

OFFICIAL GUIDE TO  
**EARTH'S LARGEST  
SPACE EXHIBIT**

ALABAMA  
SPACE & ROCKET  
CENTER



Plan at least two hours for tour  
Cameras welcome

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# ENJOY YOUR TOUR of THE SPACENTER

Only a privileged few have had the rare opportunity to walk on the moon, but the ever expanding Alabama Space and Rocket Center gives us earthlings this experience under simulated conditions.

The Alabama Space and Rocket Center, Earth's largest space exhibit, is "dedicated by the citizens of Alabama to those Americans who have made it possible for man to walk on the moon and to explore the universe; and to the youth of America who will use the technology of space for the benefit of mankind."

Far more than a museum, the Center is devoted to the advancement and understanding of space exploration, discovery, and rocket development. NASA's Marshall Space Flight Center and the U. S. Army Missile Command are represented jointly with the aerospace and missile industry at this unique space age exhibit. The Center is a self-sustaining facility owned and operated by the State of Alabama. The Center's emphasis is on experience and participation. You can see, handle, operate and learn by doing much of what the Center seeks to tell. The Center LETS YOU BE THE ASTRONAUT as you experience the sights, sounds and sensations of space travel.

Fast becoming the South's most popular tourist attraction, the Space and Rocket Center can be sampled for a few hours by those passing through Huntsville, or savored for days by space buffs who come to study in earnest. It has been called many things by many people—A Space Age Museum, Space Disneyworld, and Showcase of Space. Wernher von Braun, its founder, calls it "the best facility of its kind in the world." It is the pride of Huntsville, Alabama and the whole state, for that matter. The Center houses the world's largest and most complete collection of missile and space equipment ever assembled—and it's still growing.

For space connoisseurs and ordinary folk alike, it tells the story of this nation's unparalleled leap into space in a fashion that neither baffles nor bores. It's not the usual sort of museum. In fact, it is as far removed from the "don't touch" style museum of tradition as its centerpiece, the massive Saturn V moon rocket, is from the Wright Brothers' first airplane.

The Center serves as NASA's Marshall Space Flight Center's Visitor Information Center where visitors may obtain free information about this nation's space program and the Marshall Center's role in space exploration. Bus tours of the Marshall Space Flight Center depart from the Space and Rocket Center daily. The two-hour bus tour takes the visitor on a tour of the world's largest space vehicle test center where you can see close-up the test stands used to perfect the Apollo-Saturn V moon rocket. You can see future space vehicles like the Space Shuttle under development and visit the space simulator where Skylab astronauts train for future missions. The bus tour offers you an opportunity to look behind the scenes of this nation's leading space center where tomorrow's space happenings can be previewed today.

This handout contains a brief description of the exhibits with Areas 1-13 indicated and a suggested route to follow. If you have questions, please direct them to the uniformed personnel who are available to assist you.

## AREA 1

The lobby of the Center is the introduction for your visit. NASA's Visitor Information Center located here, offers information about the space program and general visitor information. The Center's Satellite Tracking Station

receives and displays weather information directly from an earth orbiting satellite.

The Wernher von Braun Recognition Room containing some of the awards, honorary degrees, and other honors bestowed on the world's most renowned rocket expert is open for viewing by the public.

A lunar sample returned by the Apollo astronauts from the moon is prominently displayed in this area.

## AREA 2

The theater is the next stop where you will see the Center's feature film "Freedom To Explore." Using stereo sound, multi-image projection techniques and spectacular wide screen display, the 11-minute film traces man's progress from the stone age to the space age. The highly unconventional film has only a few spoken words, relying on sight and sound for its effect. It has won many domestic awards and was selected to represent the United States in film competition abroad. NASA space flight films are shown on a scheduled basis throughout the day. Check the schedule and select the film you would like to see.

