

Source Note: The following information is presented here as published in a Fact Sheet issued on April 5, 1960 by the Marshall Center Public Affairs Office.)

HUNTSVILLE, Ala.--The National Aeronautics and Space Administration's Marshall Space Flight Center will become fully operational July 1, 1960.

The Center will employ some 5,500 persons, the majority of whom are transferring from the Army Ballistic Missile Agency and other Army organizations at Redstone Arsenal.

The nucleus of the organization is the Development Operations Division of the ABMA, the group which developed the Redstone and Jupiter ballistic missiles, and conducted several outstanding space projects, including the launching of the Free World's first:

- a. Satellite of the Earth, Explorer I, January 31, 1958;
- b. Satellite of the Sun, Pioneer IV, March 2, 1959;
- c. Successful flight and recovery of animal life, Monkeys Able and Baker, May 28, 1959.

The Center, under the direction of Dr. Wernher von Braun, will have charge of developing and launching NASA's space vehicles and conducting related research. It is the only self-contained organization in the nation which is capable of conducting the development of a space vehicle from the conception of the idea, through production of hardware, testing, and launching operations.

The Army facilities are being transferred to the NASA following a recommendation of the President to the Congress last October. President Eisenhower announced last month the intention to name the Huntsville facilities for the late General of the Army George C. Marshall.

The NASA organization will continue under Army business management until June 30, 1960, the end of the current fiscal year. The Marshall Space Flight Center will inaugurate NASA management in all fields July 1.

Dr. von Braun will have two deputies. Dr. Eberhard F. M. Rees, who has served as his deputy for many years, will become the Deputy for Research and Development. The Deputy for Administration will be Delmar M. Morris, formerly of the Atomic Energy Commission. The research and development organization will continue practically unchanged. The 10 laboratories and their directors are:

Dr. E. D. Geissler, Aeroballistics; Dr. Helmut Hoelzer, Computations; Hans Maus, Fabrication and Assembly Engineering; Dr. Walter Haeussermann, Guidance and Control; Dr. Kurt Debus, Missile Firing; Dr. Ernst Stuhlinger, Research Projects; W. A. Mrazek, Structures and Mechanics; E. W. Neubert, Systems Analysis and Reliability; Hans Hueter, Systems Support Equipment and Director of Agena and Centaur projects; and Karl Heimburg, Test.

Chiefs of staff and project offices include:

H. Koelle, Future Projects; Dr. O. H. Lange, Saturn Systems; George Constan, Technical Program Coordination; David Newby, Technical Services; Victor Sorensen, Personnel and Management Services; Arthur Sanderson, Personnel Director; and Keith Wibble Security.

Other staff officers are to be chosen for financial management, purchasing and contracting, legal, weapons systems, and public information. All key personnel will be selected before June 30.

Current programs under development by the organization include the Saturn 1,500,000-pound thrust space booster, Redstone missile firings in the Mercury Project, Juno II vehicles for scientific earth satellites, Agena B, Centaur and the 1,500,000 single barrel engine known as the F-1. Dr. von Braun reports to Maj. Gen. Don Ostrander, director of launch vehicle operations for NASA in the Washington headquarters, who in turn

reports to Dr. T. Keith Glennan, NASA Administrator.

Physical Facilities

The physical facilities to be occupied by the Marshall Space Flight Center have an estimated value of \$100,000,000. About 85 percent of this, according to evaluation, is located at Huntsville; the remainder is at the launch site at Cape Canaveral, Fla., headquarters of the Atlantic Missile Range. The facilities of the 10 laboratories are described as follows:

Computation Laboratory: gross area, 58,465 square feet. The Laboratory houses electronic computing equipment used for the automatic processing of data obtained from tests, missile firings and research. It is manned by programming and administrative personnel who carry out data reduction. In addition to employing high speed digital computation, simulation and data reduction in the fields of missile and space vehicle research, the Laboratory performs business-type automatic data processing services for ABMA and other elements of the Missile Command.

Aeroballistics Laboratory: gross area, 38,860 square feet. The Laboratory is equipped to conduct research and development in the field of aeroballistics and related sciences to establish optimum design for ballistic missiles, satellites and other projects. It also makes analyses of future projects and supporting research activities.

