

B1-22

C-1 Project

All divisions have been requested to prepare their FY-63 operating plans (hardware, engineering services and facilities) for the latest launch schedule. In connection with this, planning the C-1 operational phase is difficult as MSC has not firmly stated its FY-65 and 66 two stage C-1 operational requirements.

Mr. J. Sloop, Dep. Dir. Ofc. of Space Sciences, met with SSO to express strong Headquarters interest in a three stage C-1 program. JPL was also represented. A tentative agreement for joint preparation of a Project Development Plan was completed. After approval of each representative's management, another meeting will discuss details (about January 29).

I promised Mr. Holmes to read him into this 3-stage C-1 plan before we commit MSFC finally to Office of Space Sciences

C-5 Project

S-IC-P&C suspended negotiations with Boeing on January 11 and notified SSO to resolve with Mr. Rosen the Scope of Work before further MSFC effort is expended. SSO reduced the Scope of Work (7 months effort to 5 months effort and 12.0M to 7.5M) and carried on discussion with Mr. Canright as to acceptability. Mr. Rosen was on West Coast and not available. SSO proposed to resume negotiations; however, Mr. Gorman has established a further review for January 22.

O.L., looks like least sailing was, after we talked to blues.

An Ad Hoc Working Group is being established to develop a detail plan to identify in-house and Boeing effort and to establish a phasing plan identifying responsibilities according to guidelines furnished by SSO.

S-II-Contract clauses and Scope of Work language were negotiated with NAA during week of January 15 for better contract which will permit the contractor to increase his R&D effort during the next few months prior to definitization. The paper work has been completed and we are awaiting fund authorization from NASA Headquarters. The present engineering services contract expires on February 9, 1962, consequently, it is imperative that fund authorization be forthcoming from Headquarters within the next week, otherwise, any further delay will result in no contractual coverage.

Please keep me posted. Will make necessary telephone calls if you insist me to.

M-SAT was notified by WOD on January 19 that they had been directed by NASA Headquarters to stop all work on the S-II A&E design on the grounds that this was not an approved project and also that funding was committed in violation of a specific law concerning use of R&D funds for facilities. The contractor was notified and sub-contract work was stopped as of 3:00 P.M. PST. This action is affecting program schedules.

True! WOD goofed!

Harry Gorman is trying to straighten this out!

Present planning by the Newby facilities evaluation group is to locate S-II development facilities as proposed by NAA at Seal Beach, Santa Susana, and Downey, but that production rates exceeding 12 per year be considered for location in the Southeastern region.

S-IVB-As the result of a lack of a definite mission profile for the S-IVB during the first half of the Douglas study, no concrete results on the S-IVB design were presented during the Mid-Term Review. Also, no consideration had been given to the fueling mode; consequently, Douglas was asked to consider this in further studies. A contract plan (definitive contract only by June 62) has been proposed. A&E work on stand 2A has been dropped. Stands 3A & 3B are being proposed. Work on criteria starts in April 62, and A&E Aug. 1962.

for SIV B ?

for SIV ?

OFFICE OF DIRECTOR

MSFC ROUTING SLIP

CODE	NAME	INIT.	<input type="checkbox"/>	<input type="checkbox"/>
			A	I
1	Dr. Lange		C	N
2	Mr. Means		T	F
3			I	O
4			N	N

REMARKS

As I read attached documents, in particular the Third Stage Procurement Plan signed by Dr. Seaman, I get the impression that Casright drafted the complete text. Now: did he check it with SSO before submitting it to Seaman for signature? If not, did you tell him that we resent this omission? Why was WOO invited to negotiate it; wasn't SIV negotiated by MSFC, PLC?

I think we can live with the text, although I find numerous

CODE	NAME	DATE
	Over	

omissions and sloppy features in it, As wit:

- Possibility, if not probability, that first flight tests of STVB's will be conducted with SI's as boosters
- C-1 2nd stage feature
- Not a word on where guidance eqpt is to be located
- Not a word on orbital storage time (insulation, meteor protection etc)
- not a word on filler needs for boxing etc, etc.

B1-22

NOTES 1-22-62 Maus

B
1-22

1. MASTER PLANNING CHARTING SYSTEM: Established a nucleus of master planning charts on which to build a coordinated MSFC master plan. ✓
2. NOVA: Completed preparation of NOVA Summary Development Plan for presentation and comment at the Technical Board Meeting on January 22, 1962. ✓
3. ORBITAL OPERATIONS: The MSFC proposal for implementation of the GEMINI program is being rewritten in accordance with recommendations of the Technical Board on January 19, 1962. The revised proposal will be available for your review on January 29, 1962. ✓
4. S-IVB AUTHORIZATION: The authorization for Western Operations Office to negotiate the S-IVB contract signed by Dr. Dryden and the procurement plan signed by Dr. Seamans approve six S-IVB stages for the Advanced Saturn C-5. These documents state that S-IVB will be used later for the third stage of NOVA, but makes no mention of C-1 usage. However, they clearly imply that S-IVB is R-1 and state that the stage will be used in the rendezvous mode to take the spacecraft to escape velocity. See red markings on attached document.

↓
see my red note (attached)

B
1-22

NOTES: 1-22-62 MRAZEK

B
1-22

1. ORBITAL OPERATIONS: Last week in discussions with MSC personnel, MSFC was provided full documentation of studies for Apollo R-2 (Lander) and R-3 (return) stages based on:

- a. H₂-O₂ lunar lander with earth storable return stage.
- b. H₂-F₂ in both lunar lander and return stages.

MSC preliminary design is proceeding with approximately 40 man effort.

Present plans are to submit RFQ for two studies with 3 contractors each for:

- a. Preliminary design of R-2 stage.
- b. Preliminary design of "bug" module for Lunar Orbital Rendezvous mode of Manned Lunar Landing.

Plans at Houston are to develop new specialized H₂-O₂ and H₂-F₂ engines for R-2; also to set up facilities for propulsion system testing (R&D).