## AREA 3

Did you know that the sun is a star and that Mars has an atmosphere that may support some form of life? This is an example of some of the things you will learn about our Solar System in Space Dimensions. After winding through a hallway of introductory information about our Universe, you will find yourself standing on a platform in deep space. All of the stars from the first to the sixth magnitude surround you. Directly in front of you is the Solar System. The nine planets are shown orbiting the sun at different distances. The illusion, created by use of black light and three dimensional models, is so convincing that some fear to look over the edge. Spectacular photos of stars, gases, and galaxies are projected in the black space environment. The moon, the only other part of our Solar System visited by man, is viewed from afar. It has been said that the vast dimensions of space and time may prevent us from ever making contact with living beings on another world, but history tells us that man will continue to develop machines and instruments and will never stop trying.

## AREA 4

Do you like to push buttons and pull levers to make things happen? If so, you'll find the do-it-yourself area of the Center to your liking. You can be an astronaut-for-a-day as you learn about the basic principles involved in rocketry and space travel, and the fun part is that you can pick and choose the device that interests you the most.

— Rocket power is at your fingertips as you press a button to start a narration that explains the how and why of rocket engines. As the narration is completed, you receive instructions to fire the engine. 5-4-3-2-1. Ignition! Press the firing command button and you are at the controls of a real, live rocket engine. You may adjust the thrust by manipulating the control lever while large gauges indicate thrust changes and fuel consumption. You have successfully fired a real operating rocket engine generating five pounds of thrust for a duration of ten seconds.

— Have you ever wondered what a laser beam might look like? The laser exhibit lets you see a laser beam forming a three-dimensional image, or hologram, of a space vehicle.

— Many of the spacecraft now in space are powered by sun absorbing solar cells. The solar energy exhibit lets



you see solar cells convert sunlight to operate a motor — just like parts of a spacecraft operating in space.

— Micro-miniaturization, or “mini-size” parts play a major role in space travel. Because of the reduction in size of many electronic components in space vehicles, many new products are now on the market such as a TV set with a two inch screen.

— Check your heart rate on the astronaut heart monitoring system by placing your finger tips on a mini-size transmitter. The signal on the screen is your heart beating.

— Why can't you fly to the moon in an airplane? Try the Action-Reaction exhibit and find out. Press the button which starts a pump that removes most of the air from the vacuum jar. You will notice that the propeller driven motor slows down and stops because there is not enough air in the jar for the propeller to push against. However, you will note that the rocket engine continues to operate because it needs no air to operate. That's why you can't fly to the moon in an airplane.

— Can you maneuver the Lunar Module to a safe landing on the moon? Take the controls of the moon landing simulator and fly the lander by controlling ascent and descent by the right lever and lateral movement by the left. You only have a limited amount of fuel to complete the mission, so watch the fuel gauge readout.

— Gyroscopes are an important part of a space vehicle's guidance system. The Gyro Chair lets you experience the reaction of a gyro. Take your seat in the simulated spacecraft, move the handle slowly to the left and hold that position. Then move the handle to the right and hold that position. The spinning wheel acts as a gyroscope and as you change its position, it will cause you and the spacecraft to move in the same direction.

#### AREA 5

Remember “Miss Baker”, the first monkey to survive a successful flight into space? She now lives here with her husband Big George in a specially designed monkeynaut chamber. Miss Baker, who is 16 years old, is the smaller of the two monkeys.

— The flight of the Hybrid Rocket Craft is one of the exciting demonstrations held each day at the Center. The craft is a simulated lunar module equipped with a real rocket engine which burns plexiglas and gaseous oxygen. Operated by a Center technician at scheduled times, the craft takes off, hovers and lands on a simulated moon surface.

— Exotic materials that make up a space vehicle are in this area. You may bend a beam with the touch of your hand and operate a maze of gears lubricated by a new space developed technique.

#### AREA 6

The Information Lounge is located on the balcony. The Television-Telephone exhibit lets you talk to and see a friend by way of a new device called the Picturephone. Other exhibits related to space travel are located here.