Its facilities include two wind tunnels to obtain and evaluate experimental data required to optimize the configuration of rocket systems and to conduct research in aerodynamic measuring techniques. There are vacuum tank facilities, vacuum pump house, air dryer house, compressed air facility and dry air storage tanks.

Fabrication and Assembly Engineering Laboratory: gross area, 348,411 square feet. The Laboratory is equipped to produce experimental model and prototype ballistic missiles and space vehicles. It also conducts research in and develops new technology and novel manufacturing methods and procedures, including tooling and equipment for fabrication and assembly. It has supplied scientific and engineering advice to industrial contractors performing system or component development and production.

Its facilities include the following:

- *Preservation Facility* - housing a spray system to apply preservative coatings and materials to missiles.
- *Press Forming and Heat Treating Shop* - houses hydraulic presses and furnaces to form and heat treat metals and missile components.
- *Missile Assembly Shops 1 and 2* - fitted with special tooling for component and missile sub-assembly and modification, final assembly, alignment, wiring buildup and installation, fuel and hydraulic line and valve makeup, testing a cleaning involving ultrasonic equipment.
- *Structural Fabrication Building* - utilized for ballistic shell fabrication, hydrostatic test, X-ray of welds.
- *Development Shop* - equipped for machining, spinning, stretch forming, skin milling and related machine shop operations involved in missile development and production and including the manufacture of special tooling.
- *Engineering Building* - utilized for engineering and management operations.
- *Surface Treatment Facility* - utilized for surface treatment of metals including clearing, passivating, anodizing, plating, chemical milling and painting.
- *Facilities Maintenance and Supply Building* - utilized for model work, mechanical maintenance and alteration of special tooling and production equipment; receiving, warehousing and distribution of materials and supplies.
- *Methods Research and Development Building* - utilized for the conduct of methods research and development applied to fabrication and assembly of missiles.
- *Instrumentation Shop* - utilized for buildup, modification and maintenance of electrical control

consoles and panels controlling special welding equipment and intricate wiring systems on production equipment.

Guidance and Control Laboratory: gross area, 306,475 square feet. The Laboratory performs research, development, engineering and pilot manufacture of guidance, control, electrical network, missile tracking, measuring, telemetering and range safety systems. It tests commercial components and fabricates and modifies electrical and electronic on-missile components, ground equipment and laboratory equipment.

Its facilities include the following:

- *Laboratory Building* - used for telemetry and measuring research development and testing.
- *Guidance and Control Laboratory* - houses staff offices, gyrostabilizer and navigation branches, environmental testing, radio frequency, measuring and telemetering activities, applied research, electro-mechanical engineering, mechanical shop and pilot manufacturing areas.
- *Wiring Laboratory* - performing the buildup of electrical networks
- *Guidance and Control Shop* - pilot manufacture in sheet metal, welding, coil winding and machine shops.
- *Methods Development Building* - a complete laboratory for development and testing of guidance and control components.
- *Materials Engineering Building* - nuclear gas testing of transistors and printed cabling laboratory.
- *Gyro Shop* - used for beryllium machine shop and printed circuit laboratories for pilot manufacture.

Systems Support Equipment Laboratory: gross area, 138,195 square feet. The Laboratory plans and develops missile support systems to meet tactical and logistical requirements for missiles or space projects. Its facilities include:

- *Fuel Test Stand* - houses instrumentation for tests such as propellant transfer.
- *Mechanical Building* - houses engineering personnel and the "shake table" device by which missile packaging methods and materials are evaluated.
- *Supply Building* - houses operating supplies for the Laboratory.
- *Missile System Building* - houses electrical and mechanical branches which mate, test and evaluate electrical, hydraulic and pneumatic circuitry and missile components.
- *Engineering and Machine Shop* - Furnishes electrical, electronic and mechanical designs; conducts checkouts, tests and modifications for ground support equipment. Utilizes a machine shop, sheet metal shop, welding shop, electrical shop, hydropneumatic and high pressure checkout equipment.
- *Vehicle Shop* - utilized for vehicle modification and the fabrication and modification of handling equipment.

Systems Analysis and Reliability Laboratory: gross area, 107,185 square feet, also maintains representatives and functions in the buildings of the laboratories for the purpose of quality control and inspection. The Laboratory facilities include:

- *High Pressure Test Laboratory* - performs functional test of rocket engines, systems and components and analyzes data for the purpose of accepting or rejecting items.
- *Missile Inspection and Assembly Hangar* - utilized for development, supervision, maintenance and evaluation of programs and procedures in the fields of system analysis, reliability, quality engineering and quality control.