A digest of these meetings is being prepared by Schramm. ✓

I think we should not fight it. We'd rather stick to R-2

2. CENTAUR/TITANIUM: The Centaur/Titanium Steering Committee met on 1-16/17-62 after completing a substantial portion of the crash program to determine the suitability of using titanium for the fuel and oxidizer containers and concluded unanimously that Ti should not be used for the LOX container but that it is feasible to undertake a project to apply Ti in the LH₂ container. A scope of work was prepared for CD/A. A film is available demonstrating the reactivity of Ti with LOX. ✓

rather stick to R-2

Can I see it? Please arrange w/ Buddie

3. TURBINE SPINNER: The premature firing of a turbine spinner at MSFC test stand about three months ago was caused by the application of 1000v instead of the normal 500v used in the insulation check. ✓

4. SOLID PROPELLANT ATTITUDE CONTROL SYSTEM: A Vickers "Attitude Control System" has been successfully tested. It consists of a solid propellant gas generator producing gas at 2000 degrees F; flow rate 0.47 lb/sec; nozzle diameter for yaw and pitch, 0.25 in. (~ 47 lb thrust); nozzle diameter for roll 0.06 in. (~ 3 lb thrust); operating pressure 1000 psi. The valves switching from one nozzle to another is the problem item. *Operating time??* B

5. CENTAUR: Heat conduction from boost pump turbines during park orbit and transfer coast are significant heat inputs which were recently recognized and had not been considered thus far. ✓

6. C-5: The Structures Branch has started structural layouts on the C-5 design for static test and structural hardware. ✓

7. ENGINE PROJECTS:

F-1: Mr. Belew and Mr. Morea visited NASA Headquarters on 1-16-62 to discuss MOD #11 (Deepened Effort) to the F-1 contract. Headquarters had previously disapproved this; however, it is believed that they will now go along with it, as is. A second F-1 LOX pump has exploded in fast start. Reason appears to be slight rubbing in the inducer housing (due to vibration). ✓

J-2: Some difficulties have appeared in the Gas Generator Ignition area. The contractor has made several changes to overcome the suspected problem, but has not had conclusive results. ✓

RL-10: Two personnel from the Stress Analysis Section are presently at P&WA starting a stress analysis of the RL-10 engine for the S-IV and CENTAUR. ✓

000197

NOTES 1-22 62 Rudolph

B₁₋₂₂

Negative.

NOTES 1/22/62 SMITH

B₁-22NASA PERT

Training - Contracting with the University of Alabama for Phases II and III of the PERT training has been delayed. Plans are being made to renew the training effort by February 5, 1962. ✓

SA-5 - The meeting, held on January 16, 1962 to review and evaluate Marshall's PERT effort to date, had participation from all effected divisions and offices. ✓

As a result of the meeting the operating divisions are reviewing activity time estimates as well as replanning their work in an effort to reduce the most critical path through the network to zero slack. ✓

NOTES 1-22-62 Stuhlinger

B 1-22

1. ELECTRIC PROPULSION: Authorization has been obtained from Headquarters to transfer seventeen additional electric propulsion contracts to Lewis Research Center, and they are being prepared for shipment. This will make a total of 33 contracts transferred to Lewis; the 9 or 10 contracts then remaining to be transferred will be sent up in February. MSFC will retain technical and administrative control over five contracts to be retained here.

As MSFC's last active contribution to the Electric Propulsion Development Program, Astrionics Division will help in the testing of batteries for the electric engine flight test. Referring to your recent note to Research Projects Division in which you approved Astrionics' participation in these batteries tests but suggested that we obtain Headquarters' approval on tasks of this nature, we wish to inform you that we did solicit and obtain approval from Hqs. (Mr. Jim Lazar) prior to requesting your concurrence. ✓

2. SATURN WATER DUMP: In reply to your question on last week's NOTES (Attachment #1) the first water dump is being planned for SATURN flight #SA-2. Dr. Johnson of RPD, who is coordinating the scientific objectives of the project, is a member of a NASA working group to investigate potential disastrous effects which could result from the project, and to further investigate experiments associated with the project. ✓

3. SUPPORTING RESEARCH PROGRAM: In response to Dr. Rees' remarks at the Cleveland meeting early in January, Mr. Tom Dixon and 7 of his key people from the Office of Advanced Research and Technology (OART) will visit MSFC on January 29 and 30 to learn about the overall MSFC Supporting Research Program, to tell how they will handle supporting research from OART, and to meet our research people and see our research facilities. We plan to spend the first day in discussions and the second day in visiting the divisions. RPD will carry the ball for the presentations on the MSFC program, with major divisions in attendance and available for detailed discussions. We hope that you will be able to "kick off" the meeting. Dr. Rees indicated that he wants MSFC to make a good showing, and he plans to spend as much time as possible there. ✓

yes
So do I. B

Mr. Dixon and I met briefly in Washington on January 17 to discuss our Supporting Research Program. Confirming my anticipation, Mr. Dixon stated that MSFC will have to coordinate its SR program with each of the Divisions in the four NASA offices which is interested in supporting research. (See paragraph 5 in last week's NOTES, Attachment #1.)

oh, oh!

4. ORBITAL OPERATIONS: During a one-hour discussion with Mr. D. B. Holmes on January 18, I explained our Orbital Operations - Rendezvous Technology supporting research program, and I asked for release of the \$7.75 million set aside for this program. After an initial remark that Orbital Operations was solely MSC's concern, and that MSC will establish the supporting research program, Mr. Holmes obviously soon realized that MSFC has many direct requirements in this field, and he appeared to accept our viewpoint. In another discussion later the same day in which you were present, Mr. Holmes was again very hesitant to share our views, and to comply with our requests. Dr. Rees and I will further discuss our Orbital Operations Program with Mr. Holmes today (January 22) in Washington. ✓

