

VIII.04

HISTORICAL REPORT 0

M I C H O U D O P E R A T I O N S

July 1, 1963 - December 31, 1963

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LIST OF SUPPORTING DOCUMENTS

Enclosure No.

1. Photograph - Transfer of first S-1 to NASA
2. Photograph - Arrival of F-1 engine
3. Photographs - Engineering Building
 - Aerial view Engineering and Vertical Assembly Buildings
4. Photograph - Vertical Assembly Building
5. Current Organization Chart
6. Photographic Chart Key Personnel
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CHAPTER I:

MICHLOUD HIGHLIGHTS

Most significant event in the history of Michoud Operations during the last half of 1963 was the acceptance by NASA of the first industry-built Saturn I first stage (S-I) on December 12, 1963. In impressive ceremonies at Michoud Operations, Lynn A. Townsend, Chrysler Corporation president, presented the booster to Dr. Wernher von Braun, Director of MSFC. Top officials of government and industry, representatives from the nation's press, and numerous Chrysler employees gathered for the presentation and to tour the plant. (Enc. 1)

Earlier in the year, because of a decision to rephase manned flight missions among the three Saturn-class vehicles, and to redirect engineering design and development effort related to the Saturn I manned flight program to the Saturn IB and Saturn V programs, Chrysler Corporation Space Division's Contract NAS8-4016 was partially terminated. Vehicles S-I-111 through S-I-116 were deleted from the program. Two S-I stages will be produced at Michoud Operations, the S-I-8 and the S-I-10. On November 29, 1963, CCSD received formal direction to reorient the S-I program. Chrysler will assemble 12 Saturn IB first stages (S-IC) under the present contract, to continue through May, 1968.

On November 12, 1963, a full-scale engineering model of the F-1 rocket engine was received at Michoud Operations. It is being used by the Boeing Company Saturn Booster Branch in studies to determine the best method of attaching the engine to the Michoud-built Saturn V first stage (S-IC), and will be returned to Huntsville about March of 1964. (Enc. 2)

The Saturn barge Palaemon, previously stationed at MSFC, arrived at its new home port in mid-December. The 180-foot-long barge will be used to transport the Saturn I and Saturn IB first stages from Michoud to MSFC for static firing. It will be used during January 1964 by the Chrysler Corporation Space Division for training in loading and unloading of the S-I stage. The barge was moored at the Michoud Dock which was placed in operation in October, 1963, and has been used for outloading two barge shipments to Huntsville, Alabama, and for the receipt of two barge shipments from Huntsville.

Progress continued in construction projects. Major accomplishments included completion of Phases I, grading, drainage, filling, and pile driving (foundations), and II, superstructure provision and erection (steel work), on construction of the new Engineering and Office Building. Phase III, general building construction, was 7% complete and on schedule at the end of 1963. Phase III of the chemical waste disposal system, consisting of the drilling of the well and installation of injection pumps, was 75% complete. In addition, Phase II of the Vertical Assembly Building project was approximately 90% complete at the close of the year. The Boeing Company let a contract in December for the erection of two tank weld stations and the vertical assembly tower, with actual work on the construction to begin in 1964. (Encs. 3 and 4)

On September 6, 1963, a contract was made with Harland Bartholomew and Associates, Memphis, Tennessee, for an engineering study of traffic conditions with recommendations for the Michoud Operations area. This contract was completed on schedule, October 15, 1963. The scope of work included a study of immediate and possible future traffic and parking needs, based on existing conditions and possible future growth at Michoud. The MSFC Master Plan Office

developed a Master Plan and implementation schedule for the above information. This was presented to Michoud Operations on December 9-10, 1963, and approved by management for accomplishment.

CHAPTER II:

GENERAL

A. Organization

During September, 1963, the functions and personnel of the separate MSFC P&C operation (M-P&C-OM) were transferred to the newly established Michoud Operations Contracts Office. No other major organizational changes occurred during the reporting period. A copy of the current organization chart is attached as Enc. 5, together with photographic chart of key personnel (Enc. 6).

B. Key Personnel

Mr. Edwin R. Ling was appointed Counsel for Michoud Operations, and assumed his duties on August 19, 1963. Mr. Ling also provides legal service and counseling to the Mississippi Test Operations of MSFC.

Mr. John W. Hill assumed the duty of Chief, Engine Office, Michoud Operations, during the reporting period. The Engine Office was established at Michoud May 1, 1963.

Mr. John P. Miraglia, Industrial Relations Specialist, transferred effective November 17, 1963, to Cape Kennedy, where he is Chief, Industrial Relations, NASA-Kennedy Space Center.

C. Public Affairs Activities

1,007 visitors were handled by the Public Affairs Office during the second half of 1963, and 91 tours of the Michoud plant were conducted. Press visitors and/or interviews totalled 142, and 13 visitor briefings were held. Thirty speeches were made, 3 speeches written, 60 releases, brochures, speeches, etc., were reviewed, and 58 pieces of "fan mail" answered. A summary of major activities in 1963 is attached as Enc. 7.

D. Contractor Quarterly Reviews and Other Management Reviews:

1. Two (2) Quarterly Reviews were held during this period between Chrysler Corporation Space Division and the Michoud/MSFC management. Both reviews were held at New Orleans.

2. One (1) Quarterly Review was held during this period between The Boeing Company and the Michoud/MSFC management. The review was held at Huntsville.

3. One (1) Quarterly Review was held during this period between Mason-Rust and the Michoud/MSFC management. The review was held at New Orleans.

4. The Programs Office prepared a presentation on the status of Michoud Operations for the MSFC Director's Board Meeting on August 2, 1963. Dr. Constan made the presentation.

5. A series of briefings were conducted during August for representatives from NASA Headquarters, Bureau of the Budget, and MSFC. These presentations included discussions on Michoud organization, contractor/MSFC/Michoud relationship, plant modification, supporting services, and the Saturn stages.

CHAPTER III:

ADMINISTRATION OFFICE

A. General

A review of the MSFC Equal Employment Opportunity Program at Michoud Operations was conducted on December 9 and 10, 1963. The review was part of the Community Survey conducted by the Dallas Office, U. S. Civil Service Commission, in New Orleans between December 2 and 20, 1963.

Activities in connection with the Equal Employment Opportunity Program at Michoud Operations included visits to Dillard and Xavier Universities, presentations to the student body at Xavier University and the Urban League of Greater N.O., meetings with the Urban League and its Industrial Relations Committee, and program coordination with prime contractors and the support services contractor at Michoud Operations.

B. Administrative and Office Services

1134 Travel Request and Authorization documents were prepared by the Administrative Services segment of Administration Office during the period of this report, and approximately 350 Applications for Employment (SF's 57), letters of inquiry and/or resume's were received.

The Communications Skills Company (under contract to MSFC) conducted a correspondence clinic and a Clear Writing Course for approximately 55 NASA Michoud employees from December 9-20, 1963.

