

Nov. 6, 1961

NO REPORTS THIS WEEK FROM:

HAEUSSERMANN  
CONSTAN  
DEBUS

NOTES-11-6-61-GEISSLER

B 11-6

1. HIGH RESOLUTION ENVIRONMENTAL DATA: Official action has finally been taken by NASA Headquarters on behalf of MSFC's statement of requirements for high altitude (above approximately 75 km) data on temperature, density, pressure, etc. for the Atlantic Missile Range. Goddard Space Flight Center has been requested to prepare a plan of action for support of MSFC requirements. This action is in line with your suggestions last year that we get other NASA Centers to provide us with the necessary high altitude data for our use in establishing values for MSFC vehicle design studies. The collection of data below 75 km will continue to be by AMR personnel in cooperation with MSFC. ✓
2. SA-1 EVALUATION: The Saturn flight evaluation is progressing with high priority. The cooperation of all divisions within the Evaluation Working Group is highly successful. Data flow from LOD is very satisfactory. Results of the evaluation are published in regular bulletins. Dr. Speer made a presentation to the Board of Directors on November 3, 1961. Significant problem in aeroballistics area is a potential sloshing problem in roll between 90 sec flight time and cut-off. Investigations are continuing. ✓
3. SATURN OPERATIONAL FLIGHT CONTROL: Final contractor selection for the conceptual study of "Saturn Operational Flight Control" will be made at the steering committee (AMR-MSFC) meeting within roughly one week. Top candidates appear to be Sperry Rand, RCA, and IBM. The scope of this study will be closely related to the area of interest to the ad hoc working group "Flight System Control" which was recently suggested in the Advanced Program Coordination Board meeting at Langley. ✓
4. SPACE FLIGHT TRACKING AND ORBIT DETERMINATION: System studies in the area of space flight tracking and orbit determination are being continued. A point of particular interest is the influence of bias errors on the ultimate accuracy. Such bias errors include velocity of light, astronomical and gravitational constants, station locations, etc. ✓
5. SPACE ENVIRONMENTAL CHAMBERS: Mr. Jim Carter, FPO, contacted AERO-E during this week for background information about space environmental chambers. He feels strongly that large chambers will be required for "Orbital Operations" R&D and full scale vehicle checkout. Mr. Carter was given copies of the Aeroballistics Division's proposal for formation of a Space Simulation Group plus the NASA-DOD survey on existing U. S. facilities and proposed facilities. Warning: Space simulators are too costly to be dealt with at the Divisional level, centerwide treatment required.

Hans Maus: Suggest you get in touch with Jim Carter to coordinate this program. He is making preparations in the area of "manned outside repairs in orbit" etc. B

## NOTES 11-6-61 GORMAN

B W-6

1. Of the total additional positions available to Marshall under the increased \$4.6 million (S&E), 311 have been allocated to the divisions and offices while 260 have been held in reserve for staffing for management of Pratt & Whitney Convair contracts, Pearl River and Michoud operations, additional positions for Centaur, etc. ✓
2. Nothing new has developed in the Gurtler-Habert issue except an unfortunate article in the Huntsville Times which begins "MSFC Refutes Drew Pearson". As you know, we are trying to avoid any further involvement in this case. ✓
3. Our personnel office has received word of my confirmation to the deputy's job. Harry G. → Good *Please cut necessary papers for my signature. Place your picture* ✓
4. A meeting has been scheduled for November 14 between Styles, myself, and a panel of union representatives from Washington to work out an agreement on construction of Complex 37 and/or an agenda for a meeting between Mr. Webb and the union presidents. Styles and LOD are in the process of preparing an MSFC position to be taken on the 14th. Believe you should have a short briefing on this before the 14th, your schedule permitting *o.k. Please lay it on (Don Bonine)* ✓
5. Headquarters received word from a contractor source that we plan to negotiate with the top three contenders for the S-I before contract award. Siepert agreed it was a good idea, but we should make a presentation to Headquarters before we undertake negotiations with the top three contenders. Understand Rees received a similar call from Dixon with the same comments from Dixon. ✓
6. Congressman Thomas' visit to Marshall has been canceled for this week. He may visit at a later date. ✓
7. Because of your concern with respect to the fallout problem, I have asked Dave Newby to prepare a brief report giving you the details of what is going on here, at the Army, and the community of Huntsville. ✓
8. The meeting of November 1 with the people to be displaced at Pearl River went very smoothly; thanks to Senator Stennis, who strongly endorsed our project. About 1,000 people attended. *Let's prepare a nice, personal letter to Sen. Stennis for my signature. He sent me a note recently* ✓
9. A GAO team will make an initial survey of our activities the week of November 20. The detailed audit will follow. ✓
10. Representatives of Harbridge House are visiting Marshall this week to work up an agenda for a series of indoctrination sessions on procurement matters. The sessions will be oriented towards the "project engineer" type. ✓

Called  
on 5  
11/7/61  
592Bogue's gallery  
B

NOTES 11-6-61 GRAU

B11-6

1. QUALITY ASSURANCE POLICY AS APPLIED TO NASA PROGRAMS: The "Quality Assurance Policy as applied to NASA Programs" (NASA Management Manual, General Management Instructions 4-2-2 dated October 13, 1961, signed by Dr. R. C. Seamans) was received in this Center and distributed by the Quality Division. This document is considered an important milestone for obtaining the required degree of quality in the future and will have impact on the internal operation of the various Centers as well as on the relationship between the Centers and the Inspection Agencies of the Department of Defense. In case you have not had an opportunity to read the document, I quote some of the most essential points:

"3.b. The Director of each field installation will establish a single organizational point for quality assurance responsibility and authority in the installation.

3.c. NASA installations shall retain overall responsibility for the quality of items and services procured and cannot delegate this responsibility. Within this continued responsibility, NASA installations may delegate authority for quality review activity to existing and available organizations.

4.a. It shall be NASA policy to utilize every practical means of assuring high quality of space systems. To accomplish this objective, quality assurance requirements shall be placed contractually on space system contractors and sub-contractors by NASA installations.

4.b. Assuring satisfactory contractor performance in developing and maintaining the quality of space systems and their parts is the responsibility of the cognizant NASA installation, assisted by Government inspection agencies to the extent determined advantageous by the NASA installation."

From the document "Procedures for Utilization of Government Inspection Agencies for Quality Assurance Functions at NASA Suppliers' Plants" (NASA Management Manual, Chapter 18, Procurement, Subpart 7, dated October 13, 1961) which was distributed simultaneously with the above mentioned document, I quote:

"50.704 PROCEDURES

(a) In arranging for inspection in accordance with Part 18-14, NASA installations will designate the inspection agency, as appropriate, and:

(3) Determine the work requirements to be delegated to the inspection agency and at the same time provide for:

(1) NASA engineering representation and technical liaison at the factory.

(ii) NASA performance of quality assurance functions which are not delegated.

(iii) Designation of individuals at the responsible NASA installation for quality, engineering and documentation matters for the contract.

50.705 (c) (5) If more than one Government inspection agency is involved in Research and Development work at a plant, determine as early as possible which should perform desired inspection."

These documents clarify the NASA standpoint and should make our future dealings with other Agencies easier.

*Dieter Grau*

*Congratulations! I think you fought a good fight here! B*

NOTES 11-6-61 Helmburg

B 11-6

1. SA-2:

SA-2 was removed from the Static Test Tower and delivered to F&AE Division, 11-2-61. ✓

2. SA-T:

SA-T was installed in the Static Test Tower the night of 11-2-61 and preparations for tests are underway. First test, last of November. ✓

3. LIQUID HYDROGEN TEST FACILITY:

The first LH<sub>2</sub> cold flow fill and drain test was successfully conducted on the test facility, 11-4-61. ✓

4. MODEL STUDIES:

a. VLF-37: Model tests with 1/20 scale C-1 configurations have determined that the present VLF-37 deflector design is satisfactory. Some hot gas overwash, which could heat up the pedestal columns, would be alleviated by the addition of sidewalls. Limited preliminary data indicate that the sidewall pressures would not be excessive. ✓

b. West Area Deflector: Model tests with C-4 configuration at 1/59 scale have indicated that the deflector design, with 24° exit uplift, is satisfactory under full gimbal conditions. The aspirator effectively prevents hot gas backwash. ✓

5. F-1 ENGINE STATIC TEST FACILITIES:

Mr. Tischler agreed to construction of the three single-position test stands (vs. the two double-position stands) at Edwards Air Force Base, California. ✓

6. BARGE MODIFICATIONS

The barge "Compromise" arrived at the Todd Shipyards, Houston, Texas, on 11-3-61, for modifications. Should the name "Compromise" be retained or changed at this time? (Change of name to "Promise" would be most economical - only have to erase "Com".)

↑  
 Good idea. Suggest to publicize it in a suitable way (via Bart S.).  
 ("Money-conscious MSFC" or so.)

B11-6

## NOTES 11-6-61 HOELZER

1. DATA REDUCTION SA-1: The basic data reduction of SA-1 flight data is virtually complete. Reduction procedures that provide analysis of data in various combinations are proceeding. As can be imagined, there is a huge amount of harmonic analysis and correlation calculation. This is proceeding slowly because the processes themselves are slow and manpower is available for only about 1 shift per day per piece of equipment. ✓
2. STATUS OF THE VEHICLE: The study group has reviewed some of the engineering documentation in Structures & Mechanics Division to determine whether it can be used as a master file for posting the Status of the Vehicle and, if not, what will be necessary to add to this record in order that it may be used as a master. At present data is being gathered in the F&AE Division as to their needs for Vehicle Status Report. The general plan for obtaining the Status of the Vehicle from the design phase to firing should be complete within three weeks. This plan will enable MSFC to determine how to make a complete systems study and what is needed for implementation of same. This status is to include such items as status of all E.O.'s, status of assembly, all defects to date, items waived or changed, and over-all history which accompanies vehicle during any transfer. ✓
3. LOD PAYROLL: Beginning testing this week of LOD payroll in Atlanta on IBM Service Center 1401. ✓
4. FMO COMPUTER: In a meeting held Thursday, November 2, in Mr. Rees' office we discussed the FMO computer situation. Dr. McCall knows details. After 2½ hours of heated conversation it was decided that the Computation Division would make a fast system study to determine what type of computer hardware should be used in FMO in order to be able to include it ultimately into an integrated data system for all of MSFC. This study is to be completed by December 15. A plan for an MSFC version of a "corporate data center" will be worked out together with Dr. McCall for presentation to you, Dr. Rees and Mr. Gorman. ✓

Financial  
management  
office

What's  
that?  
B

Fine

MSFC SYSTEMS ENGINEERING CAPABILITIES

The 200-page abstract volume is completed and ready for distribution. I understand you want to discuss this with Mr. Holmes on November 13th, and give him his copy of the report.