Attachment 1, NOTES
1-15-62 Stuhlinger

NOTES 1-15-62 Stuhlinger

B1-16

1. SUPPORTING RESEARCH: The funding programmed for the 3rd and 4th Quarter Launch Vehicle Technology Program has now been authorized by Headquarters. A total of 8.115'M has been made available for the FY 1962 LVI Program, not including the Future Projects Office's funding. ✓
 2. SATURN WATER DUMP EXPERIMENT: A teletype signed by Newell and Rosen has been received citing funds and authorizing preparations for the release of the SATURN water ballast at apex. This preparation has been proceeding under Configuration Control Action #160. An answer to the Newell-Rosen teletype, establishing the MSFC plan for implementation of the project is being prepared for your signature. The code name "High Water" has been proposed for the project. *Flight Number what?*
 3. ELECTRIC PROPULSION: Sixteen electric propulsion contracts have been transferred to the Lewis Research Center. The major ion and arc engine development contracts and the RCA contract for the flight capsule are included in these contracts which have been transferred. An additional seventeen contracts are ready for transfer, except for final closing actions, and we are waiting for authorization from Mr. I. R. Schwartz in NASA Headquarters to proceed with the transfer. ✓
 4. ORBITAL OPERATIONS: An Orbital Operations Program is being prepared by RPD for submission to Headquarters. Submissions have been requested from the divisions on the Standard Form 399. As per this date a total of 89 projects have been proposed totalling approximately \$9,718,000. The program is presently being checked for completeness and duplication; it will then be edited and reproduced for discussion with Hqs. representatives. Dr. Lundquist and Mr. Frank Williams are planning to handcarry the program to Hqs. around January 25. *I'd like to see it before submission, if possible. B*
- It is suggested that the name "Vehicle Rendezvous Technologies" be used instead of "Orbital Operations", because Vehicle Rendezvous Technologies is much easier to defend for MSFC than Orbital Operations. ✓
5. LIAISON WITH HEADQUARTERS FOR SUPPORTING RESEARCH AND TECHNOLOGY PROGRAM: The reorganization of NASA Headquarters resulted in a substantial change in the handling of our supporting research program at Hqs. In the past, there was one person in Hqs. who was responsible for those supporting research projects which are coordinated by RPD (Dr. Harvey Hall during recent months); in the future, there will be at least five offices, and several divisions in each of these offices, with which we will have to negotiate our research program. Recognizing the need for a strong and continuing relationship in the area of supporting research and technology with all these segments in Hqs., Research Projects Division has established "Principal Contact Persons" for the various Hqs. offices, and also for "Vehicle Rendezvous Technologies", and for the University of Alabama Research Institute. Details of these nominations will be submitted to you soon. ✓

Attachment #1

January 29, 1962



NOTES 1-22-62 DEBUS

B.1-29

1. Congressional Inquiries to MSFC: I encountered a minor problem with Congressional inquiries which deals with the method of replying to such inquiries. Major complaint: the answers from MSFC are not (in my opinion) expedited. I suggest

a. An answer to Congressmen within 24 hours, that his letter was received and that action has been initiated and a full reply will be made before seven days have passed.

b. That a follow-up system be established to assure that action has been taken as promised.

The need for such promptness should be apparent. Action suggested.

2. Agena Management: The Deputy to Heaton (Mr. John Sloop) visited AMR today and discussed the operations of the Agena Program through MSFC. Ranger #3 shot looks good for Friday this week. ✓

3. Visitors: The number of visiting Congressmen and other VIP for the Mercury operation is fabulous. Messrs Thomas, Spragins and Monroe of Huntsville called to get "in" on the Mercury shot. I set them up with Paul Siebeneichen as escort. ✓

Harry Gorman

Good suggestion. Please set up
suitable machinery. B

noted for
Mr. Gorman's
attention 1/30/62
Jof.

NOTES 1/29/62 CONSTAN

B 1-29

PERSONNEL

Twenty-seven individuals have been employed by Michoud Operations. Twenty of them are presently at MSFC and the remaining seven are at the plant in New Orleans. ✓

MICHOUD PLANT TRANSFER

The BOB has not yet transmitted a recommendation to GSA regarding reimbursement or coreimbursement of the Michoud facility. It is anticipated that the transfer will be accomplished by the end of this week. ✓

RENOVATION AT MICHOUD

Office Building: Work stopped for over three weeks pending authorization by P&C to improve work orders and pending Headquarters approval of additional C of F monies. (X)

Engineering Building: Roofing approximately 70% completed.

Manufacturing Building: Plumbing approximately 70% completed. Repair of 16 fan houses approximately 85% completed. Spray pump motors are in bad condition and will require considerable repair if made operational under present system.

Boiler Plant: Checkout and repair of equipment is approximately 85% completed. Three boilers have been acid cleaned; one remains to be cleaned. ✓

Office Space: Office space at the Michoud facility will be inadequate about August 1962. TSO is conducting a survey to determine the availability of office space in the New Orleans area. TSO is also developing the criteria for the additional office space that will be required. ✓

Manufacturing Space: Chrysler has stated that the space assigned to them at Michoud is insufficient. A review meeting has been set for January 30, 1962 at Michoud with participation by Manufacturing Engineering Division, Quality Division, Saturn Systems Office and Michoud Operations. MSFC opinion is that if Chrysler follows the same make or buy plan as used in house, the space is adequate. ⊗ ⊗

Chrysler Task Orders

Seven (7) Task Orders were issued to Chrysler under Contract NAS8-2576. These tasks covered 153 man-years (335 personnel) of effort from January 22 thru July 31, 1962 in S-1 activities to support M-P&VE, M-ME, M-QUAL, and M-ASTR at an estimated cost of \$1,860,589. ✓

Programming

The second increment of funding in the amount of \$3,000,000 has been processed to procurement for extending the Chrysler contract. Total funded to date is \$4,500,000. ✓

Chrysler Corporation has started reviewing the Redstone and Jupiter quality control procedures for possible use on the Saturn program. Chrysler Corporation will, as much as possible, modify these procedures to comply with Saturn program requirements. ✓

George C.

⊗ What are we doing to break the deadlock? B

⊗ ⊗ It also looks like RIFT will definitely not go into Michoud! B

1. SPACECRAFT ENVIRONMENTAL SIMULATION: The NASA Ad Hoc Working Group on Spacecraft Environmental Simulation, of which Mr. James Ballance, M-AERO-E, was the appointed MSFC member (Aeroballistics Notes 12/4/61), completed their regularly scheduled meetings on January 11-12, 1962. The information gathered by the group has been organized into a number of convenient categories and is to be presented to Mr. Newell Sanders, Office of Advanced Research and Technology, around February 1. At the same time, five copies of this preliminary report will be sent to the working group members so that each NASA Center can review and comment on the report. All comments will be forwarded by the members to NASA Headquarters within a month on receipt of the preliminary report. Mr. Ballance requests guidance as to which offices at Marshall should perform this review. If the total comments from all Centers warrant enough attention, another meeting of the Ad Hoc Working Group will be called to include them in the final report.

2. APOLLO WIND TUNNEL INVESTIGATIONS: According to MSC's Apollo work statement, December 18, 1961, it is noted that NAA is directed to conduct extensive wind tunnel investigations. These investigations include the launch vehicle, in addition to the spacecraft. While this meets with approval of MSFC, it becomes apparent that extremely good coordination must be maintained between MSC, MSFC, NAA and other NASA centers in order to avoid duplication of efforts and foster coordination where overlapping objectives must be met. It might be well to point out that MSC sponsored a meeting this week for purposes of discussing these programs but failed to invite MSFC.

Dr. McCall

Please look into this question and settle it with Dr. Geissler.

B

Let's make this a sub-item on Management Council Agenda.