C. Management Analysis

A special study of problems in the manufacturing building relating to general conditions of housekeeping and vehicle and personnel traffic control was completed in November, 1963. An ad hoc committee composed of representatives of the prime contractors and the support services contractor and chaired by NASA Michoud Operations' representative made in-plant vehicle and personnel

surveys, and studied housekeeping practices in all in-plant areas. Findings and recommendations of the committee were presented at a briefing to top management of Michoud Operations on November 1, 1963, and agreements reached were being implemented at the close of the reporting period.

D. Personnel

Total personnel on board at Michoud Operations as of December 30, 1963:

The Boeing Company	4,895
Chrysler Corporation	2,907
Mason-Rust	797
NASA	247
Rocketdyne	16
Telecomputing Services, Inc.	<u>102</u>
TOTAL	8,946

The number of personnel assigned to each organizational segment as of the close of the reporting period is shown on attached chart. (Enc. 8)

E. Safety

During the reporting period, a number of actions were taken to strengthen and improve the safety program at Michoud Operations. A comprehensive safety program was drafted in the form of a Michoud Operations Instruction. A fire evacuation plan was formulated and will be published shortly. An emergency notification procedure was instituted whereby all emergencies are handled in a matter of minutes following receipt of a telephone call. The system in operation is in process of documentation. Action was also initiated to give safety wider publicity through the use of promotional media.

Subcontractor safety requirements were promulgated through inclusion of a revised safety clause in all prime contracts (Enc. 9).

Michoud Operations actively participated in the Louisiana Safety Conference with a keynote address by Dr. George N. Constan, general manager.

F. Security

Plans were completed for the installation of a Cryptographic Communications Center at Michoud Operations. A vault-type room on the first floor of the Engineering Building was selected as the site of the proposed facility. The MSFC Communications Security representative approved the proposed location. Arrangements were made for the Fourth U. S. Army, Fort Sam Houston, Texas, to provide installation and maintenance of the facility.

The MSFC Security Branch recommended that the S-I Stage be declassified and that required physical protective measures be written into the contract and made the responsibility of the contractor. Declassification of the stage will require approval of NASA headquarters.

A Work Planning and Management Control System was put into use by the Michoud Operations Security Office during this period, to provide a method for work measurement and project control through use of control cards and statistical charts. Use of this system aids in activity planning, services to standardize the system, and results in more efficient operation and savings in time and labor.

CHAPTER IV:

CONTRACT AND FINANCIAL MANAGEMENT

A. Contract Management

Contractual actions during the reporting period are covered in this history under the programs to which they pertain. Contracts pertaining to support activities and computer operations are reported under those headings.

Contracts awarded by the MSFC Construction Office being administered by the Contracts Office at Michoud for construction of the new Engineering Building at Michoud were as follows:

1. Harders Construction Company, Inc., Contract NAS8-5572, for Piling and Site Work at a cost of \$387,000. There were three (3) modifications to the contract for changes which increased the price to \$390,450.

2. Orleans Materials & Equipment Company, Inc., Contract NAS8-5579 for Structural Steel and Pre-Cast Concrete Columns at a cost of \$1,012,350. There were four (4) modifications to the contract for changes which increased the price to \$1,018,557.

3. J. A. Jones Construction Company, Contract NAS8-5596 for final construction of the building, parking lots, grading, etc. at a cost of \$6,352,000. There are two (2) modifications to the contract for changes which has increased the price to \$6,391,416.51.

B. Financial Management

Funding Activity

Fund certifications in the amount of \$144 million and vouchers for \$125 million were processed during the period.

Surveillance of Construction Contracts

Approximately 5,300 payrolls for an average of 196 construction

contracts were examined for compliance with the Davis-Bacon Act, Copeland (Anti-Kickback) Act, and the Fair Labor Standards Act of 1962.

Voucher Payments

The NASA Michoud Financial Office assumed the responsibility for payment of vouchers for printing services performed by other government installations, and payment of commercial vouchers for communications and utilities services. Vouchers for printing and utilities were paid by MSFC previously, and communications vouchers were paid by Mason-Rust before July 1, 1963.

Verification and Certification of Telephone Toll Calls

A Michoud Operations Instruction for verification and certification of telephone toll calls, in conformance with requirements of government regulations, was published. A procedure was developed in collaboration with all Michoud prime contractors.

Contractors Holiday Schedules

The Michoud prime contractors had established holiday schedules in conformance with their respective corporate policies, but some holidays were not uniformly recognized by all contractors. A review was made, and recommendation submitted for adopting a uniform schedule of holidays for all contractors.

Contractors Salary and Wage Schedules

All Boeing salary and wage plans were approved with the exception of the rates applicable to the special payroll, which are still under consideration.

Final action on fringe benefit plans of all Michoud contractors was taken with the issuance of approvals or disapprovals, as appropriate.

Surveys of Contractors' Operations

Financial surveys and analyses of contractors' operations were performed as follows:

1. Boeing: Payroll Procedures; Estimating Group; Timekeeping; Data Processing Machine Operations; Data Processing Systems and Procedures; Facility Department.
2. Computer Operations: A cost analysis of computer operations was made to determine the cost per hour of processing computer applications. The survey included a study of the machine rental costs, Telecomputing Services, Inc. operating costs, and support costs of Mason-Rust and NASA

Contractors' Monthly Reports

Mechanized transmission to MSFC of the Boeing Contractor Financial Management Report (NASA Form 533) was implemented during the period. Transmission of Chrysler and Mason-Rust reports was implemented previously.

Liaison Representative for General Accounting Office Audits

The Chief, Financial Office, was appointed the Michoud Liaison Representative for General Accounting Office. The function embraces coordination between the General Accounting Office, Michoud Offices, and MSFC.

CHAPTER V:

PROJECT MANAGEMENT

A. Saturn I/IB, S-I/IB Program

1. Contracts

a. NAS8-4016

The Chrysler Corporation Space Division Contract NAS8-4016 was modified and increased in value during this report period in the amount of \$55,423,016. This increased the total contract value from \$225,888,793 to \$281,311,809 (includes \$5,240,658 C of F). The \$55,423,016 increase provided the following:

(1) \$897,057 - Extend Launch Support through Sept. 30, 1963.

(2) \$660,107 - Increase to Engineering Documentation effort for SA 5, 6, 7, and 9.

(3) \$469,967 - Extend Baronne Street lease through Sept. 30, 1964.

(4) \$52,781,082 - Saturn IB, S-IB effort.

(5) \$563,575 - Extend Reliability Program through Sept. 30, 1963.

(6) \$2,000 - Additional electrical outlets at Baronne Street.

(7) \$49,228 - C of F for Plant Modification.

The Launch Support effort and the Reliability Program effort, subsequent to September 30, 1963, was not successfully negotiated into Contract NAS8-4016 during this report period. However, effort on both programs was continued by issuance of Contracting Officer's Incurrence of Cost Letters.

Chrysler Corporation Space Division was advised on July 9, 1963, to proceed immediately with preliminary design and studies of a new fin configuration for the Saturn IB, S-IB stage. This effort, part of Item I of Contract NAS8-4016, was not successfully negotiated during this report period. However, effort has been continued by the issuance of Contracting Officer's Incurrence of Cost Letters.