✓ Yes, I'd like to see it before he comes. B

OLVP- LONG RANGE PLAN

A copy of this year's long range plan has been received for review from Mr. Rosen's office. Our written comments have to be in Washington Wednesday morning. I have drafted our comments and Mr. Rees will go over it Tuesday morning (8:00 a.m.). Will you have a chance to discuss this with me? Best time is Tuesday morning at 9:00 a.m. or shortly thereafter. *Hardly.*

FRANK WILLIAMS has now completed his Washington assignment, but will be on leave most of this week. He wants to report on some personal impressions of Mr. Holmes and Dr. Golovin today or tomorrow.

✓ Tuesday afternoon only. *Hardly.*  
✓ *Has done!* B  
*Time!*

ENVIRONMENTAL TEST FACILITIES

Large space environmental test facilities for checkout of OLV's, OLF's and other orbital equipment are a real critical problem in preparing for OLO. Jim Carter is preparing a memo for your consideration and action.

orbital launch vehicles

orbital launch facilities  
orbital launch operations

These abbreviations!!!  
Meaning? B

NOTES - 11/6/61 - KUERS

B 11-6

SA-2

Returned to Assembly Shop November 2. Conversion to flight configuration presently in process. ✓

R&D

1. The second meeting, with NAA, of the Vehicle Assembly Working Group S-II Stage Ad Hoc Committee was held here on November 1. New concepts resulting from these discussions include:

- a. Manufacturing of cylindrical skin sections using larger segments and welding longitudinally in the vertical position.

- b. Fabrication of common bulkhead by welding complete inner and outer bulkhead skin assemblies and bonding honeycomb in one complete assembly rather than bonding the bulkhead gore in segments as previously proposed.

Various other processes and procedures in the NAA S-II Manufacturing Plan were also discussed to provide basis for the final draft of their Manufacturing Plan. ✓

2. Installation of 160" diameter Paddle Wheel Test Fixture in Building 4707 has been completed. Horizontal circumferential test welds are now being made. ✓
3. Mr. Paul Zeigler, Director of Metallurgical Research, Kaiser Aluminum Corporation visited this Division November 3 to discuss problems involved in welding heavy gauge 2014 plate. Personnel from Material Lab, S&M participated in discussions. ✓
4. Mr. Marcel Sommeria, Senior Project Engineer, Sciaky Brothers, Inc. visited us on October 31 to discuss and witness the actual performance of the new low frequency arc guidance transducer developed by this Division. Sciaky is presently experiencing problems with their arc guidance system being used by Douglas Aircraft Corp. on the S-IV. In the performance evaluation, efforts were made to imitate the same condition as encountered by DAC. The low frequency transducer was able to perform adequately under these adverse conditions. Mr. Sommeria concluded that the low frequency transducer performed better than any his company had built to date. Efforts are now being made to speed up the conversion of this breadboard type model into a piece of equipment suitable for shop use. ✓

NOTES 11-6-61 Lange

B11-6

1. S-I: Technical and business evaluation was completed and transmitted to the Source Evaluation Board Members on 10-31-61; The Source Evaluation Board will meet on Wednesday 11-8-61. ✓

2. S-IB: Technical Evaluation Criteria are completed and will be transmitted to the Chairman of the Source Evaluation Board today. Contract proposals are expected by Wednesday 11-8-61. ✓

3. S-II PROGRAM: The engineering services contract was signed by NAA and WOO on 10-27-61. ✓

A review of S-II facilities, including consideration of Aerojet test stands, was completed 10-31-61 with the result that S-II facilities during S-II development appears impractical.

Supplemental funding will be given to NAA to:

~~Oswald Lange Use of Aerojet for~~

is that what you mean?

B

a. Advance the design of the hydraulic actuator system prior to full contract-go-ahead, to insure early delivery of actuators to Rocketdyne. ✓

b. Advance the A&E design of S-II development facilities at Downey, Seal Beach, and Santa Susana. ✓

4. M-SAT, Dr. Lange, took part in the APOLLO-A Evaluation at Langley Field, on 11-1/3-61. ✓

5. M-P&VE, Dr. Kuettner, met with SSO to consider Mark II on the SATURN C-1. The obvious conclusion drawn is that we can fly a Mark II manned at the same time we can fly the APOLLO manned. So from the standpoint of the National Program using SATURN C-1, it would be best to go directly to APOLLO. We are going to try to gain more information about the modified TITAN II through Colonel Sorenson. ✓

The information above is a similar approach to that using the S-V for APOLLO orbital rendezvous and deep space probes. The studies you requested on this are through the preliminary trajectory and performance stage. See the MEMO from SSO dated 11-1-61, subject: Preliminary Project Development Plan, for further details of what is under study. ✓

6. PERT: Implementation is proceeding satisfactorily. A display is set up in SSO Chartroom, and depicts those milestones which have been furnished to NASA Headquarters. A study to compare these officially approved milestones dates with the tentative PERT data will be started shortly. ✓

if Apollo can  
be had on time!  
B

NOTES: 11-6-61 MRAZEK

B 11-6

1. START CYCLE OF J-2 ENGINE: (See Attachment). ✓
2. CENTAUR: Future Projects Design Branch is investigating the feasibility of a 3 Stage CENTAUR configuration. The complete evaluation will be reported to the LSMV Office by 12-1-61. ✓  
Engineering Materials Branch (P&VE) has assumed responsibility for the technical direction of a \$250,000 program with Convair on the use of titanium for the CENTAUR.
3. RIFT: As of 11-6-61 Seamans had not signed Procurement Plan. Meeting this Thursday at high level (Seamans, Abbott etc.) to discuss Procurement Plan. Appears to be lack of coordination at Headquarters level. ✓  
*Delucas* *Let us not overlook Fiberglass, Better than Titanium at L<sub>2</sub> temperatures!!* B  
Two additional contractors have proposed \$1.00 contracts on the RIFT study. Space General looks pretty good but Boeing does not. ✓
4. SA-2: It appears that many changes to the measuring system will be proposed as matters of refinement. (Needs Change Board Action) ✓
5. SA-5: For SA-5, the decision was made to gasify and disperse "cool down LOX" from the S-IV stage chambers by nitrogen gas injection into the LOX flow. This requires the addition of 12 high pressure LN<sub>2</sub> gas bottles. ✓  
2  
1st stage  
3
6. MATERIAL RESEARCH:
  - a. Radiation Damage Studies: A contract with Convair, Ft. Worth, has been negotiated to study the combined effects of radiation, vacuum and cryogenic temperatures on materials of interest to the RIFT program. Plans are also being made to support Oakridge National Laboratories with some equipment in the conducting of a program of mutual interest on radiation effects on materials. ✓
  - b. Lubrication In Space: A contract has been negotiated with CBS Labs to study the effects of space environment on lubrication. ✓
7. ENGINE PROGRAMS:
  - a. F-1: Project approval has been received from Headquarters on the 3 single position stands; however all other funds have not been released. ✓
  - b. J-2: Funds for facilities not released yet. First all systems test delayed by approximately 2 months partly due to change to a gas spin start. ✓
  - c. M-1: A preliminary Project Development Plan is being prepared at the request of NASA Headquarters (LPL). A FY-62 Supplemental budget of \$26 million (R&D, Propellants & Facilities) to support this program has been submitted in coordination with NASA Headquarters. (Del Tischler, LPL)
  - d. RL10: PFRT on the A-1 going well - 17 out of 20 test complet, repeatability between runs good. *Very Fine!* B

Dual engine cold flow test have been completed. One 30 sec dual hot test was run on E-5. First negotiation session of the A-3 contract has been completed at Huntsville. Negotiations will resume at West Palm Beach in 10 days. Three hot tests at Lewis have been completed. Some problems still exist in facilities causing hydrogen supply instability. ✓

Attachment: Excerpt (Notes: 10-30-61 Geissler)

Excerpt - NOTES: 10-30-61 GEISSLER

B4-6

1. IN FLIGHT EXPLOSION HAZARDS - THIRD MEETING:

b. The start cycle of the J-2 engine was discussed with respect to potential hazards. Two start cycles are proposed. The first one uses only the tank head to start the engine; it is characterized by a slow turbine spin-up, needing six seconds to build up to full thrust; 80 lbs/nozzle of H<sub>2</sub> are dumped into the interstage before main stage ignition; presence of this H<sub>2</sub> would prohibit the use of pyrotechnic separation devices. The second cycle starts the turbine with compressed gaseous H<sub>2</sub> from a storage container. While mechanically a little more complex, this cycle compresses the thrust build-up to 1.5 seconds and eliminates the dumping of H<sub>2</sub> with its potential hazards. It is therefore considered mandatory for manned flight application. ✓

(Dr. von Braun comment: Mr. Weidner - What's your reaction?)

