were obtained and are being distributed for MSFC familiarization. Final test procedures will be available in approximately three weeks. ✓
- In order to expedite the approval, or revision and approval, of these procedures, a team from MSFC will be sent to Sacramento to review and assist in revising these procedures. ✓
- \* 5. USE OF AUTOMATIC TEST EQUIPMENT DURING SA-5 PRE-STATIC CHECKOUT: During the pre-static checkout of SA-5, considerable progress was made with the Packard Bell automatic checkout equipment. The Telemeter Calibration Test was accomplished with the stage under program control of the central computer complex. The test consisted of powering up the stage and energizing the telemetry system via the networks test station, then switching to the instrumentation and telemetry test station to measure and evaluate the "hard-wire" measurements versus the "RF link" measurements. The Simulated Plug Drop Test, which sequences the stage through power up, preparations complete, firing command, and lift-off was also accomplished under fully automatic control. ✓

1 Enc:

Attachment 1

B1131

NOTES -HAEUSSERMANN, 1/28/63

1. SA-5 ACTUATORS: Seven flight actuators have been installed on SA-5 in M-ME. One actuator assembly exhibited questionable functioning in conjunction with M-QUAL test equipment. This actuator has been replaced by a stiff-arm until the vehicle reaches M-TEST. In the meantime, evaluation of the circumstances surrounding the questionable operation is being made while the actuator assembly is being retested by M-ASTR. ✓

\* 2. ST-124 ENVIRONMENTAL TESTS: Temperature and vacuum tests performed with the ST-124 Platform (Serial No. 2) have shown that it functions properly within the environmental limits of the C1 (Block II) vehicle. During a special 6-hour test, with simulated vacuum conditions of 210,000 ft., temperature changes of the ST-124 inertial components were insignificant. (These environmental limits apply to unpressurized IU version.) ✓

3. FUNDING PROBLEM IN RADIATION TESTING AND QUALIFICATION PROGRAM:

The program for the electronic equipment of the RIFT Vehicle Instrument Unit will be in serious difficulty unless adequate funds are provided in FY-64 for necessary evaluation and qualification testing at the Dawsonville Nuclear Test Facility. We have been advised that the RIFT funding level for FY-64 would be approximately the same as FY-63 in which case it would be impossible to continue this test program at a worthwhile level. → *W.H. Let's wait a while. Maybe with Senator Anderson's ascendance to the Senate Space Throne thing will change.*

4. GE MANPOWER BUILD-UP: MSFC was assured by General Electric's Command Systems Division Manager, Mr. Shetler, that the manpower build-up at MSFC under contract NASw-410 would be accomplished by 3/15/63. Manpower for Mr. Fichtner's task totals 190, which is to be comprised of the following types:

		Location
Checkout	120	Test, Qual, and Comp
Checkout	49	Astr, Fichtner's Branch
Integration	21	Astr, Fichtner's Branch
	<u>190</u>	

Mac  
for your info  
B



B

B 1/31

\* 1. S-1-5: Delivery of S-1-5 for static firing had to be postponed until today, 1/28/63, because of hazardous ice conditions on the test stand. Now due to be installed in the stand around noon. ✓

2. RL10-A1: Spin-up planned Wednesday, 1/30/63; hot firing Thursday for approximately 200 seconds using LOX fed directly from transport trailer. ✓

3. H-1 ENGINE TESTING, MSFC

Next firing scheduled, 1/29/63.

↳ Why's that? <sup>K.H.</sup>  
B

\* 4. MTF: Criteria for high pressure water and heating systems and marine terminal building and docks have been received from A-E Contractor, S&P. Criteria for S-II Complex technical systems is expected by 2/1/63. Negotiations with S&P for brick & mortar final design contract for S-1C and S-1I Complexes have been rescheduled by Mobile District for this week, with contract award now anticipated during week of 2/4/63. ✓

5. MARINE ACTIVITIES: Barge PROMISE with SA-4 aboard is now crossing Gulf; position at approximately 11 a.m. today, off Cape San Blas (about 45 miles SE of Panama City); ETA Fort Pierce, 1/31; ETA Cape Canaveral, 2/1. ✓