Structures and Mechanics Laboratory: gross area, 249,734 square feet. The Laboratory conducts research and development in the fields of structures, mechanics, propulsion, chemistry and materials related to ballistic missiles, space missiles and vehicles. Its facilities include:

- *Shop* - used by layout section for missile systems.

- *Testing, Mockup and Engineering Building* - utilized for preliminary layouts of missile systems, evaluation of data pertaining to mass characteristics of missiles or components, and analytical and physical checks of missiles.
- *LOX Test Pits* - utilized for preparation of electrical and mechanical components and sub-assemblies for test and storage.
- *Test Tower Instrumentation* - used for instrumentation for a 15-foot centrifuge employed in performing acceleration tests on missile components.
- *Engineering and Administration Building* - houses the technical and scientific staff which conducts research and development.
- *Engineering Materials Building* - utilized for research and development in chemistry and materials for planning, design, manufacture, storage and operation of missiles and space vehicles.
- *Development Shop* - processes design engineering from the preliminary design to completion of test models.
- *S&M Experimental Shop* - conducts research, development and performance testing of hydraulic components, valves and other missile components; performs environmental testing and structural testing of complete missile structures, satellites and other space vehicles.
- *Vacuum and Compressor Building* - houses air conditioning equipment and high pressure testing of air control equipment.
- *Accelerator and Test Cell Building* - employed for hazardous testing of components and materials. It is equipped with a large rotary accelerator for high G loading.

Test Laboratory: gross area, 187,614 square feet. The Laboratory performs experimental and developmental testing of complete missile systems and their components, providing an independent evaluation of test results and recommendations on design criteria. The Laboratory includes the following facilities:

- *Shop* - support facility for high pressure gases and propellants.
- *Power plant test stand* - for static firing rocket engines and missiles up to 300,000 pounds thrust.
- *Engineering Building* - houses test operating and data reduction personnel.
- *Blockhouse* - instrumentation and control center for static test tower and horizontal firing test stand.
- *Static Test Tower* - used for static firing completed guided missiles and space vehicles. The tower has two positions, one capable of handling 500,000 pounds thrust; the other, 2,000,000 pounds thrust.
- *Components Test Laboratory* - equipped for research and development testing of guided missile components.
- *Cold Calibration Test Stand* - a two-position cold flow test stand.
- *Guided Missile Test Shop* - complete welding, machine, structural assembly, sheet metal, pipe fitting and instrument development shop for support of test stand operations.
- *Interim Test Stand* - a two-position stand for static firing of guided missiles up to 100,000 pounds thrust.
- *Signal Unit and Instrumentation Building* - houses television operations and photography units employed in test programs.
- *Liquid Propellant Test Stand* - assembles test apparatus for conducting combustion tests on rocket motors and gas generators.
- *High Altitude Test* - a large, high altitude duct facility simulating conditions up to 100,000 feet altitude.
- *Checkout Building* - engine assembly shop.
- *Nitrogen plant* - utilized to compress helium and put it in transfer or storage containers.

Research Projects Laboratory: gross area, 7,000 square feet. This laboratory originates and directs advanced research projects which, for the most part, are accomplished by private industries and educational institutions. Major areas of work are in advanced materials and propulsion, and the physics of reentry.

Missile Firing Laboratory: gross area, about 135,000 square feet. The Laboratory has management

offices and a components warehouse at Redstone Arsenal. The major facilities, however, are at the Cape Canaveral, Fla., firing site. Among Cape facilities are the following:

- *Two Hangars* - these buildings, 38,000 square feet in area, are used for horizontal checkout of missiles before erection on launch pad, engineering offices and labs, telemetry recording and maintenance operations, several machine shops and a communication center.
- *Supply Building* - houses all missile components and other supplies.
- *Engineering and Laboratory Building* - houses such functions as guidance and control, electronics engineering, measuring and tracking, and management offices for the Army and associated contractors.
- *Vertical Launch Facilities* - The Laboratory operates two vertical launch facilities, each with a blockhouse service structure, and two launching pads.

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