Answer:

START CYCLE OF J-2 ENGINE: (Reference paragraph 1.b. Notes 10-30-61, Geissler) Problems to be encountered with the "slow" tank-head start cycle in the J-2 Engine were recognized here soon after the start of the J-2 Program. The seriousness of the problem became drastically clear in our SATURN C-2 studies. Since then we have been pushing for an alternate (fast) starting procedure, at the same time cleaning up the propellant overboard bleed requirements prior to ignition. Everybody is finally aboard including Headquarters, Rocketdyne, the S-II Contractor, etc., and it is a going concern. Rocketdyne has modified their system accordingly. ✓

Attachment

## NOTES 11-6-61 SMITH

B 11-6

1. NASA PERT:

a. SATURN, SA-5: Refinement and updating of the SA-5 integrated network continued with a reduction in the schedule delay from 18 to 13 months. Additional improvements will be reflected in the next bi-weekly report due on November 8, 1961. Copies of integrated network and latest computer run was distributed to all Divisions and M-SAT November 3, 1961. ✓

b. Training: Phase I of the PERT training course to be offered by University of Alabama will begin December 5, 1961. ✓

2. LAND PURCHASE - CAPE CANAVERAL:

Per your comments on NOTES 10-30-61 (copy attached). Acquisition of the 80,000 acres of land north of AMR for the Manned Lunar Landing Program (MLLP) facilities is an MSFC C of F project; with actual land purchase being effected by the Army Corp of Engineers (JAX District) in accordance with the recent agreement between NASA and Depart of Defense. Funds and project authorization are provided by NASA Headquarters to MSFC, then a procurement request is initiated jointly by LOD and Technical Services Office to MSFC, P&C; the P&C office then completes MSFC procurement action by placing a funded purchase order upon the JAX District Corps of Engineers. Dr. Seamans has designated to the Corps of Engineers Dr. Debus as the NASA focal point for all information and direction in this land purchase.

In this capacity Dr. Debus is to give direction to the Corps as to which land to buy. Dr. Debus is to act as the contracting officer's representative and certify the payment vouchers submitted by the Corps. ✓

Attachment No. 1 NOTES 10-30-61 SMITH

NOTES 11-6-61 Stuhlinger

B11-6

1. ELECTRIC PROPULSION PROGRAM: RPD is proceeding with plans to phase out the electric propulsion program. We have obligated essentially all of the money for contracts and will be in a good position to transfer the contracts with a minimum of burden upon Lewis Research Center when they are ready to take them. Harold Finger will visit us presumably on November 13 to discuss how this transfer will be accomplished. Dr. Haussermann has already furnished us his recommendations on how the various tasks on which G&C is furnishing us support should be phased over to Lewis. ✓

2. RPD'S FUTURE ASSIGNMENT: I have continued to familiarize myself with the Manned Lunar Landing Program, and with the projects currently underway at JPL (Ranger, Surveyor, Prospector, Mariner, Voyager), with the intent to find a possible future project assignment for RPD. Discussions were held with Mr. Maus, Dr. Kuettner, Mr. Koelle, Mr. DeFries, and Dr. Lange. ✓

3. RPD ROLE IN RIFT PROGRAM: Col. Fellows of the Nuclear Vehicle Project Office met with Dr. Shelton and me this week. We agreed that RPD will furnish direct nuclear engineering support to NVPO until bidders' specifications are finalized. After that, when the need for engineering support is less urgent, RPD will resume concentration on aspects involving more basic nuclear physics. ✓

4. OBERTH'S HONORARY DEGREE: In accordance with your suggestions on the NOTES of 10-30-61, we have contacted PIO and they will have an article about Professor Oberth receiving his degree in next week's Marshall Star. ✓

5. LIQUID H<sub>2</sub> RESEARCH AT LEWIS RESEARCH CENTER: Stimulated by your question, we checked whether members of MSFC (Paul, Head, Hall, Belew, Lucas, Hueter) are familiar with research on liquid hydrogen presently underway at Lewis. As far as we could find out, MSFC has been in constant close contact with the Lewis Research Center effort. A copy of one of Mr. Kinser's trip reports will be sent to you. ✓

6. SMART PROJECT: Dr. Strughold will arrange for a meeting between members of the AF School of Aviation Medicine, San Antonio (Strughold, Stapp) and MSFC, probably around December 12, to present details of the Air Force's approach to the problem of human vs. automatic functions in space operations. Who should go there from MSFC? Should STG be included? ACTION REQUIRED.

Ernst St.

Suggest Maus, Kuettner,  
Jim Carter, (from Aero,

Attach. 1 NOTES 10-30-61 Stuhlinger

(from  
G&C,

+ RPD) of course.

(whoever you designate)

Suggest not for  
the time being.

Nov. 13, 1961



## NOTES 11-13-61 DEBUS

B  
11-13

1. LOD Off-Cape: Segments of LOD's Financial Management have started to move to new quarters off-cape. New location is in the area of Cocoa Beach where Martin, STL and Boeing have their offices. ✓

2. Centaur Management (Follow-up item): Action is well underway between LOD and Convair to firm up test plans for Centaur to meet with MSFC test philosophies. There is a marked difference in attitude of certain personnel at the Cape following our meeting with Dempsey, Davis et al. ✓

3. Dornberger Contact on FLOURINE FUELS: I have arranged for Dornberger to meet with AMR personnel to investigate what problems for launch arise from the proposal for storable fuels. You mean "no-vent" storage of fluorine?

4. Rescheduled Visits: VP Johnson's visit now tentatively set for the last week in November. Congressman Thomas' visit is tentatively set for that period also. ✓

or what?  
B

## NOTES 11-6-61 DEBUS

B 11-13

1. Centaur Management Meeting in Washington:

a. Technical and political problems of this program were discussed in Washington last week with Dixon, Rees, Hueter, Dempsey, Ehricke, Davis, and me. Rees has full details, but notable statements concerning the technical checkout were:

Dixon--"We in government have a responsibility to look into what contractors are doing and see that they do it properly. The responsibility for Centaur is in MSFC. Therefore, they will dig into the program and direct it." ✓

--"A successful launch at the earliest possible date is the prime requirement...not just a launch at the earliest possible date. Therefore, MSFC will specify test requirements to give the maximum assurance for a successful launch." ✓

Dempsey--"If you do things differently than we have in the past then we will do what you want us to." ✓

b. Follow-on meetings were held at CCMTA and progress is being made now in the technical checkout requirements for Centaur. Tentative indications show a slim possibility of first launch this year. ✓

2. MSFC Labor Position Meeting: Styles/LOD meeting held at CCMTA Saturday to arrive at MSFC position on labor. Styles has details to present to Seaman and then to Labor Meeting on 14 November. Significant points:

a. Instead of the words "interface areas" we propose to use, "Experimental Tie In Points." ✓

b. Work of a construction nature performed by vehicle stage contractors that could be determined as Davis/Bacon work will have to be either:

- (1) Sub-contracted to a construction contractor,
- (2) Performed by NASA civil service personnel,
- (3) Performed under a maintenance contract. (This contract is presently out for bids.) ✓

c. We will attempt to use the maintenance contract to build an in-house capability of craft union personnel. ✓

d. The Corps of Engineers will be advised to use the NASA Industrial Relations Office for labor problems and not use the Air Force to solve labor problems on NASA projects. (NOTE: We anticipate many labor problems, not only in "experimental tie-in points," but also in the installation of prefabricated items.) ✓

1. Ranger II: Continuing the series of schedules for Ranger II, it was scrubbed again and rescheduled for the middle of this month. Total of 5 re-schedules so far. ✓

2. Davis AMR Meeting: I discussed the proposed AMR organization of Davis with him. He is setting up Richardson as his deputy for Space Programs. Thus, it appears that Gibbs' office will become somewhat ineffective and I have to reorganize for the Test Support Office.

3. Saturn Launch Photos: Color films of the Saturn Launch are available showing many details of ignition, lift-off and tracking. Technically outstanding. Zeiler can arrange for showing at MSFC if you are interested. 1 am!! B

4. NASA Hqs. Organization: Copy of the new Headquarters organization was furnished me while in Washington. Snyder tells me that there will be 5 individual Launch Operations segments under the various offices. ←

Kurt

Is that former General Richardson, lately with RCA?  
Is he back in uniform, or Civil Service?

B

Kurt

We discussed this with Brainerd Holmes and told him that this was impossible. We agreed that there should be a special meeting on this entire organizational problem in the near future. Please lay it on with Holmes' office. (Coordinate suitable date with Bonnie). B

## NOTES 11-13-61 GORMAN

B11-13

1. Official representatives from the Pearl River area spent Thursday afternoon and Friday morning in Huntsville. They saw a static firing, visited Test Division and Fab Division, had dinner with Chamber of Commerce officials, and had several meetings with MSFC officials as well as downtown representatives. The affair went very smoothly. ✓
2. Approval and money was received to proceed with design and site surveys at the Pearl River area. ✓
3. There will be a NASA-wide supply conference beginning here tomorrow. ✓
4. The proposals on the "housekeeping" and S-IB contracts at Michoud have been received and are being evaluated. ✓
5. A meeting has been set for November 15 between Maintenance, Inc. (our janitorial contractor) and the steel workers union. This meeting is to discuss wage demands by the union. There is a possibility of a strike sometime in the future. Mr. Styles is keeping abreast of the situation. There is nothing we can do as far as we know. ✓

→ Get me a broom! I'll  
sweep my own office.

B

## NOTES 11-13-61 GORMAN

B11-13

1. Official representatives from the Pearl River area spent Thursday afternoon and Friday morning in Huntsville. They saw a static firing, visited Test Division and Fab Division, had dinner with Chamber of Commerce officials, and had several meetings with MSFC officials as well as downtown representatives. The affair went very smoothly. ✓
2. Approval and money was received to proceed with design and site surveys at the Pearl River area. ✓
3. There will be a NASA-wide supply conference beginning here tomorrow. ✓
4. The proposals on the "housekeeping" and S-IB contracts at Michoud have been received and are being evaluated. ✓
5. A meeting has been set for November 15 between Maintenance, Inc. (our janitorial contractor) and the steel workers union. This meeting is to discuss wage demands by the union. There is a possibility of a strike sometime in the future. Mr. Styles is keeping abreast of the situation. There is nothing we can do as far as we know. ✓

→ Get me a broom! I'll sweep my own office.