B1-29

NOTES - 1-29-62 - GORMAN

1. TEMPO II - Action is being taken to modify the Rocket City Air Activities contract, NAS8-1241, to provide the TEMPO II aircraft.
2. RECRUITING BROCHURE - The proofs for the recruiting brochure were received from NASA Headquarters, January 2, 1962. Proofs, dummy, art work, and text were returned to NASA Headquarters January 4 after review here. It is going to take a year.
3. SENATOR DODD - The Senator's office has made a number of inquiries regarding the Chrysler relationship with MSFC including questions about individuals. It has been determined that the questions are coming from Congressman Daddario. Perhaps we should discuss this.
4. ACCIDENT - On January 24, a Mr. Rowell, LOD, was involved in an auto accident after working hours. He was driving a pick up truck supplied under the MSI contract. He was apparently run off the road by a hit and run driver. He is in the hospital with a broken leg and undetermined injuries. We may have legal problems involved. ✓
5. AIR SERVICE - The CAB has approved a 90 day operation for Eastern Airlines to operate between Huntsville and New Orleans, beginning February 1, 1962. ✓

*et's
issues
were
sink*

*Taken care of
Jan 30, 1964*

NOTES - 1-29-62 - GORMAN

1. TEMPO II - Action is being taken to modify the Rocket City Air Activities contract, NAS8-1241, to provide the TEMPO II aircraft.
2. RECRUITING BROCHURE - The proofs for the recruiting brochure were received from NASA Headquarters, January 2, 1962. Proofs, dummy, art work, and text were returned to NASA Headquarters January 4 after review here. It is going to take a year.
3. SENATOR DODD - The Senator's office has made a number of inquiries regarding the Chrysler relationship with MSFC including questions about individuals. It has been determined that the questions are coming from Congressman Daddario. Perhaps we should discuss this.
4. ACCIDENT - On January 24, a Mr. Rowell, LOD, was involved in an auto accident after working hours. He was driving a pick up truck supplied under the MSI contract. He was apparently run off the road by a hit and run driver. He is in the hospital with a broken leg and undetermined injuries. We may have legal problems involved. ✓
5. AIR SERVICE - The CAB has approved a 90 day operation for Eastern Airlines to operate between Huntsville and New Orleans, beginning February 1, 1962. ✓

NOTES 1-29-62 GRAU

31-29

1. SA-2 CHECKOUT: Performance testing of vehicle SA-2 is continuing approximately on schedule. ✓
2. AUTOMATIC CHECKOUT EQUIPMENT: Approximately one-half of the design documentation on the Automatic Checkout System under development contract with the Packard-Bell Computer Corporation has been approved. The remainder of the system will be approved by approximately February 15, 1962. This approval will enable the contractor to begin procurement and fabrication of the equipment involved. The development of an automated program for system overall tests and G&C tests is also in progress. ✓
3. CENTAUR: GD/A is considering major changes in checkout plan and philosophy to more closely correspond to MSFC philosophy and desires. A group of eight engineers from GD/A are now observing checkout of SA-2 as a part of this study. ✓

NOTES 1/29/62 HAEUSSERMANN

B₁₋₂₉

No Notes received from Dr. Haeussermann this week.

NOTES 1-29-62 Hainburg

B 1-29

1. EXPLOSIONS AT THE COLD CALIBRATION TEST STAND:

During a test run at the Cold Calibration Test Stand on 1-23-62, a series of explosions in the propellant catch tank area destroyed a 1000 c.p.m. LOX pump which was being checked out for LOD to assimilate their S-IV stage LOX fill system. The explosions were caused by an improperly wired stop circuit in the pump control system, which made it impossible to stop the motor from the control panel in the Blockhouse. The piping at the pump suction and discharge was also destroyed, with other minor damage to the immediate area. No personnel were injured during this mishap. A PLAIN GOOF.

I appreciate this honest appraisal! B

2. DOUGLAS SACTO S-IV SURVEY: (Visit of Messrs Riggs, Shirley, Rutledge, and Johnson)

Review of DAC-SACTO S-IV facilities and operations indicates good general agreement with MSFC test philosophy and organizational arrangement. Safety consideration adequate, except in fire detection and in possibility of H₂ accumulation in thrust cone. Single-engine firings are "schedule restricted", due to requirement for all firings to be performed with deliverable GSE; therefore, according to DAC, no effort was directed to provide "bread board" GSE for checkout-hot firing tests. Electrical control GSE is pacing item at present. ✓

3. MODEL TESTS, C-1 SEPARATION:

The 1:10-scale model cluster of the Saturn S-IV stage, using six 150-pound-thrust LOX/RF-1 rocket engines, has been installed in Cell 112. Checkout tests of the model cluster were conducted, with ignition occurring at simulated altitudes of up to 120,000 feet. Present facility limitations result in a simulated altitude loss of 10,000 feet per second of test duration. Tests of S-1/S-IV separation characteristics utilizing a dummy S-1 stage with flat plate deflators should commence within a week. This test program is being conducted for PSVE Division.

4. FLASH BOILING LOX PRESSURIZATION SYSTEM TESTING: (Per request in NOTES 1-22-62 Hainburg)

For these tests, about 9100 gallons of LOX are tanked in an uninsulated tank. The tank vent is closed and the bulk LOX temperature allowed to increase 4°F to 6°F in periods from 20 minutes to 40 minutes. The tank is drained, with the vent remaining closed, and ullage pressures from 3 p.s.i.g. to 7 p.s.i.g., corresponding to the vapor pressure of the bulk LOX temperature, are maintained by flash boiling of the LOX. The tests are performed for H-PSVE-PT to provide data for comparing pressurization schemes for advanced vehicles. ✓

5. EMPLOYMENT OF W. L. GRAFTON:

Mr. W. L. Grafton, formerly Director of the Test Evaluation and Firing Laboratory, ARMA, has been employed by Test Division and assigned as Chief of the Components Test Branch, effective today, 1-29-62. ✓

ATTACHMENT: NOTES 1-22-62 Hainburg

Good!
What happened to Hainburg?

Kare H.
I'd like to see this setup + possibly a test.
B

B 1-29

NOTES 1-29-62 HOELZER

Negative report.

NOTES 1-29-62 Koelle

B
1-291. NOVA

Norm Rafel (from Canright's office) was given essentially the same briefing as given in-house. He was in agreement with our approach and, therefore, will not oppose the recommended plan. How did you make out with Rosen in Washington?

2. SOLID S-I REPLACEMENT

We have coordinated a plan jointly with the SATURN Office for the initiation of this study effort and would like to discuss it with you in the near future at your convenience.