\* 6. S-IV (WORKING GROUP NOTES): Results of first Static Firing Working Group meeting appeared to be very successful. Philosophy of parallel, independent telemeter, and facility measuring systems was accepted (somewhat reluctantly) by DAC. S-IV-5 and 6 are to apply in a minimal extent because of schedule. Full application targeted for S-IV-7; DAC will present cost by 2/15/63. ✓

First battleship A-3 firing was delayed because of difficulty with engine valves during turbine spin-up, which required re-run to verify clearing of the problem. Next difficulty arose because of electrical problems and resulting damage to wiring. Seven minutes 48 seconds firing <sup>SUCCESSFULLY</sup> run 6 p.m. Saturday. Start was made with 40 seconds fuel cool-down, 10 seconds LOX cool-down with helium bubbling on LOX side (A-1 used 40 seconds each side), closed loop Propellant Utilization (PU) system for all tests. Helium heater failed to ignite; auxiliary pressurization system carried test through. ✓

B 1131

1. \* HEADQUARTERS ADP REGULATIONS: The meeting reported in Notes 10-15-62 (copy attached) resulted in a draft of policies and regulations concerning ADP equipment in NASA. We have reviewed this draft and find that it requires entirely too much detailed reporting to Headquarters. We are documenting our objections and sending them forward to NASA Headquarters through our Central Planning Office. We are also sending copies of the regulations and our comments to Dr. McCall. ✓

B/31

1. LLV: Personnel from the Special Assignments Office are currently participating in the various activities connected with the LLV program. This includes participation with DeFries and the various Marshall divisions. Additionally, the Special Assignments Office is in the process of preparing guidelines for the FY 65 preliminary budget submission and identification of those planning activities required to support a good development program and the preparation of a Project Development Plan. The Marshall organizations which will participate in the systems specs preparation at Hq. is to be discussed the early part of this week between the Division and appropriate Office Directors. ✓

\* 2. C-1/AGENA: This office was advised by telephone this morning (1-28) that a TWX had been sent out of OSS which asks that all effort on C-1/Agena be deferred. Another review of the Centaur program and other factors which could influence another decision relative to C-1/Agena is planned for June or July. ✓

3. HAEUSSERMANN'S NOTES 1-21-63: Reference Haeussermann's Notes 1-21-63 (Saturn C-1/Agena Electrical Interface Panel). It was not the intent of the Special Assignments Office to establish new panels which would be duplicatory to those currently established Saturn Working Groups. It was felt, however, that there were areas in the C-1/Agena program which required working group coverage involving membership from this office, from JPL, from LOC, and associated contractors. It is necessary that working group members be identified and available to support the C-1/Agena program as required. If this function can be achieved by the existing working groups by the addition of new members, on a timely basis, then this office has no objection to the utilization of current working group structures.

4. C-1B/3RD STAGE: The Special Assignments Office will sponsor during the early part of Feb. a planetary spacecraft launch vehicle coordination meeting with OSS. ✓ Initial ground work for such meeting was prepared by Dr. Lange's group under Mr. Stein and initial cut of the agenda is attached. One of the things it was felt should be covered in detail is the latest planning on the LLV inasmuch as OSS appears quite susceptible to using an LLV stage for their mission requirements. ✓ Mr. Cortright has indicated that he will attend this meeting. ✓ We would like to arrange a meeting at a time which would make it possible for yourself and/or Mr. Rees to attend. ✓

\* 5. AGENA: Approximately 30 Agena Systems Office personnel are at Lewis this week to assist Lewis in the Agena program transfer activities. Lewis Research Center assumed responsibility for direction of the Agena program on 1-28. Summaries of outstanding problems and pending action items have been prepared and were delivered to Lewis personnel on the above date. A decision has been made that the PMR Operations Office will also be under the cognizance of the GSFC Field Projects Office effective 1-28. It is anticipated that Marshall's support will be required for the next four to five weeks. ✓

H.H. Problem does not seem to be very acute!