B

ANSWER TO DR. VON BRAUN'S QUESTION ON THE NOTES OF  
NOVEMBER 6, 1961

B 11-13

NOTE: "Nothing new has developed in the Gurtler-Hebert issue except an unfortunate article in the Huntsville Times which begins 'MSFC Refutes Drew Pearson.' As you know, we are trying to avoid any further involvement in this case."

DR. VON BRAUN'S QUERY: "Bart Slattery, Why couldn't we prevent this?"

ANSWER: This article in the Huntsville Times could possibly have been temporarily prevented by the use of the old dodge "no comment."

It is standard public information practise when an article such as Drew Pearson's appears, to be prepared at the appropriate time to answer questions from the media. Accordingly, as a good public information practise and at the request of Headquarters PIO, I prepared a RTQ (response to queries). A copy was forwarded to Headquarters PIO and was checked by PIOs with the appropriate people on the Administrator's staff. The information contained in the RTQ was used to answer questions asked by the Huntsville Times. Headquarters PIO used the same RTQ to answer questions for Aviation Week, Missiles and Rockets, New York Post, Washington Post and Washington Times. There were probably others about which I have not been informed. The contents of RTQ were also checked here at Marshall to be sure that the statements therein were true. The fact that a situation existed which might encourage us to try "to avoid any further involvement in this case" was not made known to me until November 4. I doubt that the existence of this situation in any way relieved us of a responsibility of answering press queries. This is a matter of NASA policy as well as good public relations practise.

A copy of the original article and the RTQ are attached hereto for information.

✓

O.K. B

NOTES 11-13-61 GRAU

B11-13

1. SA-T INVESTIGATION: Structural inspection and investigation on SA-T have been completed. No major defects were noted. ✓
2. GUIDELINES TO A.F. AT HAYES CORPORATION: Quality Division guidelines to the Air Force at Hayes Corporation for inspection and acceptance of GSE have been submitted thru P&C for official notification. This letter notes deviation from past working agreement with the Air Force in that certain areas of work at Hayes will be covered entirely by a Quality Division representative. ✓
3. QUALITY REPRESENTATIVE AT LOCKHEED, MARIETTA, GA.: The Mechanical Systems Analysis Branch has assigned a resident inspector to the Lockheed, Marietta, Ga., operation. This will reduce the amount of TDY to this place considerably. ✓
4. INSPECTION SERVICE AT WEST PALM BEACH - PRATT-WHITNEY: For renegotiation of the contract with Pratt & Whitney, it has been recommended, after thorough consideration from all angles by Propulsion Projects Office, P&C, and Quality Division, that Quality Division personnel be used for the quality control responsibility and that the Air Force be relieved of this job. The basis of the recommendation is more experienced personnel is needed and the use of MSFC methods of quality assurance are necessary. It is felt that neither of these things will be forthcoming from the present operation. ✓
5. PARTS PROGRAM: A letter has been forwarded to M-REL from the Parts Working Group indicating general agreement with Dr. Gephart's proposals concerning the control of parts in vehicle manufacture, but clearly stating that MSFC is presently working on a plan which we consider to be more adequate for all centers than the JPL Plan. The letter also recommends a strong input be allowed from MSFC in any NASA-Wide plan which is adopted. ✓
6. CENTAUR PROJECT: First flight Vehicle C-1 is now undergoing receiving inspection at Cape Canaveral. A representative of this Division is witnessing this operation. Centaur Vehicle C-2 has been returned to GD/A after completion of mating tests at LOD. Centaur Vehicle C-3 is being sent to Sycamore Canyon for study of the intermediate bulkhead leak problem, utilizing LH<sub>2</sub> and LO<sub>2</sub>. ✓
7. PRESSURE CELL ADDITION TO BUILDING 4708: The remaining portions of the pressure cell were accepted by the Quality Division. The cell is now ready for use. ✓

Notes  
 this  
 per-  
 subsequent  
 as a  
 temporary  
 solution?  
 think  
 up to 2  
 not even  
 2 years  
 may be  
 a.k., but  
 the coffee?  
 B

Lewis' personnel's great contributions (list names etc) would go a long way B

WEEKLY NOTES - 11-13-61 - GRISSLER

1. SATURN BASE HEATING TEST RESULTS: A voluminous report on the 1/2 scale Saturn base heating tests at NASA-Lewis has been received, culminating 1 1/2 years of effort. Significant conclusions:

a. The degree of real effort that other NASA Centers will exert is largely influenced by diplomacy and the amount of good will that MSFC people are able to generate. (Proof: Dr. von Braun's brief visit and pep-talk at Lewis had a marked effect on livening up the program.)

b. It is harder to influence technical decisions and methods at other NASA Centers than at equivalent contractors. *oh yes!*

c. Small scale base heating results from tests similar to those run at Lewis are still in the "state-of-art development phase" and the confidence level of model data as related to the full scale application is low. Even with advancing techniques, programs of this type will remain handicapped by the inadvertent dilemma of noncompatible scaling laws of aerodynamics and combustion chemistry. Nevertheless much useful information, especially qualitative, is obtained. ✓

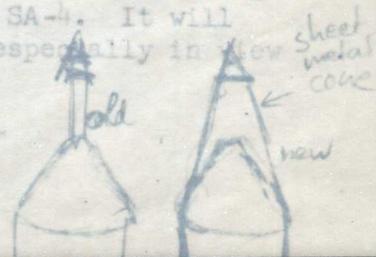
2. SA-1 EVALUATION: The sloshing instability during the last few seconds has been mathematically reproduced. The 2 possible solutions being studied are: (1) extension of slosh baffles into the rear area of the tank, and (2) a change of networks with possible phase stabilization of roll bending. ✓

3. DYNAMIC TEST TOWER: The investigation of the effects of the suspension system continues for the purpose of improving the suspension system and to prepare for Block II and later on for C-4 dynamic tests. ✓ *see Hanses - main a note 11-13*

4. SOUND PROPAGATION-ATMOSPHERIC INFLUENCE INVESTIGATIONS: Although all equipment is not installed, the atmospheric sounding station and prediction unit for use in direct support of Test Division static test is now operational. Techniques, empirical and theoretical, are being developed to analyze atmospheric influence on the low frequency sound propagation in cooperation with Test Division's sound level measuring program. The overall objectives of our work are: (1) Develop prediction techniques to forecast, in advance, conditions conducive to focusing of low frequency sound waves; (2) Develop mathematical models of sound propagation as a function of atmospheric parameters; (3) Provide Test Division with all necessary support concerning atmospheric conditions for use in static test scheduling and evaluation. ✓

5. INTRODUCTION OF APOLLO SHAPE: A discussion was held with representatives of STG and Langley Research Center concerning the payload of SA-5. There is evidence of a substantial amount of aerodynamic vibration produced by the escape tower and by the nose shape, which may at transonic speeds lead to structural damage. Further tests with a 2% scale model are expected in the near future simulating accelerated flight through Mach 1. If the results are encouraging, an effort will be made to introduce Apollo shape into SA-5 and schedules are presently being checked to see whether a test flight of this shape can be made on SA-4. It will also be necessary to increase the stiffness of the escape tower, especially in view of the possible use of an  $\alpha$ -meter on top of it.

Can't we put a cover over the tower? How much more would it really weigh? B



Letter to Abe Silverstein expressing our appreciation

Bu-13

1. CENTAUR PROGRAM: a. MSFC patiently listened (7 hours) to the GD/A presentation 11/9 on the proposed modifications to the Centaur guidance system and the preliminary evaluation of the first piggy-back flight. The main positive results of the meeting were: (1) Convair admitted all the system's shortcomings (previously stressed by MSFC) and recommended improvements (many originated in MSFC); (2) Adoption of recommendations is mainly a funding question; (3) We will evaluate the recommendations and GD/A will follow-up with cost proposals; (4) Certain improvements in the Librascope Computer will be defined this week in a meeting at Librascope; (5) The atmosphere was friendly and cooperation will improve. ✓

b. Gyro Branch personnel have been participating in final acceptance testing of Centaur gyros and accelerometers at St. Petersburg. Delivery of three GG49D6 gyros, three DGG116A2 accelerometers and associated test equipment is scheduled this month. ✓

2. CONTROL SYSTEM PLANNING FOR SATURN - BLOCK I: a. SA-2. The same values for  $a_0$  and  $b_0$  gains will be used. Roll filter will not be changed. Another rate gyro package will be added to determine best location (spider beam or canister). ✓

b. SA-3. Active rate gyro system will be flown for P and Y loops. ✓

c. SA-4. Active rate gyro and control accelerometer will be flown for P and Y loops. ✓

3. AIR BEARING FOR SATURN BENDING MODE TESTS: One large plano-spheric air bearing (16 inch dia.) has been completed. Tests have been made with 12,000 pound load. Eight of these bearings are needed for the bending mode tests. At 1000 PSI, they will carry 160,000 lbs. each. ✓ (Request more details; sketch, concept suffices) B

4. SECURITY PLAN FOR COMMAND SYSTEM FOR SATURN/NOVA CLASS VEHICLES: In response to request of Range Planning Office, AMR, we are preparing (jointly with MSFC Security Branch) a letter to NASA Hdq. to: (1) Refer request to Hdq. for action, (2) To present factors for consideration in establishing a new and more adequate security policy. We feel the matter is of such importance that it should be addressed to Holmes over your signature. COMMENTS ??. ✓

5. ST - 124 P PLATFORM: Mechanical work on the first ST-124 P, which will be a passenger on SA-3, has been completed. Wiring and balancing is now in progress. ✓

6. G&C CRYOGENICS R&D ACTIVITIES: Reference Item 4, Notes of 10/23 (copy attached). Stuhlinger will submit subject matter to Comdr. Kelley, who, under Abbott, will be responsible for G&C advanced technology. Stuhlinger will keep you advised of the status. ✓

7. ELECTRICAL SYSTEMS DESIGN INTEGRATION WORKING GROUP MEETING: The 8th meeting of this group was held at DAC during week of 11/6. The group also visited the SACTO test stand facilities. ✓

8. SA-5 (C-1 APOLLO) INTERFACE MEETING: Meetings were held during week of 11/6 with Manned Spacecraft Center. MSC personnel were given a briefing on VLF 39 complex concept and MSFC's automation plan for implementation of this program. ✓

Walter H.