#### AREA 7

The restaurant and rest rooms are located on the basement level in Area 7. You can enjoy a delicious sandwich while taking in the view of the world's largest collection of rockets, missiles and space vehicles.

While visiting Area 7, take a ride in the Air Chair and feel the sensation of riding on a cushion of air as you manipulate the thrusters and other controls of this participation exhibit.

Climb in the Mercury Spacecraft, press the button and prepare for a simulated ride into space aboard a spacecraft similar to the one flown by Astronaut John Glenn.

#### AREA 8

On the far side of the building, you will find how the technology you have learned about is applied in rockets and space flight. Two individuals may play against one another in the Preparedness Game, a missile strategy computer. This involvement exhibit invites you to design your own missile system by making a selection of desirable features being tested in a simulated combat situation.

Missile systems that have been designed to defend the nation from hostile forces are dramatically displayed in a large housing featuring models, slides and narrations.

#### AREA 9

The east balcony features the historical story of Rocket Pioneers. The accomplishments and achievements of men like Goddard, Oberth, Toftoy and von Braun are shown along with some of the hardware used in the past.

The story of spacesuit development starting with the Navy flight suit and continuing through early Apollo is displayed. A tribute to the Apollo I astronauts who died in an accident at Cape Kennedy in 1967 is exhibited in this area.

#### AREA 10

In the Space Applications area, you will find space suit equipment, an explanation of the manned moon landing mission, an incredibly detailed model of the Saturn V launch vehicle, the story of Skylab and other potential future space missions.

Space scales permit you to check your weight on the planets Earth and Mars and on the Moon. The Satellite Wall exhibit allows you to see satellites hung in the high-bay area through viewing ports aligned with the satellites.

#### AREA 11

America's Future in Space exhibit describes this nation's hopes for future space exploration in earth orbit, on the moon, and to distant planets. Models of the Skylab, Space Shuttle, Space Station, Space Base, Space Tug and Mars Lander are displayed in three-dimensional form, in a black lighted space chamber. The benefits derived from space research are displayed in this area.