o.k. Please arrange thru Bonnie

Scheduled for Feb. 21, 1963, 1:30 p.m. BH 1/31/63

PROPOSED AGENDA

B1131

PLANETARY SPACECRAFT/LAUNCH VEHICLE COORDINATION MEETING

~~MSFC~~ February 6-7, 1968

The designations of individuals has not been settled by Dr. Lange

February 6

- 9 AM Welcome and Opening Remarks O. H. Lange (MSFC)
- 9:10 Agenda Chairman - R. J. Stein (MSFC)
- 9:20 NASA Long Range Planetary Program O. Nicks (NASA) - HQT/RS
- 9:50 JPL Planetary Missions Studies P. Haublan (JPL)
  - Mission Analyses -
  - Spacecraft Configurations -
  - Launch Requirements -
  - Velocity -
  - Spacecraft envelope -
  - Schedules -
- 10:50 - 11:00 Coffee Break
- 11:00 SATURN Launch Vehicle System S. Reinartz (MSFC)
  - C-1/C-1B Performance C. Thionnet (MSFC)
- 11:30 Summary of Current MSFC In-House Studies E. Goerner (MSFC)
- 12:00 - 1:00 Lunch
- 1:00 C-1B Third Stage Study Requirements R. Morrison (NASA) - HQT/RS
  - C-1B Third Stage Study Requirements Schedule and Funding A. Nelson (NASA) - HQT/RS
- 1:45 Proposed MSFC Study Effort H. Hueter (MSFC)
- 2:20 - 2:30 Coffee Break
- 2:30 Establishment of Planetary Working Group Charter O. H. Lange (MSFC)
- 3:00 Establishment of Planetary Program Management Procedures O. Nicks (NASA)
- 3:30 Summary and Action Items for Next Meeting R. J. Stein (MSFC)
- 4:00 Close Session

February 7

~~Morning Tour of Facilities.~~

Hans Hueter / O.H. Lange

I miss de Fries' LLV input in this meeting!  
I thought this was the key to the C-1B three-stager

B1131

B 1/31

\* 1. C-1 Project:  
Jan

a. SA-5: Final modification and preparation of 1st Stage for static firing was completed by Friday last week. Date of actual move to Test Division depends on weather conditions. This stage is 1 week behind schedule. ✓

b. SA-6: Assembly of 1st Stage has been completed on schedule and was transferred to Quality Assurance Division last Monday. The stage will, however, remain physically in Building 4707 until the pressure cell of Quality Assurance Division becomes available which was still occupied by SA-5. ✓

c. SA-5 Mock-Up has been loaded on the barge Palaemon which was scheduled to depart for Michoud January 24, 1963. ✓

2. C-5 Project:

a. An S-II Working Group meeting with S&ID at Los Angeles has been scheduled for January 29, 30 and 31. At this time the complete status of tooling will be reviewed. Other agenda items are discussions on common bulkhead fabrication technique, welding process development, review of test results of a 10 feet vertical TIG weld, vertical alignment concept, etc. ✓

b. The million dollar dies for hydraulic bulge forming of upper and lower gore segments have been completed at Wichita and are being tried out. First results look very good with almost no spring-back. ✓✓

c. After completion of scaled-down tests of peen-forming, press brake forming and age forming of 90° skin segments for lox and fuel containers it has been decided to use and tool up for the age forming method which is the cheapest and will produce the straightest skin segments. ✓

I'd like to see it B

1. C-1: A draft of C-1B cost, performance and reliability data was prepared and presented on 1-26-63 to NASA Hqtrs. for transmission to the Air Force. ✓

S-IV - Battleship was static fired 1-26-63 for the first time using A-3 engines. Test was considered successful in all respects except that the helium heater never ignited. It was a duration run lasting seven minutes and 48 seconds. Simultaneous tanking was accomplished. There was a three hour hold after the tanks were loaded. Run was lox depletion type. The next static firing is scheduled for 1-31-63. ✓

shortage: Parts Shortage - Good progress is being made in stage parts

## Number Parts Short

	<u>Dec. 1, 62</u>	<u>Jan. 20, 63</u>
All Systems	180	19
S-IV 5	250	56

Facility Test vehicle shipped to AMR 1-18-63. ✓

All Systems to be shipped to SACTO 2-1-63. ✓

2. C-5: S-IC - Approval of Contract NAS8-5608 is pending completion of review by NASA Headquarters. No information is available as to expected date of approval. ✓

S-IVB/C-1B - P&C was requested to prepare a procurement plan for S-IVB/C-1B for submittal to Headquarters for approval in preparation for a contract modification to include S-IVB/C-1B. Effort at DAC up to present has been under a contract change notice. ✓