I understand our Command System is quite unprotected and I'm ANNOYED about it. But before I can make intelligent comments I need more detail.

But see Geissler's note 11-13, No. 2, (2) (3) in principle I'm all for protecting our kids against intentional or inadvertent damage.

NOTES 11-13-61 Heimburg

B11-13

1. DR. ELFYN J. RICHARDS:

Dr. Richards, Chairman of the Aeronautics and Astronautical Department, University of Southampton, England, Member of Acoustical Society of America, and Fellow of Royal Aeronautics Society in England, arrived today for lecture to Space Science Seminar and a two-day visit with Test and P&VE Divisions to discuss MSFC noise reduction programs and plans. ✓

2. JACKASS FLATS TEST FACILITY:

Four companies, Ralph M. Parsons and David, Mann, Johnson & Mendenhall (on Nov 14) and AETRON and Bechtel (on Nov 16) will make presentations to an A-E Selection Board of their qualifications to do the design of the stage peculiar RIFT facilities at Jackass Flats. The A-E Board will make recommendations as to the one to be selected. Holmes and Narver declined the invitation. ✓

3. PEARL RIVER TEST FACILITIES:

Initial funding of \$500,000.00 for engineering surveys and studies for the Pearl River Test Facilities was received at MSFC on November 7, 1961. On November 9, 1961, the Corps of Engineers, Mobile District, was notified by TWX that \$200,000.00 was being forwarded for initiation of surveys and other engineering work. It is anticipated that survey work will begin on November 14, 1961. ✓

B 11-13

## NOTES 11-13-61 HOELZER

1. FMO COMPUTER: The question was raised concerning the initials FMO. These initials stand for Financial Management Office. There is under consideration placing the applications in FMO now on tabulating equipment (punched cards) onto a computer. (See attachment 1.) ✓
2. DECENTRALIZED DIGITAL COMPUTER CENTERS: A review of the computing services performed by the decentralized digital computer centers suggests strongly that these facilities should be improved. New products and developments in the computer field suggest also that this could be done with considerable economy to MSPC. As a result, computer manufacturers are being invited to submit proposals to replace several of the Burroughs 205 computers with advanced hardware and software (programming and operating systems for the hardware.) Mr. Hubbard, chief of the Digital Projects Branch, is coordinating these matters. ✓

Attachment 1, NOTES 11-6-61 HOELZER

000091

NOTES 11-13-61 KOELLE

B 11-13

FPO HAS NO NOTES THIS WEEK.

Please do not spread out this much.

NOTES → 11/13/61 → KUERS

B 11-13

R&D

Mr. John Leshko, Space Task Group, visited this Division to become familiar with the facilities, mockups, and support equipment planned for use in the preliminary space maintenance and repair exercise scheduled for the latter part of this month. Construction of the airbearing chair/platform for this exercise has been completed.

Use more meaningful subject

Mr. Kues Good. Please keep me posted (write Jim Carter) how this program is shaping up. I am very interested in this whole thing. What can I do to expedite it?  
B

000093

NOTES 11-13-61 Lange

B11-13

A negative report is submitted by M-SAT.

NOTES: 11-13-61 MRAZEK

B 11-13

1. CENTAUR: A committee consisting of one representative each from Lewis and Goddard, two from General Dynamics/Astronautics, Dr. Lucas, Mr. Riehl and Mr. Cataldo from P&VE and representatives from L&MV Office met this past week to discuss the application of titanium to the Centaur. Titanium offers considerable weight savings and consequently increased payload capacity, but the concern is for its reactivity with oxygen, notch sensitivity at cryogenic temperatures plus quality control of the raw material and finished product. ✓
2. SA-2: Meetings were held with Arrowhead this past week to outline a program for producing flight curtains for SA-2. ✓
3. SA-4: A meeting will be held today at the request of M-AERO to discuss the possibility of changing to an Apollo-type nose cone for SA-4. This would allow flight test of an alpha meter on the tower at an earlier time. This is a late change request. *see my ~~not~~ remarks on Geissler's note 11-13 par. 5.* ✓
4. SA-5: Cook Research Laboratories received a contract for the development of a recoverable movie camera. ✓
5. C-4: A computer program is being developed for weight control on the C-4 vehicle. *Are you in touch w/ Lockheed/Marietta on this? I understand they are tops in this field.* ✓
- Four-compartment partitioning of the upper tank portion in a cross-like fashion indicates small enough liquid amplitudes and does not adversely affect missile control nor ullage pressures. ✓
6. RIFT: Procurement plan still not approved after seven weeks. Dr. Seamans gave the impression at a meeting in Washington last Thursday that he favors the C-4 as presented and will probably approve the procurement plan as soon as he has had a chance to read it. ✓
- Harry Finger generally insists that all MSFC contacts with the AEC in Nevada be made through his office. A working agreement between SNPO and AEC, Nevada, is being prepared by Finger now and it appears unlikely at the moment that MSFC will be offered a chance to comment on the agreement even though MSFC has so requested. *→ Can we live with this situation or do you want me to go to bat?* ✓
- The KIWI-B1A (NERVA Project) experiment was scheduled for last Wednesday but has been delayed due to a non-nuclear explosion. ✓
7. ENGINE PROJECTS:
- F-1 - A long-duration test at the derated thrust level was accomplished during this past week. ✓
- J-2 - A TWX received on 11-9-61 from NASA Headquarters stated that a fund of 2.75 million dollars has been released for J-2 facilities. ✓
- RL10 - Hot firing portion of the A-1 PFRT has been successfully completed. ✓
- A successful dual engine hot-fire test was accomplished on 11-3-61; however, two further attempts have been unsuccessful due to malfunction of the vehicle-supplied H<sub>2</sub>O<sub>2</sub> driven fuel boost pumps.

NOTES 11-13-61 SMITH

B 11-13

ELECTRIC PROPULSION PROGRAM

FY 62 fund commitment to date in this program is progressing very satisfactorily. Of \$6,151,000 authorized to date by NASA Headquarters, \$5,882,000 has been committed. ✓

SATURN C-3/C-4 (LIQUID) PROGRAM

As you may recall, to date NASA has authorized MSFC to commit only \$5,000,000 for this program pending NASA approval of the Preliminary Project Development Plan. MSFC has committed \$4,626,000 of this amount to date, and a request is being made to NASA Headquarters for additional commitment authority. ✓

FY 63 BUDGET

Guidelines for preparation of the FY 63 President's Budget Estimates were received last week from NASA Headquarters, and this office is collaborating with the Financial Management Office in preparing the detailed estimates and back-up schedules required for submittal to NASA Headquarters during the balance of November, the initial submittals on S&E and Support of Plant being due in NASA Headquarters by November 17th. The FY 63 budget guideline is based upon 7200 civil service people for MSFC (including LOD). ✓

NASA PERT

a. SATURN SA-5: Results of efforts in refining network will not be conclusive until a computer run is made per project status reported by divisions on Thursday November 9, 1961. ✓

b. CENTAUR: First NASA-wide report supported by PERT was released November 3, 1961 replacing the former PMP system. This report included (1) Master Schedules (Preliminary) on each vehicle subject to approval of NASA Headquarters, (2) Networks for vehicle flights F-1 through F-10, (3) Situation Summaries on all flights vehicles, (4) Network of LOD activities for flight F-1. ✓

The forecast launch date for F-1 was predicted by PERT as December 29, 1961. This was later substantiated in a coordination meeting held by M-L&M. ✓

B 11-13

1. RPD'S FUTURE ASSIGNMENT: Further discussions were held with Mr. Maus, and within RPD. Dr. Landquist may join Mr. Maus' Lunar Operations Office on a temporary and part-time basis. It appears advisable to withhold organizational reassignment of RPD until MSFC's role in the Manned Lunar Landing Project is more clearly defined. *1 agree B*

2. SCIENTIFIC EXPERIMENT WITH SATURN C-1: Dr. Landquist held preliminary discussions with SSO, G&C, P&VE, and others regarding the possibility of releasing the ballast water carried on one-stage Saturn C-1 vehicles near the apex of their trajectories. Injecting water of this vast amount at high altitudes, and observing ionospheric and atmospheric effects, would represent a scientific experiment of great value to many scientific groups. *Request more detailed info. (1 page) B*

Mr. Roy Currie from SSD is presently conducting a feasibility study. You will be informed of its outcome as soon as it is available.

3. ELECTRIC PROPULSION PROGRAM: Harold Finger and members of Lewis Research Center will visit us later this week to discuss plans for our phasing out the electric propulsion program. We have prepared lists indicating the present status of our contracts and recommendations for the transfer of each. We are proposing that all contracts, except five, be transferred to Lewis as soon as possible. The five we would like to retain include three with the University of Alabama, one with ARGMA, and one with General Electric using MSFC's 7090 computer. ✓

In the meantime, we are continuing to uphold our responsibilities until the program is transferred. This week at Plasmatyne a current-limiting power supply developed by G&C Division was tested with the 1 KW arc engine. It worked very well. Representatives of G&C, RPD, and Lewis were present. ✓

4. SUPPORTING RESEARCH PROGRAM: The Divisions have committed at present 55% of the first and second quarter money allocated for contracts and 35% of the money allocated for "in-house" materials and equipment. This amounts to a total of 3.353 million out of the 6.301 million authorized. ✓

5. NUCLEAR PHYSICS EFFORT: RPD personnel have reviewed the SATURN D Study by General Dynamics/Astronautics and determined that nuclear radiation calculations were crude but acceptable at this stage of development.