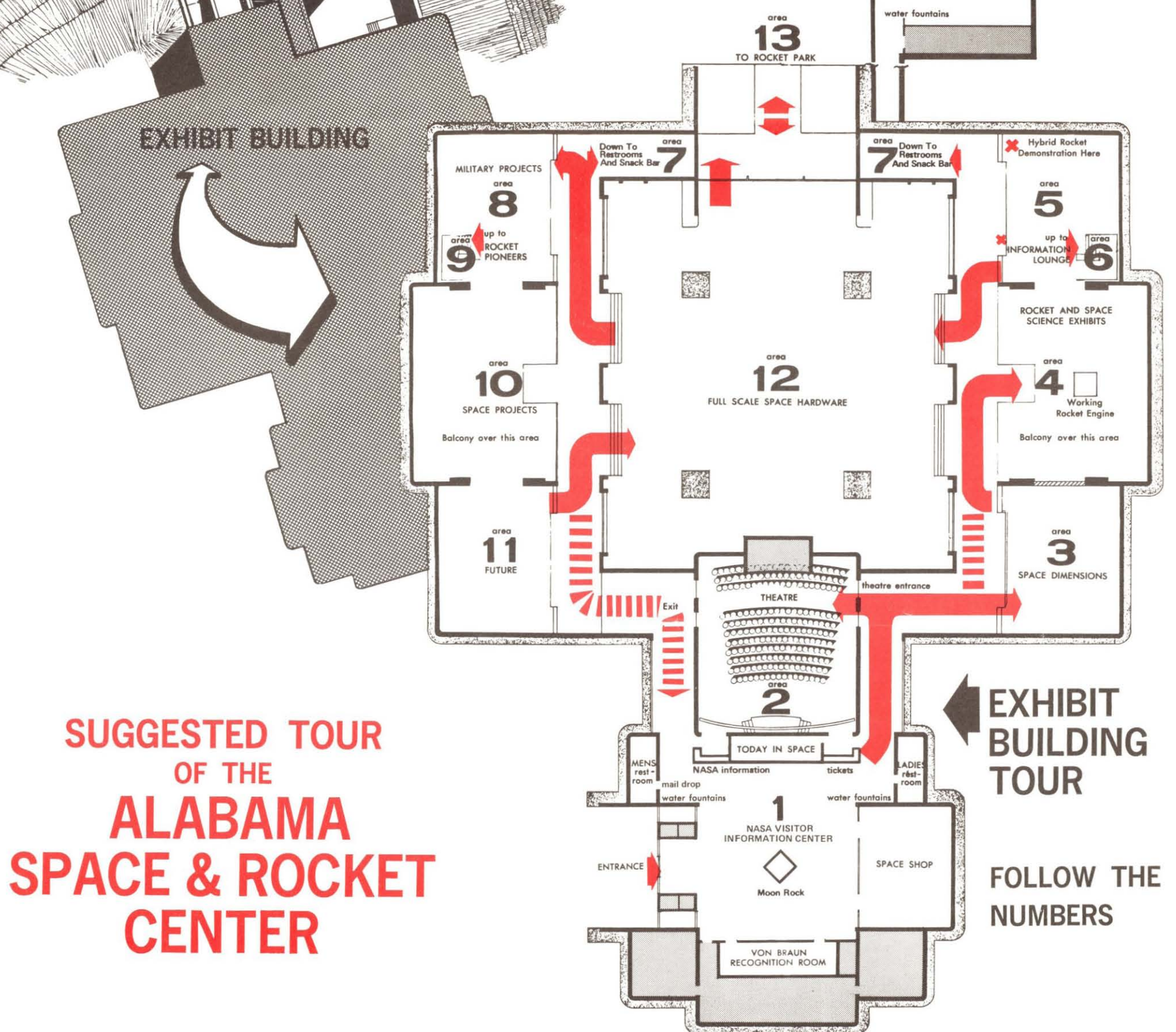
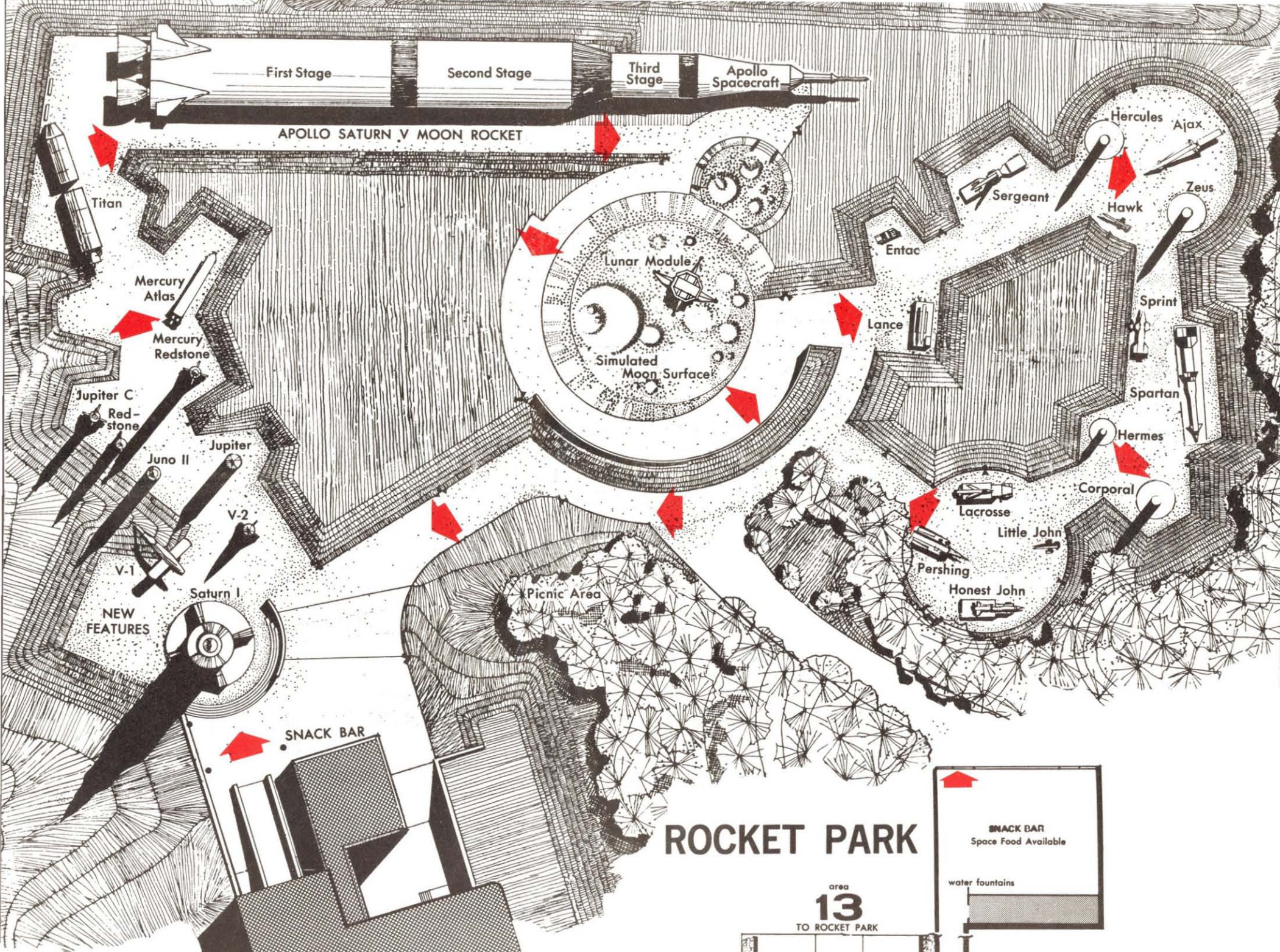
#### AREA 12