DAC has submitted a Reliability and Quality Plan to MSFC which will be reviewed in meeting at MSFC on 2-12-63. ✓

B11/31

1. OMSF SCHEDULING AND REVIEW PROCEDURE - The review by Mr. Holmes took place Friday and Saturday. Participation by Center personnel which was arranged was withdrawn. The MSFC portion of the review was presented by Milt Rosen and his project engineers. ✓

A proposal was made by George Low to have these reviews arranged in connection with the Monthly Management Council Meetings (a two day meeting would be required) and to request the centers to present their projects. ✓

No final decision has been made as yet. ✓

2. RESPONSIBILITIES AND FUNCTIONS OF A NASA CENTER DIRECTOR - A comparison of headquarters' revised (1/10/63) description of the General Responsibilities and Functions of a NASA Center Director indicates that little of our proposal was incorporated.

Main reason for this is the apparent determination by Dr. Seamans to keep the Center Director functions general (so that they can apply to all Center Directors) and to bring out the more specific functions in the Mission Statement of the Center. ✓

An MSFC Functional Statement is presently being prepared by M-CP and we will make certain that all essential elements will be included in our proposal. ✓

A special briefing for you is being readied. ✓ o.k.

B 1/31

1. USAF/NASA WORKING GROUP ON LAUNCH VEHICLE STRUCTURES: During the last meeting of this working group, the co-chairmen, Lt. Col. Marcus, and E. E. Goerner initiated discussion on the advisability of proposing to NASA Headquarters and the proper Air Force authority that the group be dissolved in the near future. ✓ The discussion during that meeting resulted in the general opinion of the group to continue the activity. Objectives of the group's activity, as stated in the charter, should undergo some changes. The membership list and the chairmanship will have to be changed. Present Air Force and NASA co-chairmen will have to resign from the group because of changes in their job assignments. ✓

Final decision on this matter will be made during the meeting scheduled for 2-7-63 after the opinions and requirements of the sponsoring agencies are known. (I still think it should be dissolved.) ✓

2. SNAP 8 PROJECT: Layouts have been started to adapt the SNAP 8 payload to the C-1B Instrument Unit. This work is being coordinated through the Vehicle Systems Integration Office.

3. SA-6 AND SA-7 INSTRUMENT UNIT: The SA-6 and SA-7 Instrument Unit has been reanalyzed due to higher loads caused by changes of the APOLLO. Longitudinal stiffeners will be required and additional 5/16 diameter bolts incorporated in both the upper and lower rings of the instrument unit. ✓

4. MEASUREMENT OF SA-7 PAYLOAD: The Structures Branch coordinated with the Astrionics Division and Manned Spacecraft Center the requirements for measurements on SA-7 payload. The program was prepared to utilize the instrument unit telemetry to obtain APOLLO measurements, but is being held pending an agreement between Manned Spacecraft Center and Marshall Space Flight Center as to which agency will buy and install the equipment. ✓

5. RIFT: We have been informed that Lewis Research Center (LeRC) is continuing in earnest with a proposal for a facility in which RIFT could be space tested without leaving the ground and eliminate, according to LeRC, requirement for a flight program. Dr. Silverstein is supposedly going to take this proposal to Headquarters within the week.

Rumors are floating to effect that RIFT is to be transferred to LeRC. We know of no basis for these rumors and have been unable to track them to source.

6. ROVER PROGRAM: Nick Golovin visited Lockheed recently, presumably to discuss possible missions for nuclear rockets. Lockheed reports that the meeting under the prodding of Golovin, degenerated into a soul-searching discussion of all identifiable problem areas of ROVER, both organizational and technical. Golovin was apparently impressed since most of the information he has received to date has come from Harry Finger. Dr. James Quill of Lockheed was scheduled to give the Nuclear Vehicle Project Office a detailed briefing on the visit on Sunday, 1-27-63, on his way to Washington to brief Harry Finger. Of significance, Golovin concurs in the desirability and practicability of nuclear missions but thinks the KIWI reactor is "15 years away." (And he might be about right.) ✓

7. KIWI B: The evaluation of problems of the KIWI B (NERVA Reactor) has been broadened to include testing as well as structural and material problems. This Division and the Test Division are in the evaluation Group. Attached is a copy of the program ground rules. ✓

8. EARMARKING OF FUNDS: As requested by you, I informed Dr. Hardeman of your decision and of the necessity to earmark funds not only for operation, engineering services, etc. but also Advanced Technology (Dry Lake Area) and Hydrogen Technology. ✓

Attachment #1: Ground Rules

1964?