We are calculating heat deposition in propellant for various tank shapes proposed by P&VE. We have also calculated the leakage through the shield and structure proposed by Aerojet to determine the radiation incident on the RIFT stage tank bottom.

Warren Keller reports that STG plans to start a 12 man in-house group to study radiation measurements and shielding for APOLLO. ✓

*Edust St* → Suggest RPD bring this immediately to the attention of Nick Jolovic, pointing out our (historically conditioned) capability in this area. Also, let's stop!

*no evidence* → NOTES: 11-13-61 WEIDNER

B 11-13

KIWI REACTOR TEST: Last week's test was not run as planned. During preparation and countdown a hydrogen-air explosion occurred damaging the sheltering structure, the wiring, and many lightweight components surrounding the test. Probably no damage was done to the reactor and its inerts.

Reason: Different crew elements are not rigorously coordinated yet during the countdown. High pressure hydrogen gas was inadvertently allowed to flow through reactor passages with roll-away shelter still in place.

Nov 20, 1961

NOV 20 1961  
SEATTLE

FILE

RECEIVED



NOV 20 1961

## NOTES-GORMAN-11-20-61

1. The meeting on November 7 with labor representatives went reasonably well. We took a firm position on the interface points and the right of Debus' people to work on the pad along with the contractor personnel. They were not happy with our position on interface points. We offered to take the issue to Mr. Webb and the international presidents immediately. They backed away requesting more time to study our proposition. Another meeting is scheduled for December 5, 1961. ✓

2. Mr. Webb has decided to make the selection of the contractor to perform "housekeeping" services at Michoud. As you know, this is not a large contract in terms of dollars, but has created interest of national proportions with much political pressure. The selection board expects to make their recommendations early next week. ✓

3. Requested authority and dollars (\$115,000) for fallout shelter in the new Headquarters building. Incidentally, expected occupancy date of the new Headquarters building is now January 1963. We are looking into the possibility of obtaining several thousand copies of Dr. Libby's (former AEC Commissioner) pamphlet on fallout and measures that can be taken to survive nuclear blasts. ✓

4. GAO Auditors are due in on November 27 to have an extensive look at the Center's procurement and financial activities. The first phase of their audit will consist of a survey extending over a two months period. Would like very much for you and Eberhard to spend a few minutes with them to give them a brief run-down on the Center's role in NASA's programs -- very informal, not more than 30 minutes.

*Harty J. I'll be on the West Coast entire week of Nov 27! Sorry!*

5. Headquarters just completed a thirty day survey of our security activities. We came out with an overall rating of excellent -- a bouquet for Sorensen & Wible. ✓

6. Rees, Neubert, Constan, and I spent several hours with Jack Young on Thursday afternoon. Among the items discussed was the need for implementing a community relations program which can be applied to the communities surrounding Pearl River, Michoud, Cape Canaveral, and perhaps Houston, Texas. Generally speaking, such a program would cover the NASA position with respect to providing aid in the financing of schools, roads, housing, etc. This is fairly urgent, inasmuch as contractor personnel will be moving into these locations very soon. Headquarters may ask us to handle this matter from Marshall much the same way as we have handled the industrial relations. This means the addition of one or two experienced individuals. ✓

7. With the selection of Chrysler to do the S-I, the question has already arisen as to what our attitude should be with respect to Chrysler people who want to remain in Huntsville as employees of the Center. ✓

*Harty Suggest you prepare letters of commendation to them for my signature*

NOTES 11/20/61 CONSTAN

B11-22

PERSONNEL

Personnel actions for approximately 18 individuals to be assigned to the Michoud Operations have been initiated and most of the individuals will be on board within the next two weeks.

SWINGLEY, Andrew B., Chief, Scheduling & Resources Office ✓

RENOVATION AT MICHOUD

a. Expect completing of roofing work on office building and begin roofing work on engineering building this week. ✓

b. Testing of transformer banks in progress. Reports on three transformer banks have been referred to the Engineering Branch for evaluation. Reports on two other transformer banks will be completed this week. ✓

c. East wing of office building will be ready for occupancy on December 1. Electrical work 80% completed. ✓

d. Testing of boilers continuing. Most items in good shape. Some minor repairs will be necessary. ✓

e. Painting of office building (inside) will be completed by December 1, 1961. ✓

f. Outside screens have all been repaired and ready for installation after completion of painting. ✓

HOUSEKEEPING CONTRACT

The Evaluation Committee should complete the evaluation this week. ✓

S-1 CONTRACT

Chrysler was selected for the S-1. ✓

S-1B CONTRACT

Proposals are presently being evaluated. ✓

1. Acoustical Studies of Launch: It became apparent that the multi-channel approach to acoustical measurements during launch of SA-1 required a single control point for the proper collection, evaluation and analyses of data. I have, therefore, established Mr. J. White of LOD as the principal coordinator. LOD will establish methods, instrumentation, evaluation of all associated with this problem. ✓
2. Release of Saturn Water Ballast at Apex: Action under way to comply with request of Scientific Community (coordinated by Lundquist) to release water ballast from Saturn upper stages at apex. Possibilities suggested by such:
  - a. Generation of an artificial noctilucent cloud.
  - b. Generation of major ionospheric disturbance.
  - c. Execution of a preliminary ice-model artificial comet experiment. ✓
3. LOD Organization Proposal: Siepert asked that 10 copies of our proposal be sent to his office for study. Sent same. ✓
4. Siepert's Visit: Discussed many topics with Siepert on his visit at CCMTA on Friday. Most important were:
  - a. He got the point about the several "Launch Operations" proposed for NASA Headquarters. He stopped action tentatively. He will pursue setting up meeting date with you and Holmes as you suggested last week and then let us know "when." ✓
  - b. Master planning for facilities at AMR. We agreed that the master planning should be done at the level of LOD/AMR. This, however, does not agree with AF proposal to handle at DOD/NASA level. Therefore, I plan meeting with Davis for next week to discuss problem. ✓
5. Operational Flight Control Study: It appears that RCA will be only qualified company with interest in this study. Will try to finalize by December 1. ✓
6. Repeat Last Week's Item on Dornberger: Explanation: Dornberger called me saying that he had discussed with you the possible use of Fluorine fuels but that you had told him to get in contact with the AMR through me in order for him to obtain a "clean shirt" as to the safety aspects and launch possibilities from the pad safety point of view. I, therefore, had a meeting set up for him to discuss these aspects with AMR personnel. Meeting now scheduled for November 28. ✓
7. Labor Meeting: Labor union officials met with NASA on November 14, 1961 to discuss position of MSFC. In general, the results appear to be hopeful. They indicated satisfaction with the proposed methods, but the unions wished to discuss it further with their headquarters. Next meeting December 5th at Patrick AFB. ✓
8. Ranger 2 Launch: Saturday's launch of Ranger 2 shot unsuccessful because second burning phase did not occur. It appears that a high roll rate during first burn led to exhaustion of control gas for, as yet, unknown reasons. Tapes from Ascension Island have now arrived and will be evaluated in the immediate future. ✓

## NOTES-GORMAN-11-20-61

1. The meeting on November 7 with labor representatives went reasonably well. We took a firm position on the interface points and the right of Debus' people to work on the pad along with the contractor personnel. They were not happy with our position on interface points. We offered to take the issue to Mr. Webb and the international presidents immediately. They backed away requesting more time to study our proposition. Another meeting is scheduled for December 5, 1961. ✓

2. Mr. Webb has decided to make the selection of the contractor to perform "housekeeping" services at Michoud. As you know, this is not a large contract in terms of dollars, but has created interest of national proportions with much political pressure. The selection board expects to make their recommendations early next week. ✓

3. Requested authority and dollars (\$115,000) for fallout shelter in the new Headquarters building. Incidentally, expected occupancy date of the new Headquarters building is now January 1963. We are looking into the possibility of obtaining several thousand copies of Dr. Libby's (former AEC Commissioner) pamphlet on fallout and measures that can be taken to survive nuclear blasts. ✓

4. GAO Auditors are due in on November 27 to have an extensive look at the Center's procurement and financial activities. The first phase of their audit will consist of a survey extending over a two months period. Would like very much for you and Eberhard to spend a few minutes with them to give them a brief run-down on the Center's role in NASA's programs -- very informal, not more than 30 minutes.

Hasty 9. I'll be on the West Coast entire week of Nov 27! Sorry!  
5. Headquarters just completed a thirty day survey of our security activities. We came out with an overall rating of excellent -- a bouquet for Sorensen & Wible.