The high ceiling atrium in the center of the building features full-size missile and space hardware. You can examine actual Mercury and Apollo spacecraft recovered from space and view a Russian Vostok spacecraft mock-up — the only Russian space item on exhibit in the United States. A full-size moon-buggy model, like the one driven on the moon by U. S. astronauts, is exhibited in this area. Full-size mockups of Surveyor, Lunar Orbiter, Mariner, Syncom, Nimbus and the 96-foot long Pegasus Meteoroid Detection satellite hang overhead.

A full-size Apollo Lunar Module, just like the one used to land on the moon, is the center of attraction in this area. Not far away is the Space Station, a dramatic replica of what astronauts may live and work in by the year 2020.

The U. S. Army's famous Huey gunship complete with attached rocket launchers, is dramatically displayed from the ceiling. An assembly of small Army rockets ranging from LOKI of the late 1940's to the Dragon, TOW and Redeye of today are exhibited. Across the hall hangs the bat-like Quick Monoplane built and flown near Huntsville in the early 1900's, about the time of the Wright Brothers' historic flight. Rocket engines used to power the V-2, Redstone, Saturn rockets and the futuristic Space Shuttle stand on the floor beneath the historic airplane. The 22 foot diameter Instrument Unit, which is the “brain” of the Saturn V moon rocket, is exhibited nearby.







# ROCKET PARK

## USE THIS AS YOUR GUIDE WHILE TOURING THE PARK

### 1. SATURN I

Saturn I was the first large space vehicle developed solely for space exploration. It was designed and developed at the Marshall Space Flight Center in Huntsville, Alabama. Saturn I operates at a top speed of 17,000 m.p.h. and can launch 11 tons into orbit. Saturn I launched the first unmanned Apollo spacecraft and three Pegasus satellites for meteoroid detection in space. An uprated version of this rocket called Saturn IB launches Skylab astronauts into earth orbit for missions of 28 and 56 day duration in 1973.