W.M.  
Request briefly  
B  
If you prefer, in short write-up with sketch

Who?  
(Names)  
B

W.M.  
I talked to Browned Hodges about this. He knows nothing about the rumors, but promised me to block any Lewis grab attempts w/ Savannah.

NOTES 1-28-63 Rudolph

B1131

No Notes.

B 1/31

NOTES 1-28-63 Stuhlinger

1. SUPPORTING TECHNOLOGY PROGRAM: As a consequence of the very late arrival of funding authorizations for the OMSF-sponsored research program and the Saturn Systems Office sponsored program (January 1963), the time remaining to commit FY-63 supporting technology funding is extremely short. In the technology areas being managed directly by Research Projects Division, a total of 17.100 M FY-63 funding has been approved and authorized, including 6.05 M from OMSF and 4.8 M from SSO. Approximately 5.166 M of the authorized funding has been committed to date.

We will send a weekly status report to all divisions to indicate the current funding status and to remind all research program coordinators that the time remaining to act on FY-63 requirements is limited. ✓  
Procurement and Contracts Office has indicated that all procurement actions must be in P&C by April 1 in order to assure that the funding can be obligated before the end of the fiscal year. ✓

*Mr. Downey, M-PP, asked that this item #1 not be included in the TWX to Halones.*  
J 1-29-63

B 11/31

1. J-2 STARTING SIDELOADS: Ten tests have been completed in an effort to increase start transient buildup rate to a level that would reduce the engine side loads. Efforts failed and resulted in "over temperature" of the gas generator on several occasions. It can be concluded that the engine cannot be started faster to reduce the side loads. The problem lies in the engine control system design, fuel pump stall characteristics, and nozzle contour. ✓

2. S-IV BATTLESHIP TESTING: The A-3 series of S-IV Battleship tests has progressed through five turbine spin tests prior to going into hot firing. The first two tests were unsatisfactory due to insufficient fuel pump discharge pressure attributable to sticking of the RL10A-3 cooldown valves. ✓

It was felt that a  $\text{GN}_2$  vent stack purge was allowing backflow of  $\text{GN}_2$  through the RL10 helium control system and diffusion into the engine lines. Initiation of  $\text{LH}_2$  chilldown could cause freezing of the  $\text{GN}_2$  which would, in turn, cause valve sticking.

Two subsequent chilldown tests were performed without the  $\text{GN}_2$  purge on the vehicle vent stack, with helium purge of the engine gearbox (as before) and with  $\text{GN}_2$  purge of the  $\text{LH}_2$  tank and engine prior to loading. The last two tests were successful on all engine positions, thus allowing continuation of the battleship program to RL10A-3 hot firing scheduled for 1-24-63. The planned full-duration depletion was delayed because of facility malfunction. On 1-26-63 a 468-second LOX depletion test was run; however, the helium heater did not ignite. Closed loop propellant utilization was used for first time. ✓

3. RL10 PROGRAM: The latest version of the RL10 throttling engine will be shipped to Lewis Research Center this week as a replacement for the modified RL10A-1 throttleable engine which was returned to Pratt and Whitney Aircraft after over 100 firings. ✓

\* 4. F-1 PROGRAM: The second F-1/S-IC Interface Meeting was held at Canoga Park on 1-16/17-63. Principal determination was that a major structural incompatibility exists between the vehicle suction duct and the engine pump inlets. ✓

\* 5. F-1 COMBUSTION INSTABILITY: Joe McNamara called for help for evaluation of the mass of accruing test records. We are making plans to send qualified people (about ten) for a one to two month hitch. ✓

In a conversation with Dr. Crocco, I established his willingness to serve as consultant for Marshall Space Flight Center. We are proceeding with plans to retain him. ✓

6. TITAN II: The TITAN engine development seems to be plagued by a serious instability problem. The Air Force does not want this to be publicized. ✓