Chrysler Corporation Space Division was advised on October 30, 1963, that Contract NAS8-4016 was being partially terminated by the deletion of six (6) S-I stages, S-I-111 through S-I-116. This action reduced the total deliverable stages for Contract NAS8-4016 to two (2) S-I stages (S-I-8 and 10) and twelve (12) S-IB stages (S-IB-1 through 12). CCSD was further advised on November 29, 1963, of technical changes to the S-IB stages and delivery schedule changes.

Fiscal Year 1964 funding of Contract NAS8-4016 is:

Incremental R&D funding for the period July 1 through December 31, 1963, \$51,564,050. In addition to this amount is the Incurrence of Cost authorizations for S-IB Fin Redesign, \$997,000; for Launch Support effort, \$1,242,000; and for the Reliability Program, \$940,000.

C of F funding for Plant Modification was increased by \$49,228 during this report period.

b. NAS8-5602(F)

Modification No. 9 was issued to Chrysler Corporation Space Division to update Schedule "A" and "B" lists and provide additional funds for acquisition of additional facilities and the rehabilitation and refurbishment of Government furnished equipment at an estimated cost of \$2,216,000.00. The total contract amount is now \$9,355,819.31.

c. The Chrysler Corporation has completed the following projects:

- (1) Receiving Inspection Clean Room
- (2) Engineering Laboratories - Test Cell Building
- (3) Surface Treatment Facility
- (4) Printed Circuit Facility
- (5) Safety Office
- (6) NASA QC Office
- (7) Ceiling for QC North Mezzanine Offices
- (8) Functional Checkout Control Rooms B & C
- (9) Catwalk for Stations 6 and 7
- (10) Completion of several Overhead Crane Systems, Manu-

facturing Area

- (11) Deionized Water Facility
- (12) High Pressure Air Facility
- (13) Nitrogen and Helium Facilities

2. Manufacturing and Engineering

Based on a review of the capabilities at Michoud and an on-site survey of the Chrysler Missile Division at Cape Kennedy, CCSD was directed not to place additional work (manufacturing and engineering) with Chrysler Missile Division except in very unusual circumstances and then only after prior approval by Michoud Operations.

3. Checkout

Decision was made to complete only two of the three originally planned checkout stations in the Chrysler Area. The first station was completed and the S-I-8 vehicle went into checkout on October 27, 1963. The static test stand at MSFC will be available for S-I-8 in early April, 1964.

4. PERT

Chrysler Corporation Space Division/MSFC PERT Implementation Team activities were completed early in this report period. New PERT networks on vehicles S-I-112, S-I-113 and S-IB-1 were implemented by CCSD. However, reporting on vehicles S-I-111, S-I-112, and S-I-113 was discontinued by CCSD upon receipt of termination notice. At the time of termination, the early assembly operations for these vehicles were on schedule. Vendor parts delivery for later assembly operations were being forecasted up to 13 weeks late. Work around activities were being investigated by CCSD to minimize the late vendor deliveries and to insure that the vehicle would meet the major milestone schedule of Static Firing at MSFC.

The impact of the delivery schedule changes, as directed on November 29, 1963, was incorporated into the S-I-8, S-I-10, S-IB-1, and Plant Modification PERT networks. The composite vehicle network is in the final phase of revision. The availability of the MSFC Static Test Stand for S-I-8 and S-I-10 is the only significant unresolved schedule date as of the end of this report period.

CCSD PERT bi-weekly reporting on the Reliability Program was suspended as of December 4, 1963, pending the completion of negotiations and the establishment of a revised program.

CCSD PERT networks as of the end of this report period contain a total of approximately 1200 activities against which bi-weekly schedule assessment is being made.

5. Budget

The Fiscal Year 1965 Detailed Budget Submission for the Saturn I/IB Program was transmitted to MSFC in late October 1963. Guidelines and

assumptions for the preparation of this budget are contained in Memorandum, Central Planning Office, dated August 30, 1963, subject: Call for Budget Planning Data, November 15 Exercise. This budget was based on the twenty (20) vehicle program and stated a FY 65 fund requirement of 89.9 million dollars for the prime contractor and all other supporting services requiring Saturn I/IB funding.

B. Saturn V, S-IC Program

1. Contracts

a. NAS8-5608

The Boeing Company Contract NAS8-5608 was modified and increased in value during this report period in the amount of \$27,879,440. This increased the total contract value from \$419,568,451 to \$447,447,891 (includes \$13,345,060 C of F). The \$27,879,440 increase provided the following:

\$27,443,676 - Plan V Schedule

204,950 - Extend Part VI, Systems Support, to August 31, 1963

230,814 - Extend Part VI, Systems Support, to December 31, 1963

A Change Order was issued to The Boeing Company Contract NAS8-5608 during this report period to provide for the delivery of selected items of GSE for MSFC Test Laboratory. This Change Order was not negotiated during this report period.

The contract was also modified to add Part XI to the Technical Work Statement. Part XI was titled, "S-IC System Mission Support." Work or tasks under Part XI will be separately negotiated as they are identified.

Contract NAS8-5608 was administratively changed on December 20, 1963, for purpose of implementing program changes. The major impact of this change was the deletion of one flight vehicle (S-IC-2) and the substitution of a ground test vehicle (S-IC-D) as well as a delivery schedule change. The revised Boeing Stage delivery schedule of the first item (S-IC-D) was delayed two months from the previously first item (S-IC-F) delivery date and the last item (S-IC-10) was delayed fourteen months (October 1967 to January 1969). This particular program is commonly referred to as Plan VI, dated December 9, 1963.

At the close of this report period, discussions were also underway between Boeing and MSFC regarding an accelerated program schedule. The schedule, known as "Plan VI - Accelerated" or "Plan VII," would advance the Plan VI first item delivery by one month and the last item by seven months.

A series of meetings have been held with Boeing representatives in regard to the establishment of eleven (11) work order numbers in consonance with the eleven (11) parts of the Technical Work Statement of Boeing Contract NAS8-5608. Acceptable progress is being made, and it is felt that these work orders will be established early in the calendar year 1964.

Fiscal Year 1964 funding of Contract NAS8-5608 is:

(1) Incremental R&D funding for the period July 1 through December 31, 1963, in the amount of \$75,823,950.

(2) Incremental C of F funding for Plant Modification was increased by \$564,000 during this report period.

b. NAS8-2577

The Boeing Company Contract NAS8-2577 period of performance was extended to December 31, 1963, during this report period. Purpose of the extension was to authorize utilization of unused C of F funds.

c. NAS8-5606

Supplemental Agreement No. 10 to Contract NAS8-5606(F) was approved by NASA Headquarters on November 26, 1963. This modification obligated an additional \$6,143,000, or a new total of \$13,922,471, for the facilities required on the S-IC Program.

Schedule "A", Contractor Acquired Facilities, was incorporated into the contract as well as Schedule "B", Government Furnished Equipment, which totals \$4,327,916 as of December 31, 1963.