3. MEDIUM CLASS VEHICLE

STL gave their final presentation on January 26. They concluded that for the large number of satellite missions planned for the future, it is desirable to select one basic vehicle and not continue using different vehicles for each mission. They showed that either a liquid (TITAN II plus CENTAUR for 24-hour missions) or a solid (160-inch plus CENTAUR for 24-hour missions) could do the required job and would cost about the same. However, now that the TITAN II is already part of the NASA vehicle program, it would be cheaper, and probably should be used for future orbital missions in the 1965 - 1970 period.

H.H.K.

Let's discuss all 3 points. Please make
appointment (1 hr) thru Buddie Martin.

B

1. SA-5: The installation of the first sub-assembly fixtures in Building 4707 for SA-5 Tail Fabrication is now underway. Longitudinal welding fixtures, bulkhead welding fixtures, trim fixtures, etc., which were used for tankage fabrication for SA-1 through SA-4, are being relocated for use in the structural fabrication of SA-5. ✓
2. R&D: The first circumferential weld in a horizontal position on 1/4" Aluminum, Alloy 2014, has been successfully accomplished on the 160" test fixture. ✓
3. C-5: Two representatives from the Boeing Company, Mr. E. Stone, Chief, Process Development, S-1C, and Mr. C. Mitchell, Welding Engineer, visited this Division during the report period. They discussed welding process equipment and controls as applicable to the S-1C vehicles. Ideas were mutually exchanged and it was agreed that present welding controls are inadequate for the S-1C Program. As soon as the S-1C Budget is released, ~~multiple study contracts~~ will be issued to develop new controls. ✓

Oswald Lange / Jim Braulet

When can that money be
pried loose for knees?

B

Info called
into Dr. Rogie's
offc 1/30/62 1:30
jff.

MSFC ROLLING SLIP					
	CODE	NAME	INIT.	<input type="checkbox"/>	<input type="checkbox"/>
1	M-01R	Dr. von Braun		A C T I O N	I N F O R M A T I O N
2					
3					
4					

REMARKS

We have worked this plan of action out with
M-P&VE and TEST Division.

Robert E. Lindstrom
Robert E. Lindstrom

Include in today's NOTES.
Bob *Jan-29*
Is Heimbury satisfied with this
solution or did you have
to cram it down his throat?
B-1-29

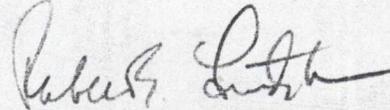
CODE	NAME	DATE

MSFC ROUTING SLIP

	CODE	NAME	INIT.	<input type="checkbox"/>	<input type="checkbox"/>
				A	I
				C	N
				T	F
				I	R
				O	M
				N	A
					T
					I
					O
					N
1	M=DIR	Dr. von Braun			
2					
3					
4					

REMARKS

We have worked this plan of action out with
M-P&VE and TEST Division.



Robert E. Lindstrom

Include in today's NOTES.
Jan 1-29

CODE	NAME	DATE

GEORGE C. MARSHALL SPACE FLIGHT CENTER
HUNTSVILLE, ALABAMA

Memorandum

TO Distribution

DATE January 15, 1962

FROM M-SAT

SUBJECT Acceptance Testing of the S-I Flight Stage for SA-5

- REFERENCE:
- (a) "SATURN C-1 Program Changes", June 14, 1961, M-SAT.
 - (b) Minutes of SATURN Configuration Control Board Meeting, December 19, 1961, "Board Meeting of December 14, 1961, SCCB No. 6", M-P&VE-E-532.
 - (c) "Policy for the SA-5 Static Measuring Program", December 20, 1961, M-P&VE-TSS Memo No. 132.
 - (d) "Acceptance Firing of S-I Flight Stage for SA-5", January 4, 1962, M-TEST-DIR

Policy for subject testing is as follows:

a. M-TEST and M-P&VE will prepare a 7-week test program to include a propellant loading test, a short duration static firing test, and a full duration static firing test.

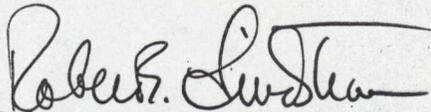
b. At the end of the full duration test, a decision will be made to:

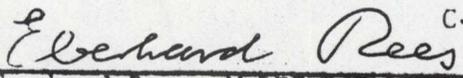
(1) Remove the vehicle for flight or

(2) Leave the vehicle on the stand for continued R&D. In the event the latter case is selected, SA-6, to be static tested on the West Side Tower, will be flown in place of SA-5.

(3) M-TEST, M-P&VE, and other concerned divisions will assure that the measuring program for the planned 7-week test program is sufficient to provide a proper technical evaluation.

(4) The vehicle will be delivered complete by Quality Division.


Robert E. Lindstrom
C-1 Project Manager

APPROVED: 
Eberhard Rees, M-DEP-R&D

SUBJECT: Acceptance Testing of the S-I Flight Stage for SA-5

DISTRIBUTION:

M-DIR
M-DEP-R&D
M-TPC
M-TEST-DIR
M-TEST-Mr. Driscoll
M-ASTR-DIR-Dr. Haeussermann
M-ASTR-TSJ-Mr. Brandner
M-ASTR-To Section Level
M-AERO-DIR-Dr. Geissler
-Dr. Hoelker
M-LOD-DIR-Dr. Debus
-Dr. Gruene
M-LOD-AD-Mr. Zeiler
M-ME-DIR-Mr. Kuers
M-ME-To Section Level
M-P&VE-DIR-Mr. Mrazek
-Mr. Weidner
M-P&VE-TSS-Mr. McCullough
M-P&VE-To Section Level
M-QUAL-DIR-Mr. Grau
-Mr. Godfrey
M-QUAL-To Section Level
M-TEST-To Section Level

GEORGE C. MARSHALL SPACE FLIGHT CENTER
HUNTSVILLE ALABAMA

Mr. Kees / Dr. Lange / Mr. Lindstrom
Memorandum

I think our position re Mr. Driscoll/ar/876-4010

TO Distribution *a short-cut test* DATE January 4, 1962
evaluation of S15 should be seriously

FROM M-TEST-DIR *reconsidered. I think Heintzberg / Driscoll*
are right when they say we are actually endorsing a major

SUBJECT Acceptance Firing of S-1 Flight Stage for SA-5 *risk program with*
the planned shortened test program. Will the S15 stage

REFERENCES (a) "Saturn C-1 Program Changes," June 14, 1961, M-SAT Memo *really*
be on line so we have