6. Rees, Neubert, Constan, and I spent several hours with Jack Young on Thursday afternoon. Among the items discussed was the need for implementing a community relations program which can be applied to the communities surrounding Pearl River, Michoud, Cape Canaveral, and perhaps Houston, Texas. Generally speaking, such a program would cover the NASA position with respect to providing aid in the financing of schools, roads, housing, etc. This is fairly urgent, inasmuch as contractor personnel will be moving into these locations very soon. Headquarters may ask us to handle this matter from Marshall much the same way as we have handled the industrial relations. This means the addition of one or two experienced individuals. ✓

7. With the selection of Chrysler to do the S-I, the question has already arisen as to what our attitude should be with respect to Chrysler people who want to remain in Huntsville as employees of the Center. ✓

Hasty Suggest you prepare letters of commendation to them for my signature

## NOTES 11-20-61 GRAU

B11-22

1. APPOINTMENT OF MR. WERNER G. TILLER: Mr. Werner G. Tiller joined me this past week and will work as my Technical Assistant. He will primarily support our effort at WOO and the Michoud Operation. ✓
2. H-1 ENGINE PRODUCTION: Quality Division representatives attended a meeting at Rocketdyne's Neosho plant relative to production of the H-1 engine there. It is intended to station one man at Neosho early next year. It is becoming increasingly difficult to induce qualified people to fill these positions. ✓
3. QUALITY DIVISION REPRESENTATION AT GD/A: Personnel will be provided on a rotation basis to cover mechanical areas until training of an engineer to be stationed there permanently is completed. ✓
4. CENTAUR: ~~Heat transfer through the intermediate bulkhead separating the LO<sub>2</sub> and LH<sub>2</sub> tanks is intolerable.~~ Mr. K. J. Bossart has been assigned to this problem for a solution. *Hans Hueber* → *Who goofed here? I've seen tons of reports studying this problem!*
5. CONTRACTUAL CHANGES TO CENTAUR CONTRACT: On October 11, Quality Division submitted to M-L&M twelve recommended contractual changes for Centaur. By mutual agreement between M-L&M and M-QUAL seven of these recommendations are to be submitted immediately to the Air Force contracting officer for inclusion in Centaur contracts. The remaining five recommendations are being held for further study with the possibility of incorporation later. ✓
6. STAGE SUBSTITUTE CHECKOUT: The S-1 and instrument unit stage substitutes to be used by Douglas during their plant checkout have been received by us for checkout. ✓
7. S-II INSPECTION RESPONSIBILITY AT NAA: We have requested the Army, (LAOD), do the inspection at the three NAA, S-II facilities, which are at Downey, Seal Beach and Santa Suzanna. ✓
8. INSPECTION SERVICE AT WEST PALM BEACH - PRATT & WHITNEY: Per your request for further clarification concerning NOTES 11-13-61 GRAU (copy attached), the Quality Division personnel have been assigned on a temporary basis only. For the present, our main concern is to get the project going and to do this we must be able to control the situation. As soon as we feel we can we will turn the inspection function over to a competent inspection agency. Perhaps we can come to terms with the Navy who is the cognizant agency in the Hartford, Conn. P&W plant and also at West Palm Beach. ✓

Enc:

NOTES 11-13-61 GRAU

1. CONTROL SYSTEM PLANNING FOR SATURN - BLOCK 1: Ref. Item 2, Notes of 11/13 (copy attached). Personnel of PAVE, Areoballistics and G&C (including Weidner, Geissler and myself) met 11/15 to discuss modifications to SA-2, 3 and 4. It appears that the use of some kind of baffles attached to the lowest Z ring of the tanks is desirable. PAVE will check this out with F&AE by 11/22 and report their findings. In the meantime G&C will see how far changing of network (filter) is feasible in view of torsional modes in roll. ✓

2. AIR BEARING FOR SATURN BENDING MODE TESTS: Ref. Item 3, Notes of 11/13 (copy attached). Since it is intended to use water as the supporting medium, this item would be more appropriately identified as a fluid bearing. The device is being designed to support heavy space vehicles (i.e. SAT. C-1 and C-4) during dynamic tests. This approach shows promise of eliminating the disturbances and difficulties experienced in the use of the cable suspension (e.g., introduction of false resonances and measurements being disturbed by adding forces on the suspension points).

a. Figure 1 and 2 demonstrates the test conditions of the Saturn SA-5 vehicle. Figure 3 shows the principle of the hydraulic support. It allows 5 degree of freedom for the vehicle. Figure 4 sketches the design of one water bearing which has with the piston arrangement 6 degrees of freedom. Oil, squeezed between the pistons, gives 6 degree freedom for each "foot", but cancels the one degree of freedom for the whole vehicle to prevent its vertical motion. The oil path between all pistons fends off any pressure difference.

b. A small scaled model will be completed in the near future to prove the proper function of the system. A report with design criteria will follow soon.

c. Loading tests on the water bearings have been completed on a full size 16 inch bearing with 50% overload (90 tons). All results agree with theory and promise successful operation.

d. It would be highly desirable to adopt the system for dynamic tests on Saturn SA-5, to make the measuring results more dependable. →

3. STG/MIT APOLLO SPACECRAFT GUIDANCE SYSTEM: We recently received MIT's G&C system information prepared for APOLLO Spacecraft bidders. Tasks of the system are: monitoring during the launch vehicle propulsion phase and active operation beginning with first rendezvous sensing and continuing through all following phases. MIT also sent their first APOLLO Guidance and Navigation Progress Report which covered mainly the optical alignment area. It was noted that it is intended to give the astronaut in-loop navigation assignments for the lunar mission. Report also reveals that monthly meetings take place with STG; MSFC/G&C has never been informed despite my request on August 12. STG & MIT here 11/29-30.

4. HOLLOMAN AIR FORCE PRESENTATION: Representatives from Holloman Air Force Base conducted a presentation to G&C Div. on Nov. 16 and 17. In this presentation services were rendered in two areas. a. Sled Testing: The available track has very good instrumentation which may permit performance as well as functional investigations on inertial guidance components. The acceleration and vibration profiles can be adjusted close to condition expected in Saturn flights. Such tests may be of value for the Saturn program, but the present planning has no Saturn guidance hardware available for ground testing. b. Analogue Computer Efforts: Experienced manpower as well as a flexible computer setup is available. We may be interested in engaging these services for flight dynamic's studies. ✓

5. TECHNICAL EVALUATION OF S-1b PROPOSALS: G&C has had a team (headed by Brandner) of 12 people participating in this activity, mainly in the areas of measuring, telemetering, RF system, vehicle electrical network, ground support equipment and vehicle dynamics. ✓

Your comments to this proposal are invited  
this  
Please do something about  
for interface panel!

That action (if any) is recommended?

B11-22

1. INDUSTRIAL WATER SYSTEM:

The Test Area industrial water system will be out of operation most of this week to permit incorporation of the second ring line into the system to provide the future required additional capacity. Testing activities will be curtailed as a result. ✓

2. KIWI-8 Testing:

Four representatives from Test Division will be sent to Jackass Flats on 11-26-61 to participate in the pre-test preparations and monitor the test of KIWI-8 scheduled for late November. (The personnel are the same that participated in P&W trouble-shooting last spring, consisting of 2 mechanical test engineers and 2 control and instrumentation men.) (by special request of Dr. Keith Boyer). ✓

3. SA-5 HEAT EXCHANGER INVESTIGATIONS:

The Saturn 4-coil heat exchanger is being tested to determine the safe operating limits with regard to LOX inlet pressure oscillations and GOX outlet temperatures for the SA-5, non-venting configuration. ✓

4. MODEL TESTS, C-1 SEPARATION STUDIES:

A 1/10-scale model cluster of the Saturn S-IV stage, using six 150-pound-thrust LOX/RP-1 rocket engines, is being fabricated in Test Cell 112 for C-1 separation studies. Calibration of the individual engines at ambient pressure is essentially complete. Several engine performance tests (single-engine) of 5-seconds duration have been conducted at simulated altitudes of up to 120,000 feet. ✓

5. FY 1963 C OF F BUDGET:

Verbal information was received from Mr. Fleming, OTS, that the following projects are in the FY 1963 C of F budget:

West Area	\$ 4,703,000.00
F-1 Engine Stand	4,500,000.00
Dynamic Test Position	1,500,000.00
Component Test Facilities	4,500,000.00
West Side, STT	2,000,000.00
Engineering and Laboratory (Instrument Lab)	<u>3,000,000.00</u>
	\$ 20,203,000.00

Request briefing in detail. B11-22

✓

B 11-22

## NOTES 11-20-61 HOELZER

1. 1401 COMPUTER FOR LOD AT CAPE CANAVERAL: The 1401 computer arrived at Cape Canaveral and was installed over the weekend. ✓
2. DATA PROCESSING: The first meeting of Sub-Board #5, which is a part of the Automation Board, was held on Friday, Nov. 17, on data processing. Each division representative is reviewing data processing needs and will furnish these for discussion at the next meeting. ✓
3. COMPUTER SYSTEM FOR STRUCTURAL TESTING OF BOOSTERS: New computer systems are being studied in relation to the on-line testing system now operated by Measuring Unit, Experimental Structures Section, Propulsion and Vehicle Engineering Division. At present a Burroughs 205 computer is doing the processing job. However, due to increased tests it is desirable to have a more capable system operating for the test on SA-5. A request for proposals was sent through Purchasing and Contracting and at present six proposals are being studied with a selection due in a week. The cost of this system will be only slightly more than the system presently installed. ✓

NOTES 11-20-61 Koelle

1. NOVA PRELIMINARY DESIGN

B 11-22

Work has been started to prepare a composite plan leading to the definition of NOVA. The plan will include in-house, as well as contractor effort, and will be coordinated with the Divisions. After finalization, it will be sent to you for forwarding to Mr. Holmes so we can get the \$2.3 million for NOVA presently in the financial operating plan.

The effect of a nine-month delay in a NOVA decision on the first launch date was studied for the LLVPG and the results forwarded to Frank Williams for inclusion in the final report. For the 8 x F-1 plus 8 x J-2 configuration a nine-month delay in program approval caused a four-month delay in first flight. ✓

2. ANALYSIS OF MEDIUM CLASS VEHICLES

The second briefing on the "Analysis of Medium Class Vehicles" was held at Space Technology Laboratories on November 15th. The preliminary design work is complete. Thirteen vehicles were analyzed to perform the mission spectrum outlined in the work statement. From the seven liquid configurations the TITAN II and TITAN II plus CENTAUR appear most promising. The most promising solid vehicle is a 160-inch three-segment solid final stage plus a 120-inch, one-segment solid second stage plus a 72-inch one-segment solid third stage. A storable liquid stage would provide the final orbital velocity and injection velocity. A first cut at program cost indicates that the solid vehicle system will cost 10% less than a liquid vehicle system which is only within the accuracy of the cost estimates. ✓

3. LARGE LAUNCH VEHICLES USING SOLID PROPELLANT

The second briefing on the study, "Large Launch Vehicles Using Solid Propellant," was held on November 17th at Boeing Airplane Company. Vehicle preliminary designs have been completed for 30,000-lb, 100,000-lb, 180,000-lb, and 350,000-lb payload classes. The NOVA stage is a cluster of 4 x 192-inch solid motors while all other vehicle first stages are based on 160-inch solid motors. Second stage configurations are based on the J-2 and Y-1 engines. Freon injection is suggested for Thrust Vector Control on the first stage. Remaining work to be accomplished includes the cost analysis for all vehicles.