During the reporting period, construction contracts for plant modification were awarded in the amount of \$6,693,767.

d. The following facilities have been completed by The Boeing Company:

- (1) Chemical Tank Farm for Hydrostatic Test and Cleaning Facility-Vertical Assembly Building
- (2) Measurement Control Lab
- (3) Joint Occupancy, Vertical Assembly Building
- (4) Minor Assembly Facility - Special Tooling Foundations
- (5) Chemical Cleaning Facility, Phase I
- (6) Boring Mill Modification
- (7) Minor Assembly "Y" ring Area Modification
- (8) Special Tooling Foundations, Phase V
- (9) Truss Modification, Phase II
- (10) Manufacturing Development Lab
- (11) Interim Stage Electric/Electronics Lab
- (12) Interim Materials and Processes Test Lab
- (13) Q.A. Centralized Radiographic Evaluation Lab

- (14) Chemical Cleaning & Finish Process Facility, Phase II
- (15) Factory Offices and NASA QC Offices
- (16) Receiving and Inspection Facility
- (17) Rework and Modification Area, Phase II
- (18) Mock-up Facility, Phase I
- (19) Quality Evaluation Lab
- (20) Intertank and Forward Skirt Assembly Tooling Bulkhead

Gore to Gore Meridian Weld Tooling

- (21) Thrust Structure & Tank Subassembly Tooling

2. PERT

S-IC:

The Boeing Company/MSFC PERT Implementation Team completed implementation of the GSE PERT networks and bi-weekly reporting began on August 9, 1963.

As of the end of this report period, nine (9) Boeing bi-weekly reports, covering all PERT networks, have been submitted for management's use and subsequent action. A series of MSFC/Boeing Management telephone conferences were initiated for the purpose of schedule assessment following the submittal of the Boeing narrative analysis report. Major effort was devoted during this report period to improving the format of the Boeing narrative analysis report to make it a more effective management document.

All Boeing PERT networks are now operational and encompass a total of approximately 8000 activities, 4100 are GSE related and the remainder are related to Stage design, manufacturing, assembly, testing, and transportation activities and a small number of incompletd plant modification activities.

Major Boeing effort at the end of this report period was revision of all networks to reflect the revised program direction.

3. Budget

The Fiscal Year 1965 Detailed Budget Submission for the Saturn V, S-IC Program was transmitted to MSFC in late October 1963. Guidelines and assumptions for preparation of the budget are contained in Memorandum, Central Planning Office, dated August 30, 1963, subject: Call for Budget Planning Data, November 15 Exercise. This budget was based on Plan V and stated a FY 65 fund requirement of 152.6 million dollars for the prime contractor and all other supporting services requiring Saturn V, S-IC funding.

C. Engine Management Program

The first significant problem encountered and resolved by the Engine Office was the formulation of a working procedure for use by CCSD and Rocketdyne in maintaining the H-1 engine. After completion of this procedure, effort consisted mainly of coordinating activities involving the H-1, F-1, and J-2 engine systems with Rocketdyne and the respective project managers.

D. Documentation Program

A satellite reproduction facility was installed in the Computer Operations Office at Slidell for the reproduction of engineering master records and engineering parts list.

The Boeing Company submitted a proposed program of Automatic Data Processing System on the Honeywell 800 Computer. Tentative approval has been given for implementation of the program for April 1, 1964.

A new procedure was provided for reproduction and microfilming of official release engineering documentation and has demonstrated its effectiveness by decreasing the time required for microfilming and reproduction.

During this reporting period, MSFC cancelled six (6) stages (SA-111 through SA-116) from the CCSD-M contract. The Documentation Office released instructions to CCSD-M for the deletion of these stages from the system and the compilation of records to be tape run for storage purposes.

The flow of documentation covering the S-IB stages is being received by I-MICH-D and is expected to increase gradually.

During this period, documentation to include design and test documentation began to flow from the S-IC stage contractor design organizations located in Huntsville, Alabama, for the Test and Checkout Station. Total releases, to include change engineering for both the Stage and Test and Checkout station, total 8,686 documents.

CHAPTER VI:

QUALITY ASSURANCE AND RELIABILITY

During the period covered by this history, I-MICH-Q personnel participated in the inspection and test operations performed by the Michoud contractors during receiving inspection, subassembly, assembly, component testing, engine checkout and final vehicle checkout.

Final assembly was completed on SI-8 and it was moved into final checkout. Final acceptance test procedures for SI-8 prestatic test were reviewed, evaluated and approved by Quality Assurance personnel. I-MICH-Q personnel observed and evaluated all tests conducted on the booster in final checkout. SI-10 progressed to the final assembly area.

In addition to certifying Michoud contractor personnel for performing special manufacturing and inspection processes, I-MICH-Q personnel were requested to certify X-ray facilities of Michoud contractors' subcontractors. During this reporting period, nine facilities were certified as complying with Specification MIL-X-6141A.

Boeing started manufacture of twenty-one different subassemblies as directed by task letters from MSFC. Of these, nine have been delivered to Huntsville, Alabama, as completed pieces of hardware. Quality Assurance personnel monitored the manufacturing operation and assisted Boeing in resolving problems and improving manufacturing and inspection techniques.

In October, R-QUAL personnel completed an audit of CCSD's Quality Control system. The evaluation proved that CCSD has an adequate quality system and is meeting contract requirements.

I-MICH-Q personnel continued to review and evaluate contractors' purchase orders, inspection and test procedures, manufacturing process procedures,

and quality control procedures and instructions. Several quality audits were conducted to assure that the contractors are complying with approved procedures.

Personnel from I-MICH-Q continued to monitor the contractors' activities in their reliability program. CCSD installed a 10,000-pound shaker and a 30,000-pound shaker. Both are operational and are being used in component testing. The CCSD reliability test schedule is being revised due to cancellation of six SI stages.

Also during this period, a reliability contract was negotiated with CCSD. Under its terms, the contractor will implement a Reliability Program Plan to serve as the master planning and control document for conducting their reliability program.

The Reliability portion of the Boeing contract was re-negotiated with no major change in scope. At the request of I-MICH-Q, Boeing developed a General Test Plan and a summary document to describe Boeing's reliability test responsibility. This was presented to other elements of MSFC in December and Boeing was given directions to implement it. This is an integrated test program which will meet all the requirements of NASA Reliability Policy Document NPC 250-1.

CHAPTER VII:

SUPPORT ACTIVITIES

A. Contracts

1. NASS-5618

On July 1, 1963, Mason-Rust and NASA entered into Contract NASS-5618 with a contract value of \$11,708,225 for Support Services for personnel, facilities, equipment and materials, not otherwise furnished by the Government, necessary to provide and perform the following support services to serve all Government and contractors' operations within Michoud Operations, New Orleans, Louisiana:

Transportation Service

Security Service

Fire Protection Service

Photographic Service

Medical Service

Food Service

Supply Service

Communication Service

Custodial Service

Plant Maintenance and Repair Service

Engineering Service

Messenger and Mail Service

Reproduction Service

Modification No. 1 added Articles XXX and XXXII, Payment of Fixed Fee and Changes to Make-or-Buy Program, respectively; changed the title

of one of the fire protection standards and added the Corps of Engineers, General Safety Requirements to Article X; changed the length of the option for renewal without any material effect and redefined the period for exercising option - Article II; added non-common items to paragraph B of Appendix "G."