(b) Minutes of Saturn Configuration Control Board Meeting,
December 19, 1961, "Board Meeting of December 14, 1961, *to rush*
SCCB No. 6," M-P&VE-E-532. *S15 to the*

(c) "Policy for the SA-5 Static Measuring Program," *detriment of*
December 20, 1961, M-P&VE-TSS Memo No. 132. *reliability???*

1. The decision was made and recorded in reference (a) that no static test version of the Block 11, C-1, S-1 stage would be made available because the schedule would not allow the time to fabricate and assemble such a stage. Specifically, the justification for this decision was that another tail assembly was just impossible to squeeze into the schedule. However, since that time, the schedule has somehow become elastic enough to seriously consider squeezing in an entire SA-D5, S-1 stage. At the time of the decision not to build an SA-T5, it was proposed by Test Division, on the basis of past test requirement experience, that at least three full duration firings be planned for S-1-5 so that an orderly development test program could be accomplished in addition to acceptance testing the stage. It was estimated that twelve weeks would be necessary for this development testing and acceptance firing of S-1-5. Attempts to have this twelve-week schedule (three duration firings) accepted as official through M-SAT have failed.

2. It is felt that three duration firings would be necessary to evaluate the Block 11 design under the various conditions which can not all be simulated in a single duration test. These conditions are mainly concerned with the LOX flow and pressurization system, gimbal control system and the gaining of confidence that no major difficulties are to be expected from launch and flight test. This philosophy is one which has been fruitfully followed in past programs and in the case of S-1-1. There would not be an entirely justifiable engineering need for static firing this stage at all if Block 11 were truly the same as Block I. However, many major changes have been made, some of which are: structure, LOX propellant flow system (from series to parallel), LOX pressurization system (flow control valves and pressurizing line inside the center LOX tank), up-rated engines (with baffle injectors), and new telemeter system. It is impossible to efficiently learn these systems' characteristics in one short (safety test) duration test and one long duration test. In addition, this does not allow the

Subject: Acceptance Firing of S-1 Flight Stage for SA-5

January 4, 1962

verification of system type environmental data on the many new brackets, etc., which this change in configuration has necessitated. With the exception of the engines, each of these changes concerns areas where major problems occurred in Block I design prior and during static firing of S-1-1. What other arguments have been voiced against static firing? It has been argued that most of these problems can be found from component and sub-system testing. Along with this argument must be purchased the assumption that MSFC has become fantastically efficient in their design and operation. That is, we can do the same for S-1-5 in one system test as it took four system tests to do for S-1-1 (SA-1), not to mention all the non-firing tests and checkouts which were made with SA-1 in support of the SA-1 configuration before flight test. It had also been argued that the static firing environment is not as severe as, nor similar to, flight environment. This is, of course, true for the dynamic flight induced environments (buffeting, bending, etc.). However, the flight measurements on SA-1 have shown that, if anything, the static firing environment is very similar and somewhat more severe than the engine induced flight environments. The argument has also been raised that static firing severely limits the life of the flight stage. It is felt that the record of SA-T dispels this fear. It has undergone, to date, about nine times the powered flight duration under static firing with essentially the same major hardware items. It is felt that the last two facts — facts because they were proved by test and measurement and not mere assumptions — have clearly demonstrated the economy and technical value of system static firing as an engineering tool.

3. The need for only one full duration firing (six weeks) to gain data was again verified, reference (b) and reference (c). Test Division was the lone dissenter with this decision in the meeting covered by reference (b). In the face of such active or at least passive opposition to Test Division's opinion and requests, Test Division can do no less than to protect their own interests in this operation. That interest now is but to safely conduct an acceptance firing of this flight vehicle. It will, therefore, be necessary to establish a strict set of ground rules which other divisions should use in regard to S-1-5. Since this stage is a new configuration with which Test Division will have had no operational experience, the allotted six-week period of operation must be reserved entirely and exclusively for the use of Test Division. On that basis the following rules are established:

a. All "hardwire" instrumentation will be installed prior to delivery of the stage to the test stand. The requirements for this instrumentation will be generated by Test Division and will include only those measurements necessary for monitoring the safe operation of the stage and the evaluation of engine performance. All other measurements must be taken via telemeter channels. This measuring program plus the telemeter channels will constitute the entire measuring program for S-1-5 acceptance firing. To date, this has not been accomplished because of last minute "requirements" from the design divisions.

Subject: Acceptance Firing of S-1 Flight Stage for SA-5 January 4, 1962

b. The stage will not be accepted by Test Division until it has been signed over, in writing, by Quality Assurance Division as to its complete and functional readiness according to the Propulsion and Vehicle Engineering Division static test configuration documentation. All telemeter channels are considered as being covered by this same restriction. To date, this has not been accomplished because of incompleteness in documentation and slippage in schedules.

c. Only assembly work which is essential to reassemble the vehicle and install it into the test stand will be performed on the test stand. The imposition of a six weeks test time precludes an operation similar to that performed on S-1-1 and S-1-2. To date, this has never been accomplished because of schedule slippage and the fact that vertical assembly facilitates some assembly operations.

d. Requests for special tests will not be considered by Test Division within this time span. This is also a novel situation.

e. No formal data presentation nor data report prior to the completion of the test program. Design personnel will have to fit their participation to the schedule.

f. Should any other division tend to cause a lag in the test schedule, Test Division will proceed without their participation.

g. Since this test program is planned for the Christmas holidays of 1962, all personnel involved in the execution of this program, both Test and other divisions, will have to arrange to take their leave before this time or willingly sacrifice any leave they might lose.

4. Even with the liberal use of overtime and the above restrictions it will probably not be possible to conduct the test program on this stage within the six weeks allotted. A time budget for a six weeks program on the basis of the restrictions stated before is shown in enclosure 1. While the relationship between the times is real, the absolute numbers are fictional and are offered only to fill up a six weeks period of work. This time budget is the same as is now shown in the MSFC-PERT system for SA-5.