It is recommended that detailed design studies be initiated to cover 7 x 160-inch and 4 x 240-inch NOVA first stages, that liquid injection systems and Thrust Vector Control systems be further analyzed including design layouts, and that a detailed design of the structure tie-in required for clustering solid motors be performed. ✓

4. With your permission, I will be on leave from November 27, 1961 through January 5, 1962. I will stay in Stuttgart, Germany most of the time. ✓ O.K. B

5. There's a vicious rumor that George Low has acquired our \$7.75 million for Orbital Operations Technology and will give it to STG. This could be catastrophic. Are we now out of the picture? (Action item)

ll  
call  
Holmes  
B 11-22

11/20/61

NOTES

KUERS

B11-22

R&amp;D

1. Completed initial weld on a 160 inch cylinder of 5456-H34 material with the circumferential test weld (Paddle Wheel) fixture utilizing the TIG process. X-ray of the welds indicated that the process is satisfactory, containing only scattered porosity which can be eliminated in future welding. Test panels were submitted to the Materials Branch for evaluation of the weld efficiency and other mechanical properties. Test of the welding process with the fixture will be continued utilizing 2014 aluminum alloy material and both TIG and MIG processes. ✓

2. Received initial shipment of laboratory controlled type M-593 aluminum alloy plated from Aluminum Company of America. These plates will be tested to determine fabricability as related to welding, forming and heat treating. An order was also placed with Kasier Aluminum Company for type MR-39A alloy plate up to 2 inches in thickness. Both of these alloys are supposed to have strength characteristics similar to 2014 but with much higher elongation property and better weld characteristics, particularly in heavy gage material. However, material is still in laboratory development stage and its availability for the C-4 Program is doubtful. ✓

3. Installed the first electro-jet milling machine in the development shop. This equipment operates on the principle of material removal by erosion rather than by the conventional tool. It is the first of its type in F&AE Division and will widen the range of operations capability of the Division. This equipment can be used for generating complex shapes not circumscribed around a centerline and is the only type capable of working on hardened and refractory metals including tungsten, molybdenum, etc. It eliminates the need of complex dies and will be used extensively in the fabrication of wind tunnel models. ✓

1. At a meeting with Mr. Dixon on November 16, 1961, MSFC stated a firm requirement for air transportation of the S-IV stage. Liaison with the USAF for their advice and assistance on air transportation was also recommended. Mr. Dixon deferred any action on air transportation until completion of a Headquarters Staff report to be prepared with MSFC's assistance. ✓
2. The first S-IV tank in the production line at DAC is approximately eleven weeks behind schedule due to processing difficulties including shaping bulkhead segments and the fully automatic welding equipment. Plans are under way to make up this time on the dynamics and all-systems tanks. ✓
3. A review has been made of Guidance and Control, and Quality Divisions needs for automation of electrical ground support and checkout equipment for FY-62. Action on additional funding as recommended will be taken during the week of November 27, 1961. ✓
4. Emergency Detection System Committee for SATURN C-1 vehicle has been formed by the SATURN Systems Office to define Marshall's approach and to recommend an onboard system to be used in conjunction with the APOLLO abort system. Inputs will be collected from Manned Space Center and Douglas Aircraft Company as well as MSFC Divisions. ✓
5. An SA-5, C-1/APOLLO interface conference was held at MSFC on November 8 and 9 by personnel of MSFC and MSC. This informal meeting was organized on subjects common to the MSFC/MSFC Coordination Panels. MSC nominees were in attendance and MSFC members will be designated soon. MSFC presented their concepts for VLF-39. The major unresolved area is the degree of aerodynamic buffeting induced by the blunt APOLLO nose shape. Langley is now running additional tests on a wind tunnel dynamic model. ✓
6. Negotiation on the contract for the A-E S-II facility design is under way so that early S-II battleship testing is possible. WOO has reported some difficulties in the early phases of contract negotiation with NAA in the area of burden and overtime rates. ✓
7. MSFC, in a meeting with Langley personnel, discussed their proposal to build a 1/5 scale dynamic model of the C-1 to the SA-5 configuration. It was decided to postpone initiation of this program until further analysis is completed on the correlation between the model, full scale, and flight vehicle dynamic test results. ✓

by was  
 IT →  
 idance  
 Apollo  
 of in-  
 ded on  
 genda?  
 e GSC  
 otes  
 1-20-61,  
 ar. 3.  
 suggest  
 do  
 at  
 ext time!!  
 B

NOTES: 11-20-61 MRAZEK

B11-22

1. DYNAMIC MODEL STUDIES: A meeting with Langley personnel last week on the SATURN C-1 dynamic models was resolved as follows: (a) to complete an exhaustive analysis of the SA-1 model studies to obtain as much correlation between model and full-scale prototype of MSFC. (b) to not build an SA-5 dynamic model as proposed, but begin, as soon as possible, a C-5 scale model program so that information will become available early in the program. (This was the MSFC stand and Langley personnel seemed a little "put out." They had proposed to go to Douglas to have a complete model built for \$500,000. LRC was to put up \$100,000 and MSFC \$400,000. This total cost didn't seem too feasible to our people.) ✓
2. C-4: (Reference Note 5 on attachment). We have not yet looked into Lockheed's program but will be glad to do so. We have used our established weight reporting system, which we have also imposed on our stage contractors, and we are now extending this into a weight control system on a preliminary design basis. ✓
3. SA-4: (Reference Note 3 on attachment) Neither weight nor design is a problem of a shroud over the escape tower. The stability of the capsule with a tower requires that a shroud be jettisoned prior to escape. STG is of the opinion that this procedure would jeopardize the reliability of the escape system. STG will look into the configuration once more. ✓
4. ENGINE PROJECTS: J-2 - OTS and the Engine Management Office have taken action to procure J-2 facilities as result of \$2.75 million fund release by Headquarters.  
M-1 (Y-1) - A MSFC approved Preliminary Project Development Plan was forwarded to Headquarters. ✓  
RL10 - Another successful hot-fire run was made at Lewis. The run was prematurely terminated at 7 seconds due to operator error which caused excess inlet manifold fuel pressure. ✓  
 The E-5 (Centaur simulated) stand operated successfully for 20 seconds on 11-13-61; however, two subsequent attempts were unsuccessful. Problem analyzed as contaminated H<sub>2</sub>O<sub>2</sub>, caused by galvanic action on an aluminum valve. ✓
5. RIFT: (Reference Note 6 on attachment) Mr. Rex, Deputy Manager of AEC Office administering nuclear rocket work at Nevada, visited MSFC last week. He told us of the AEC-NASA agreement that Finger had prepared regarding facilities at NNRDC. He was unaware that it was in conflict with the procedures proposed by MSFC and will, on return to Albuquerque, take action confining the AEC-NASA facilities agreement proposed by Finger to the engine facility. ✓  
ACTION - Dr. von Braun is requested to reach agreement with NASA Headquarters that any inter-agency agreements between NASA-AEC which have an effect on the RIFT Program, be coordinated, in advance, with MSFC.

Attachment: NOTES: 11-13-61 MRAZEK

I'll call Rosen

NOTES 11/20/61 SMITH

B11-22

NASA PERT

SA-5 - Due to numerous changes to the network required by the refinement efforts, the biweekly computer run has not been made. A run is expected today.

## NOTES 11-20-61 Stuhlinger

3 11-22

1. ELECTRIC PROPULSION PROGRAM: Three members of H. Finger's office and four members of Lewis Research Center visited us Friday to discuss the transfer of the electric propulsion project to Lewis. The meeting was held in a very friendly spirit with a genuine desire of cooperation on both sides. Lewis is still in a weak position to assume control of the program and recognizes it. A number of key positions are not yet filled. It will take about two weeks before counterparts to the present MSFC contract supervisors can be named. It was agreed that disruption of the flight schedules and other milestones of the program would be avoided if possible. ✓
2. RFD'S ROLE IN THE LUNAR EXPLORATION PROGRAM: During a two-day meeting of the Lunar Sciences Subcommittee at NASA Headquarters, it became apparent that a strong desire exists on the part of Dr. Newell's office for an Advanced Lunar Exploration and Technology Program, filling the gap between the Ranger-Surveyor Program (Atlas Agena and Atlas Centaur, JPL), and the Apollo Program (Saturn C-4 or C-5, STG). The new project should preferably be based on a Saturn C-1, and should provide for the landing of a roving vehicle, similar to the proposal submitted by MSFC-JPL two years ago. Dr. Lundquist reported that a very similar recommendation has been promoted by JPL, with the suggestion that MSFC should have the leading role in this program. I will give you further details in our meeting scheduled for this afternoon. ✓
3. SCIENTIFIC EXPERIMENT WITH C-1: In reply to your request on the NOTES of 11-13-61 (Attach. 1) a briefing is being prepared for you by the Saturn Systems Office. ✓
4. NUCLEAR PHYSICS EFFORT: In response to your suggestion on the NOTES of 11-13-61 (Attach. 1) I called Mr. Holmes and advised him of the nuclear shielding and radiation effects capabilities at MSFC, which might be of value for STG in connection with space radiation protection. Mr. Holmes was greatly interested, and asked me to send him a brief memo which outlines our capabilities, and possibilities of joining forces with STG. ✓

Attach 1. NOTES 11-13-61 Stuhlinger