Modifications Nos. 2, 3, 4, 6, 7, and 8 covered incremental funding. Modification No. 5 revised Appendix "K" by deleting project 13, Salvage Yard Facility, and adding four projects - 30, Medical Clinic Alterations; 31, Manufacturing Plant Emergency Lighting; 32, Scrap Metal Storage Bins and Ramp; and 33, Emergency Sewer Ejection System, Central Computer Facility.

This contract provided for supporting services similar to Contract NAS8-4004, Appendix "A" through "O", but excluded construction management type services which were still active under Appendix "P" of Contract NAS8-4004. Incremental FY 1964 R&D funding for support services for the period July 1 through December 31, 1963, was \$6,142,000. No C of F funding was provided during this report period for four (4) construction projects included in Appendix "K" which have an estimated value of \$1,740,000.

2. NAS8-4004

All work was completed under Mason-Rust Contract NAS8-4004 except three construction projects under Appendix "P" (Construction Management). These projects are: (1) the Vertical Assembly, Hydrostatic Test and Cleaning Facility, Phase II; (2) Modification to Boiler Plant; and (3) Chemical Waste, Phase III - Deep Well Injection System. Modifications 45 through 48 provided incremental funding to an allotted amount of \$17,230,898. The contract value

of Appendix "P" remained at \$7,634,544, with total funding amounting to \$7,421,094 (\$1,138,024 R&D; \$6,283,070 CoFF). Procurement requests were in process at the end of this reporting period to extend the period of performance to February 29, 1964, and also to provide an additional \$1,600 C of F incremental funding.

3. NAS8-4019(F)

The Mason-Rust Facility Contract NAS8-4019(F) had six modifications during this reporting period, for a total of 19. These six modifications covered additions and/or deletions of various quantities and types of equipment to Schedule "A" and increased the previously reported total contract value of \$668,683 by \$168,794 to \$837,477. In addition, \$191,967 was acquired as Government-furnished equipment through Government reserve during this reporting period for a total GFE amount of \$978,809.

4. Mason-Rust completed the following projects during the reporting period:

Central Maintenance Shops

Transportation Building

Voice Paging System

Additional Sub-Station Capacity, Phase I

Additional Sub-Station Capacity, Phase II

Boiler House Alterations, Phase I

Boiler House Alterations, Phase II

Salvage Yard Facility

Second Floor Addition to Reproduction Area

Office Space on South Mezzanine

East Extension to Mason-Rust Central Supply & Office Space

Hose Bibbs, Lawn - Central Computer Facility
 Electrical Service for Moving Picture Lighting
 Rehabilitation to Old Bulk Storage Lumber Building, Phase I
 Plant Air Conditioning, Phase I
 Chemical Waste System, Phase II
 Storm Drainage System
 Dividing Wall
 Parking Lot
 Barge Dock & Access Road
 Modification to Dry Kiln Building
 Installation of Boilers
 Renovation of Plant Toilets

5. The following C of F and R&D funds were provided Mason-Rust during the report period for contracts and services managed by Mason-Rust:

<u>Purpose</u>	<u>Project</u>	<u>Funding</u>
Plant Modification - various projects	6302	\$53,800 (FY 63)
Modification to Slidell Facility	9126	2,012 (FY 62) (Decrease)
Storm Drainage System	R&D 6307	83,004 (FY 63)

During this report period, the following C of F funds were provided various contractors under NASA(MSPC) contracts but whose activities are managed by Mason-Rust:

<u>Contractor</u>	<u>Contract No.</u>	<u>Purpose</u>	<u>Project</u>	<u>Funding</u>
Ross Corporation	NAS8-5522	Hydrostatic Test Facility	6304	\$ 26,120 (FY 62)
Ross Corporation	NAS8-5522	Hydrostatic Test Facility	6304	80,800 (FY 63)

Ross Corporation	NAS8-5522	Vertical Assembly Building	6305	\$433,000 (FY 63)
Welding & Mfg Co	NAS8-5523	Truss Modification Phase I	6302	45,000 (FY 63)
ETS-Hokin & Galvan	NAS8-5535	General Plant Lighting	6302	49,917 (FY 63)
Orleans Material & Equipment Co	NAS8-5579	Engineering Bldg	6308	6,451 (FY 63)
J. A. Jones Constr Company	NAS8-5596	Engineering Bldg	6308	39,417 (FY 63)

6. NAS8-4018

Contract NAS8-4018 with the Sewerage and Water Board of New Orleans, a standard Negotiated Utility Service Contract, originally awarded on June 25, 1962, with the privilege of renewing under the same terms and conditions each year for successive Government fiscal years until June 25, 1967, was renewed for the current fiscal year. Five modifications have been issued, for funding, renewal, and the addition of a new water inlet.

B. Real and Installed Property Activities

Michoud land acreage acquired to date is listed in Enc. 10.

A fenced salvage yard with a storage warehouse was completed during this report period, thereby providing a controlled area for the handling and storage of scrap and excess and surplus property.

Property disposals for the period July 1 - December 31, 1963, by contractor are:

<u>Contractor</u>	<u>Disposal by Transfer</u>	<u>Scrap Sales</u>	<u>Total</u>
The Boeing Company	\$1,035,464	\$ -0-	\$1,035,464
Chrysler Corporation, Space Division	7,809	-0-	7,809
Mason-Rust	<u>93,689</u>	<u>20,832</u>	<u>114,521</u>
	\$1,136,962	\$20,832	\$1,157,794

C. Industrial Property Activities

Dollar value of equipment and materials obtained from Government reserve and/or excess and furnished Michoud contractors during this reporting period is as follows:

The Boeing Company	\$2,641,230
Chrysler Corporation, Space Division	809,266
Mason-Rust	<u>191,967</u>
Total	\$3,642,463

CHAPTER VIII:

COMPUTER OPERATIONS

Telecomputing Services, Inc. Contract NAS8-5614 was modified and increased in value during this report period in the amount of \$243,115. This increased the total contract value from \$534,718 to \$777,833. Purpose of the increase was to (1) increase from two-shift to three-shift basis the operation of the computer equipment, (2) operate high speed data transmission equipment at Baronne Building, (3) establish and maintain computer technical reference library and (4) provide visitor control and receptionist service on a two-shift basis. Fiscal Year 1964 funding was \$487,833 which provided funding for the full contract value of \$777,833.

Level of activity steadily increased during the period and at year-end all digital computers were essentially being operated on a three shift, seven-day week basis. Analog computers were in operation in excess of one shift.

Some of the major projects run on the scientific computers are: Pressurization systems analysis; fuel slosh analogy; power balance program; reliability model; trajectory program; multi-engine form factors. On the management engineering computers, major programs include: Accounting-- Saturn vacation liability for Boeing; payroll tax computation, Boeing; failed parts reliability; inspection reporting system; unsatisfactory condition report system; engineering parts lists; bill of materials system; logistic spares; instrumentation systems; reliability data; property accounting. Analog computer projects include: preliminary transporter load analysis; Saturn V Point Time Dynamic Simulation; Calorimeter study of temperature distribution for Saturn; hold down and rebound analysis.