5. In summary, it is felt by Test Division that the deletion of a Block II static firing test stage was already a major compromise in favor of the schedule, and to now delete, intentionally, the development test program on S-1-5 is endorsing a maximum risk program. This seems incompatible with the philosophy which motivated some of the major changes which now constitute the Block II, C-1, S-1 design. It is felt that this political, rather than technical, reasoning will leave a serious void in knowledge because the time restriction thus imposed prohibits the

Subject: Acceptance Firing of S-1 Flight Stage for SA-5 January 4, 1962

opportunity of obtaining sufficient data to really judge the worthiness of this configuration prior to flight test. In fact it could lead to an exaggerated delay because a proper hardware measuring program cannot be installed in this time frame. This can result in the need to hold the stage and even necessitate the rerunning of tests to properly identify problem areas. It has never been the policy, in the past, to rely on telemeter for critical measurements since the telemeter system itself is the object of test. Also telemeter data, by nature, has never been available as fast as hardware data. Lastly it is realized by Test Division that the imposition of these restrictions may have the effect of disassociating the MSFC-wide cooperative engineering effort which, it is felt, made SA-1 an unqualified success. However, they are necessary if this division is to be given every opportunity to safely fire this new configuration vehicle in the six weeks allotted.

Karl L. Heimburg
Karl L. Heimburg
Director, Test Division

Enc:

S-1-5 Acceptance Firing Time Budget

Distribution:

M-DIR	-	
M-DEP-R&D	-	Dr. Rees
M-TPC	-	(2)
M-SAT-DIR	-	Dr. Lange (2)
M-SAT	-	Mr. Lindstrom
		Mr. Vruels
M-ASTR-DIR	-	Dr. Haeussermann
M-ASTR-TSJ	-	Mr. Brandner
M-ASTR	-	To Section Level
M-AERO-DIR	-	Dr. Geissler
		Dr. Hoelker
M-LOD-DIR	-	Dr. Debus
		Dr. Gruene
M-LOD-AD	-	Mr. Zeiler
M-ME-DIR	-	Mr. Kuers
M-ME	-	To Section Level
M-P&VE-DIR	-	Mr. Mrazek
		Mr. Weidner
M-P&VE-TSS	-	Mr. McCullough
M-P&VE	-	To Section Level
M-QUAL-DIR	-	Mr. Grau
		Mr. Godfrey
M-QUAL	-	To Section Level
M-TEST	-	To Section Level

S-1-5 ACCEPTANCE FIRING TIME GET
(SIX WEEKS PLAN)

ITEM	NORMAL WORKING DAYS (Saturday not included)
1. Receive S-1-5 from M-QUAL.	0
2. Receive Ground Support Equipment (GSE) and Ground Equipment Test Set (GETS) from M-QUAL.	0
3. Parallel preparatory operations:	
a. Install and perform GETS check.	
b. Hook up GSE to S-1-5 and perform component and system check.	
c. Install S-1-5 on test stand.	
d. Install lower cantilever shrouds, purge, deluge, fill and drain systems.	
e. Hook up hardwire instrumentation and calibrate.	8
4. Checkout for propellant fill test.	2
5. Propellant fill test.	1
6. Data evaluation, inspection, calibration and prepare for short duration (safety) test.	4
7. Short duration (safety) test.	1
8. Data evaluation, inspection, calibration, and prepare for full duration test.	6
9. Full duration test.	1
10. Data evaluation, inspection, and calibration check.	5
11. Ready S-1-5 for removal from test stand.	2
12. Remove S-1-5 from test stand.	<u>1</u>
TOTAL NORMAL WORKING DAYS	30
FIVE SATURDAYS	5
40% OVERTIME @ 50% EFF. = .20 x 35	7
TOTAL EFFECTIVE WORKING DAYS POSSIBLE IN A SIX WEEKS PERIOD W/O HOLIDAYS.....	42

Enc

NOTES 1-29-68 Maus

B 1-29

1. MASTER PLANNING CHARTING SYSTEM: Extended MSFC system of master planning charts to include detailed schedule, budget, and organization information relative to the nuclear program. These charts were used by Col. Fellows on 1-26-62 in a presentation to Mr. Webb and Dr. Seamans. ✓

2. NOVA: Prepared the NOVA Summary Preliminary Development Plan which was presented to and approved in principle by the Board on 1-22-62. Subsequently, this plan was presented to Norm Rafel by Future Projects Office and Lunar Program Planning Office. No formal presentation of the NOVA Development Plan in Washington is planned at this time pending further discussion among Mr. Rafel, Mr. Rosen, and Mr. Canright. ✓

3. ORBITAL OPERATIONS: Coordinated the efforts of the Orbital Operations Committee in preparing the presentation made to the Board on 1-25-62. The guidelines given by the Board will be incorporated into the presentation prior to the meeting with Dr. Shea during the week of 2-5-62. ✓

4. S-IVB AUTHORIZATION: (Reference Attachments 1, 2, & 3) The document authorizing contract negotiation on S-IVB was drafted by Mr. Canright's office. The document was discussed by phone with Mr. Bramlet of SSO before release. Mr. Canright was under a tight time schedule due to Dr. Seaman's public announcement at Michoud that an S-IVB stage would be developed. ✓

WOO negotiated the S-IV stage contract with Douglas for P&C. This arrangement is planned to continue for S-IVB. ✓

The document is sufficiently broad that the items you mentioned as being omitted (e.g., insulation, meteor protection, location of guidance equipment, etc.) can be incorporated in the definitive work scope that is being developed by the S-IVB Working Group. ✓

The usage of S-IVB on C-1 is not fully acceptable to everyone in headquarters; therefore, in an effort to expedite the S-IVB contract negotiations the C-1 potential usage was intentionally omitted by headquarters. ✓

Attachment 1, NOTES 1-22-62, Maus

Attachment 2, Routing Slip - Your Questions re Item 4 of Attachment 1

Attachment 3, Authorization for WOO to Negotiate S-IVB Contract

H.M.

Suggest you discuss this with Laugel. We're coming up with a plan for a "combined C-5/NOVA Dev. Plan".
B

ok.
l. busy
sheet
B

NOTES: 1-29-62 MRAZEK

B1-29

1. SOLID PROPELLANT ATTITUDE CONTROL SYSTEM: (Reference Notes: 1-22-62 Mrazek, paragraph 4, Attachment). The operating time of the valves used for switching from one nozzle to another is 60 seconds. These are reusable type valves. ✓
2. BERYLLIUM ANODIZING: Our Engineering Materials Branch has recently developed a new method for anodizing beryllium parts which constitutes a break-through in corrosion protection. As a result of this, beryllium is finding increasing application in gyro parts due to its thermal stability, light weight, and high modulus of elasticity. Our vendors (Bendix and Bell Aero Systems) are also using this method for anodizing beryllium. *Patents pending? B*
3. S-IV: Douglas is trying to find a fix for the helium heater which does not ignite under altitude operating conditions. ✓
4. 14" DIA. MAIN LOX BALL VALVE: Reliability and repeatability of this type valve in F-1 test stand 2-A at EAFB has been achieved with new actuator assembly. ✓
5. LEAK METER: A prototype flight version of the leak meter, which will be used for J-2 and F-1 engine component and system testing, is now available at MSFC. ✓
6. APOLLO R-2 MEETING: MSFC will participate in this meeting on 2-5/6/62 at MSC with Lewis and Headquarters (Lowe). ✓ *Please keep me posted on outcome. B*
7. NOVA: Structural studies are considering a diameter of 600 inches, and a non-circular pattern for the engines similar to SATURN is being recommended. ✓
8. C-5: Based on limited information, the dynamic factor on C-5 should not exceed 1.3, therefore an ignition and cut-off sequence of 3:2 - 2:3 is recommended. ✓

Studies to date show that a sea-borne launch of C-5 may exceed all flight conditions unless the launcher is stabilized. ✓

Ground rules for C-5, S-1C design are being compiled.