As a result of improved programming techniques and utilization review, the following computer components were released from use in July.

HW 400	Paper tape reader
HW 800	Punch and card reader punch control
IBM 7094	Card Punch

During September, reproduction equipment was installed to eliminate multiple computer runs required to print an adequate number of copies of computer products.

A high speed (15,000 characters per second transmission rate) data transmission system was installed and acceptance test started October 21, 1963. The system selected involves using the IBM 1401 Computer System installed at Slidell and a newly acquired IBM 1401 Computer System in the Baronne Building. Although numerous difficulties were encountered, the data transmission system has been very effective in providing fast, reliable data movement to and from downtown New Orleans.

Throughout the period, considerable planning was accomplished leading to the installation of a Data Reduction facility in the Computer Operations Office.

On October 1, 1963, expansion of capabilities of the Management & Engineering computers was completed including additional memory and tape drives on the Honeywell 800 computer and the addition of one off-line printer. These additions permitted initiation of parallel processing on the HW 800 and provided additional printing capability. Some relief from computer backlogs was obtained as a result of the parallel processing, but it became necessary beginning November 11, 1963, to utilize a HW 800 computer in Atlanta, Georgia. Operating contractor personnel were placed on duty in Atlanta; shipments of tape by air freight or air express arranged,

and during certain periods Boeing and Chrysler programming personnel were also on duty in Atlanta. Use of this computer is expected to continue until March 1964 in order to permit accomplishment of essential work.

A meeting of the Slidell Computer Board on October 16, 1963, approved the acquisition of an additional large scale Scientific computer and a large scale Management & Engineering computer. An additional off-line printer and the installation of two printers on the GE 225 computer with 160 print positions were also approved. As a result, an IBM 7094, HW 800, HW 418, and the GE 225 printers were ordered for delivery in January 1964.

An order for 5,000 HW tapes was made in November resulting in a significant savings because of the size of the order. It is anticipated this supply will be adequate through July 1964. An order for 1,000 IBM tapes was placed in October 1963. Regular Mylar instead of heavy duty tapes were ordered and resulted in a considerable monetary savings without adverse effect upon the operation.

A building addition to include 30,000 sq.ft. was submitted for approval for FY 65. Approval through NASA level has been indicated. This proposed addition was initiated because known and forecasted increases in computer equipment and contractor programmer personnel could not be accommodated in the present building.

Due to the very limited feeding facilities in the building, a variety of food vending machines were installed in the cafeteria in October. These are not considered to be adequate substitution for normal cafeteria services, but building space and funds limitations did not permit installation of an adequate cafeteria.

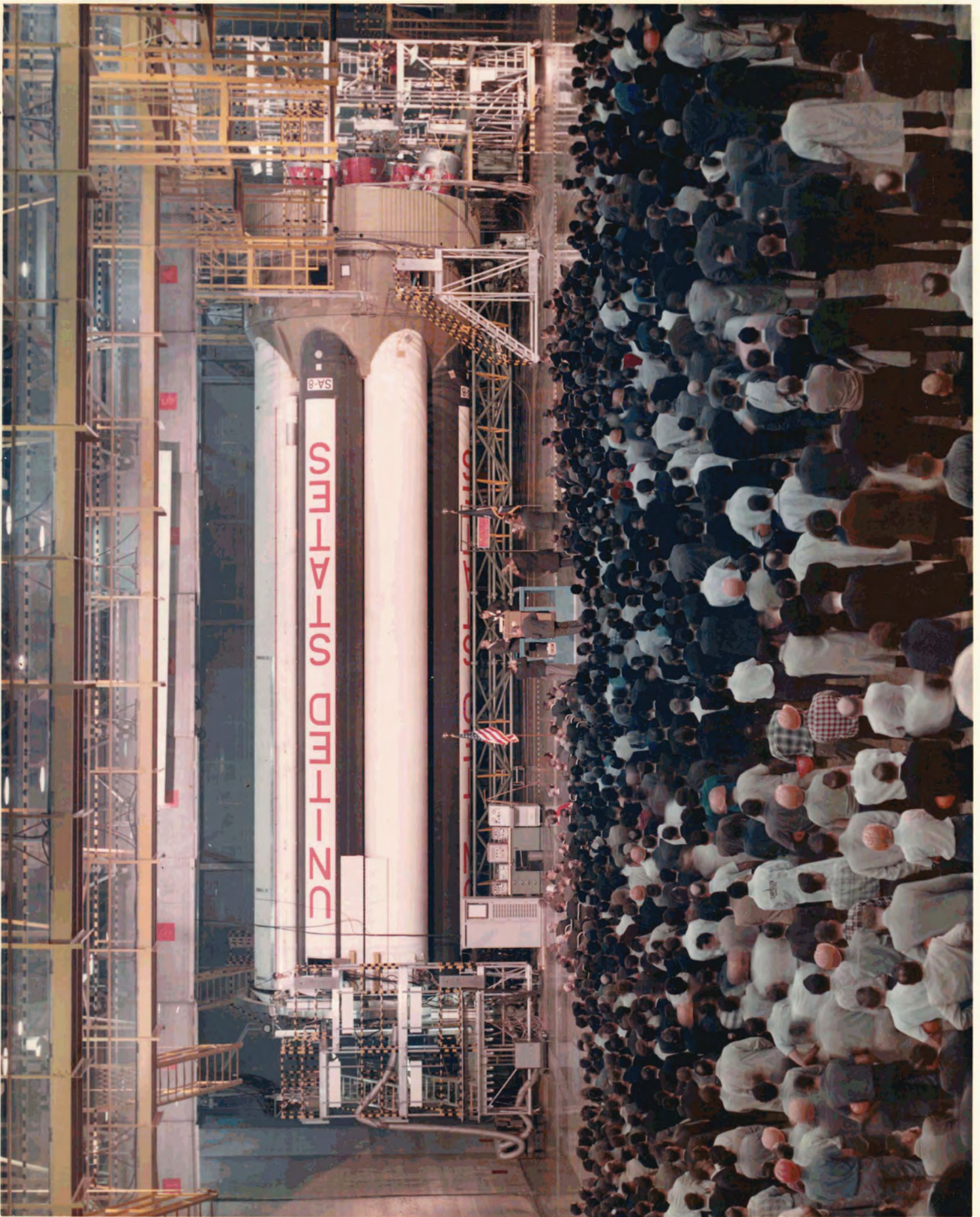
A hose bib watering system for the lawn was completed in November 1963. Although the landscaping has not been satisfactorily completed, when it is completed and lawn and shrubs established, the watering system will protect the investment during dry weather.

Lighting and ceiling renovation of the second floor was completed at year-end. Approximately 100 Boeing and Chrysler programming personnel are scheduled to occupy the floor early in January when temporary electrical outlets and telephones are installed. Considerable work is still required for temperature control, permanent electrical and telephone outlets, and partitions.

On December 30, 1963, bids were received for construction of a Guard House for the main gate entrance to the area.

SUPPORTING

DOCUMENTS







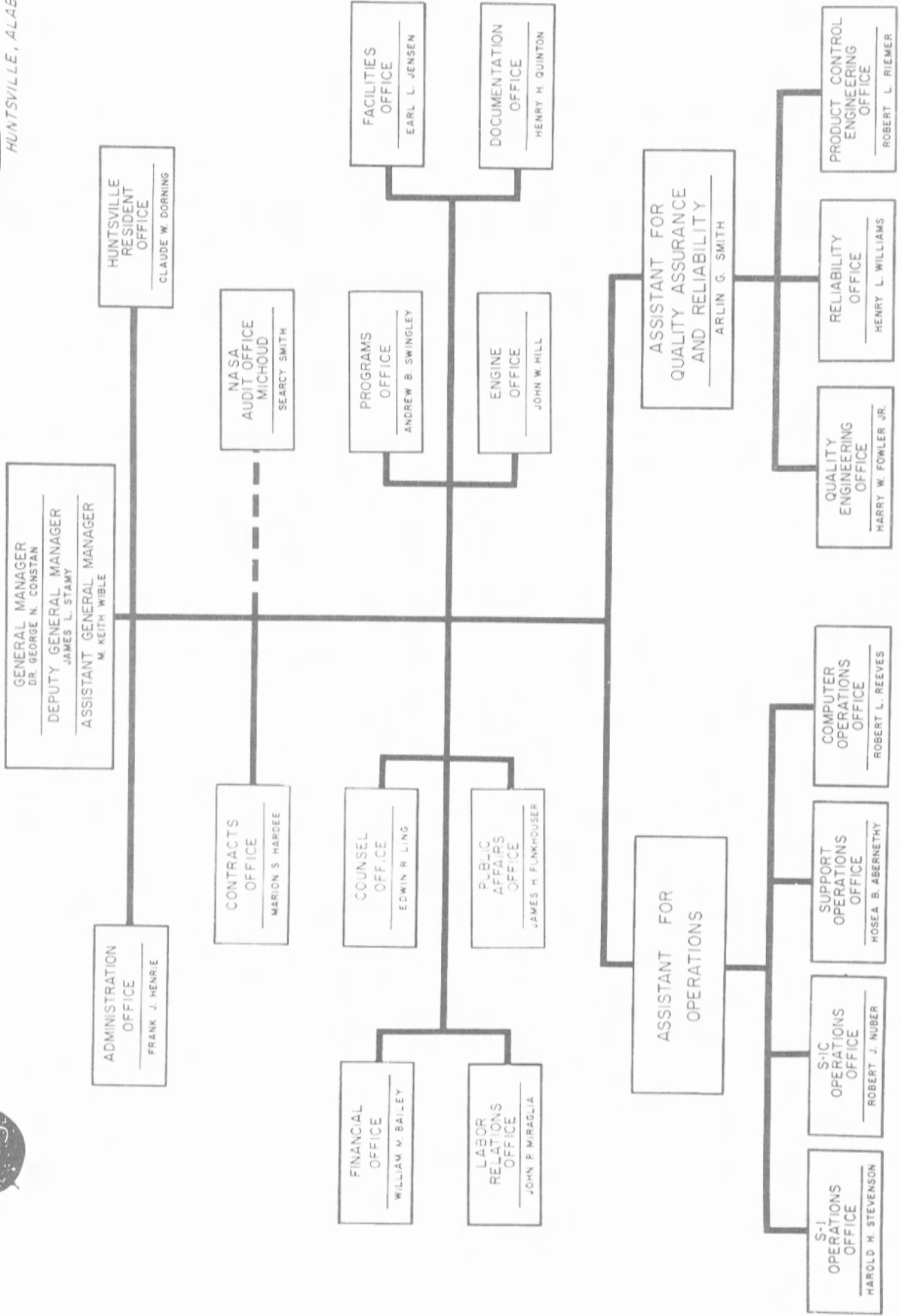






GEORGE C. MARSHALL FLIGHT CENTER
 SPACE
 HUNTSVILLE, ALABAMA

MICHOUD OPERATIONS



10. #7

MICHIGAN OPERATIONS

Public Affairs Office

Summary of Major Activities in 1963

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
TV Clips	1	-	-	-	-	-	-	-	1	-	-	-	2
News Releases	10	2	7	7	5	3	4	9	18	2	5	2	74
Still Pictures	1	-	-	-	1	2	1	-	1	1	-	1	8
Public Appearances	-	-	1	4	3	3	-	1	1	2	-	-	15
Press Visitors and/or Interviews	10	13	9	9	45	7	26	19	30	27	17	23	235
*General Visitors	203	26	148	199	97	76	118	63	100	203	414	109	1751
Plant Tours	5	2	17	13	11	6	17	8	8	13	30	15	145
Visitor Briefings	1	-	3	2	1	2	2	1	2	5	2	1	22
Speeches	3	6	5	2	10	6	7	7	3	4	8	1	62
Speeches Written	-	-	1	-	1	2	1	1	-	-	-	1	7
Speeches Covered and/or Reported by Press	-	-	1	1	1	1	1	2	1	-	-	1	9
Exhibits	-	-	1	1	2	1	1	1	4	2	3	1	16
Internal Releases	7	5	7	8	10	6	6	6	4	9	6	5	79
Releases, Brochures, Speeches, etc., Reviewed	7	8	8	4	15	1	18	6	10	9	10	7	103
Fan Mail Answered	10	12	13	3	24	6	12	13	12	8	5	8	126
Feature Films Shown													60
INTERNAL													15
EXTERNAL													13
TOTAL													33