9. ENGINE PROJECTS:

F-1: Engine delivery rates, facility requirements, and funding requirements for the F-1 engine program have been formulated based on the peak C-5 vehicle launch rate given in the M-SAT C-5 Development Plan, and a NOVA launch rate of half that of the C-5. ✓

J-2: First engine firing scheduled for week of 2-5-62 will be essentially an engine blow-down with possibility of achieving Augmented Spark Igniter ignition. First engine hot-firing is expected latter part of February. ✓

M-1: Informal technical discussions were held with Aerojet on 1-27-62 to establish design and development philosophies. ✓

RL-10: The APIX LE_2 plant will be out of operation from 1-13-62 to 2-2-62. Emergency supplies of LE_2 have been and will continue to be shipped to P&WA to permit some testing. The impact of shortage of LE_2 on engine delivery schedules is being evaluated. ✓

11. TITANIUM/LOX COMPATABILITY MOVIE: (Reference Notes: 1-22-62 Mrazek, paragraph 2, Attachment). A showing of this movie is ~~tentatively~~ scheduled for Wednesday, 1-31-62, at ~~1:30pm.~~ Director's Conference Room. ✓
1:30pm.

Attachment: Notes: 1-22-62 Mrazek

1. SUPPORTING RESEARCH PROGRAM: RPD has solicited research requirements from all divisions for the FY 1963 Launch Vehicle Technology Program, and will consolidate them this week. The requirements will be used in presentations to Mr. Dixon and his party from the Office of Advanced Research and Technology on Thursday and Friday, February 1 and 2. You will receive an invitation and an agenda of the meeting today. We discussed the entire program with Dr. Rees; he will take part in the presentations. Do you want to be briefed before the meeting? ACTION REQUIRED. Request some condensed listing for "study the

E.S.

might before"

B

Mac

Please include this

(w/ short background

briefing note) in our agenda

for Managers

Council Meets.

Also only

We should

continue our

program.

B

2. CHARGED PARTICLE SHIELDING WORK: RPD has a \$150,000 research contract with Oak Ridge National Laboratory for an experimental program in charged particle shielding. The Manned Spacecraft Center plans to let a contract for approximately \$1 million to ORNL for similar work. In fact, our existing contract scope of work has been incorporated almost verbatim into their new contract scope of work. It therefore looks like our program will become insignificant. Mr. Keller of RPD visited Hqs. and MSC to discuss the possibility of MSFC's support of MSC's program, but obviously no changes in the above-mentioned plans will be made, although members of OART and OMSF, and also Mr. T. Dixon and Mr. B. Holmes, expressed the desire that we in MSFC should continue our work on radiation effects. Dr. Rees has been informed of the situation in case it should be discussed in the Council Meeting on January 30.

yes, by all means

Feb 6

3. SUPPORTING RESEARCH FOR RENDEZVOUS TECHNOLOGIES: On January 22, I met with Dr. Shea, and briefly with Mr. Holmes. Dr. Rees participated in the meeting with Mr. Holmes. Dr. Shea stated at the beginning that all rendezvous technology (Orbital Operations) work, including supporting research, should be in the hands of MSC. Later on, he conceded that we have some good points when we try to initiate research studies now in order to generate basic data for technical decisions that must be made while the lunar project progresses. However, he did not feel that he can approve any of our proposed projects before he held a working meeting between OMSF, MSC, MSFC, and possibly MIT, and even the AF. In this working meeting, Dr. Shea hopes to decide upon technical details of the Orbital Operations Program, including details of the guidance systems, control systems, rendezvous mode, the roles of ground stations, the use of multi-purpose computers, etc. These decisions will then delineate the tasks of MSC and MSFC, and MSFC's supporting research program can then be established accordingly. Dr. Shea intended at first to keep this meeting small; however, after more discussion with Dr. Rees and me, Dr. Shea agreed that decisions can be made in this meeting only when a sizeable number of members from MSFC and MSC participate. The meeting is tentatively planned for the second week in February. MSFC's part should be prepared very carefully. Your guidelines are urgently needed (possibly after the Dixon Meeting). ACTION REQUIRED.

Haus Means

The supporting research portion of Orb. Ops. should be made an organic part of our overall orb ops presentation. Please coordinate between Dr. Skidell & deFries.

RUST

Quinn to me.
Rees 1/30/62
BSM 10:30 am

B

NOTES 1/29/62 SMITH

B
1-29NASA PERT

Discussions are underway with P&C relative to supplementing the initial justifications for the PERT Training Program with the University of Alabama. A delay of approximately six weeks is expected as a result of the amount (\$21,000.00) exceeding the authority of local University Center.

A meeting with LOD is scheduled on January 31, 1962 for discussions relative to progress of PERT applications to launch operations and AMR facility programs.

Minutes of PERT Meeting on January 16, 1962 outlining policy decisions on MSFC PERT effort published to organizational elements. ✓

PROGRAMS

Representatives of the Office of Space Sciences visited Marshall last week for the purpose of discussing policy and procedures for program and financial operations between Marshall and OSS on programs assigned to MSFC by their office (specifically the Centaur and Agena Program).

Representatives of the Office of Advanced Research Technology are expected to visit Marshall this week for the purpose of establishing policy and procedures for program and financial operations on projects assigned to Marshall by OART.

MSFC received 3rd Quarter program authorization in the amount of \$22,800,000 for the Agena Program.

Information has been received from the Office of Space Science that the responsibilities for authorizing Centaur funds for the A-3 Engine Effort has been transferred from OSS to the Office of Manned Space Flight. The 3rd Quarter authorization for this program is expected from OMSF this week. ✓

000226

NOTES 1-29-62 Rudolph

B-29

Negative.