*Includes only those visitors handled by this office

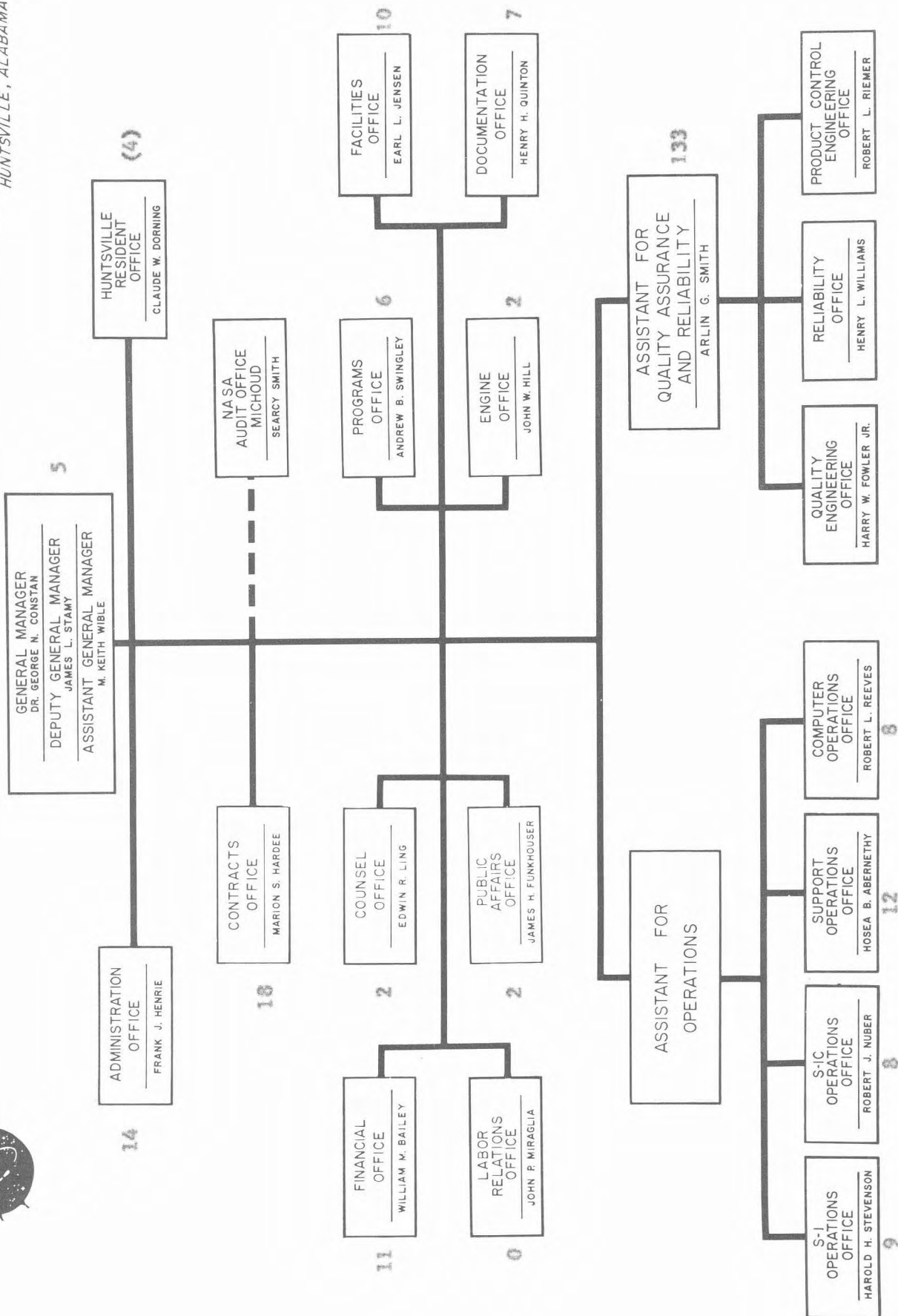
ACTUAL PERSONNEL STRENGTH BY ORGANIZATIONAL SECRET, AS OF DEC. 31, 1963



MICHOUD OPERATIONS

SPACE
MARSHALL
FLIGHT
CENTER

GEORGE C. MARSHALL
HUNTSVILLE, ALABAMA



ARTICLE--GENERAL SAFETY REQUIREMENTS

a. In order to provide safety controls for protection to the life and health of employees and other persons; for prevention of damage to property, materials, supplies, and equipment; and for avoidance of work interruptions in the performance of the Contract; the Contractor will comply with the following standards:

1. National Fire Protection Association, National Fire Codes, Vols. I-VI.
2. National Board of Fire Underwriters Pamphlets.
3. American Standards Association Safety Standards.
4. American Society of Mechanical Engineers, Boiler and Unfired Pressure Vessel Code, Section I-IX.
5. Accident Prevention Manual for Industrial Operations.
6. National Fire Protection Association Handbook of Fire Protection.
7. National Building Code.
8. Industrial Ventilation Guide.
9. Illuminating Engineering Society Handbook.
10. Heating, Ventilation, and Air Conditioning Guide.
11. Local Laws, Codes and Standards Where Applicable.
12. Any other nationally recognized standards, regulations, codes, instructions or generally accepted publications as determined by the Contracting Officer pertinent to the work being performed, the hazardous exposure encountered, and/or dangers potentially injurious or damage producing.

b. The contractor will operate under a safety program previously submitted and approved and which must be maintained in a current status especially as pertains to the work being performed.

c. During the performance of work under the Contract, the Contractor shall comply with all procedures prescribed by the Contracting Officer for the control and safety of persons visiting the job site and will comply with such requirements to prevent accidents as may be specified or issued by the Contracting Officer.

d. The Contractor will maintain an accurate record of, and will report to the Contracting Officer in the manner and on the forms prescribed by the Contracting Officer, exposure data and all accidents resulting in death, traumatic injury, occupational disease, and/or damage to property, materials, supplies and equipment incident to work performed under the Contract.

e. The Contracting Officer will notify the Contractor of any non-compliance with the foregoing provisions and the action to be taken. The Contractor shall, after receipt of such, immediately take corrective action. Such notice, when delivered to the Contractor or his representative at the site of the work, shall be deemed sufficient for the purpose. If the Contractor fails or refuses to comply promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken.

f. Compliance with the provisions of this article by subcontractors will be the responsibility of the Contractor.

Enc. 1

ACQUISITION CHRONOLOGY OF MICHOU D OPERATIONS LAND ACREAGE

DATE	ACREAGE	HOLDING AGENCY	RECEIVING AGENCY
8-11-42	1075.226	Higgins Corporation by act of sale dated 8-12-42. Registered in C.O.B. 520, Folio 543 of the Records of Conveyances, Orleans Parish, Louisiana.	Acquired by the United States Maritime Commission through condemnation proceedings.
11-28-47	1075.226	U. S. Maritime Commission; site handled by General Services Administration	Acquired by the Board of Commissioners of the Port of New Orleans on surplus property sale.
3-10-48	75.00	Board of Commissioners of the Port of New Orleans	Acquired by Higgins, Inc., of New Orleans by sale.
1951	1000.26	Board of Commissioners of the Port of New Orleans	Acquired by U. S. Army Ordnance District, Birmingham, Alabama, through condemnation proceedings awarded by Federal District Court, April 25, 1951.
1958	66.14	U. S. Army Ordnance District, Birmingham, Alabama	Transferred to U. S. Army Transportation Command, Gulf.
7-7-59	6.0	U. S. Army Ordnance District, Birmingham, Alabama	Transferred to U. S. Army Military District, Poland and Dauphine Sts., New Orleans, La.
7-14-60	93.63	U. S. Army Ordnance District, Birmingham, Alabama	Transferred to U. S. Army District Engineer, Civil Acct., New Orleans, Louisiana
3-19-62	9.76	U. S. Army Ordnance District, Birmingham, Alabama.	Transferred to City of New Orleans
3-23-62	824.70	U. S. Army Ordnance District, Birmingham, Alabama	Transferred to George C. Marshall Space Flight Center, Michoud Operations, New Orleans, Louisiana
3-18-63	13.99 (Slidell)	Federal Aviation Agency, Southwest Region, Fort Worth, Texas	Transferred to George C. Marshall Space Flight Center, Michoud Operations, New Orleans, La.

EVALUATION OF LAND ACREAGE HELD BY
 GEORGE C. MARSHALL SPACE FLIGHT CENTER
 NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
 AS OF DECEMBER 31, 1963

734.69 ACRES USEABLE HIGH LAND (INCLUDING SLIDELL PROPERTY)
 54.00 ACRES SOUTH OF LEVEE UNPROTECTED FROM WATER
50.00 ACRES LAND IN BORROW AREA AT LEVEE
 838.69 TOTAL ACRES