### NEW FEATURES

This area is used to feature recent additions that have not yet been given a permanent exhibit placement.

### 2. V-I BUZZ BOMB

This is the German cruise-type missile called the "Buzz Bomb" because of the unusual sound made by its engine. It is powered by an aero-pulse engine which burns any gasoline-type fuel and produces 900 pounds of thrust. Approximately 20,000 V-I's were launched against England and Belgium during 1944-1945. Over 1200 U. S. built copies, called the JB-2, were tested by the Army and Navy. This missile is exhibited through the courtesy of the Air Force Museum, Dayton, Ohio.

### 3. V-2

The V-2 proved that the basic theories of rocketry were correct. It was first launched on October 3, 1942, at Peenemunde, Germany, and broke all records for height, weight, speed, and range. The V-2 was brought to the United States in 1945 and inaugurated the United States missile program.

### 4. JUPITER

In 1959, the U. S. Army's Jupiter launched two primates named Able and Baker into space. This experiment proved that living creatures could pass through lift-off and re-entry and return safely to earth. The Jupiter generates 150,000 pounds of thrust. The celebrated Miss Baker, now retired from the monkeynaught corps and living at the Space and Rocket Center, was a passenger on a Jupiter just like this one.

### 5. JUNO II

Juno II was a modified Jupiter with upper stage added for launching space probes. The Pioneer and Explorer satellites were launched by the U. S. Army's Juno II.

### 6. REDSTONE

This rocket is known as "old reliable" because of the many diverse missions it fulfilled in the early days of the space age. There were three versions of Redstone; the military, satellite and manned vehicles. This is the military version designed to transport nuclear or conventional warheads at ranges up to 200 miles. Its power plant burns liquid oxygen and an alcohol-water mixture producing 75,000 pounds of thrust.

### 7. JUPITER C

The U. S. Army's second version of Redstone, the Jupiter C, launched the first U. S. satellite, Explorer I, on January 31, 1958.

### 8. MERCURY-REDSTONE

The third version of Redstone was the first of a series of rockets used in the U. S. manned space flights. In May, 1961, a Mercury-Redstone rocket launched Astronaut Alan B. Shepard on a sub-orbital flight aboard Freedom 7. Thus Shepard became the first U. S. astronaut to ride a rocket.

### 9. MERCURY ATLAS

The Atlas space launch vehicle was originally designed as a weapon and later modified to launch manned and unmanned space hardware in 1962. The Atlas launched John Glenn, the first U. S. astronaut to orbit the earth, into space aboard the Mercury Friendship 7 spacecraft. The Ranger, Surveyor, Lunar Orbiter and Mariner spacecrafts were launched by Atlas.

### 10. TITAN

The U. S. Air Force Titan rocket family was developed as part of this nation's defense system. Titan II however, was used by NASA to launch the two-man Gemini spacecraft on long duration flights (14 days), rendezvous and docking missions and "walk-in-space" experiments. Titan III vehicles which use the basic Titan II rocket with two strap-on solid motors are being used for various other unmanned space missions.

### 11. APOLLO SATURN V MOON ROCKET

First Stage—The Apollo Saturn V was designed to transport man to other planets and lift tons of cargo into space. It was used to launch our astronauts to the moon. This first stage is powered by five liquid fuel engines that consume 5,000 gallons of fuel per second producing 160 million horsepower. The first stage is 138 feet long and 33 feet wide. It is transported on the vehicle shown here. During flight the first stage operates for 2½ minutes and shuts down at 40 miles altitude. This stage burns kerosene and liquid oxygen.

Second Stage—The second stage powers the spacecraft to an altitude of 117 miles above the earth at a speed of 15,300 m.p.h. The five J-2 rocket engines generate one million pounds of thrust and burn liquid hydrogen and oxygen. The interstage or connector of the first and second stage has been removed to provide for viewing of the engines.

Third Stage—The third stage increases the spacecraft orbital speed to 17,500 m.p.h. After one orbit it re-ignites to push the spacecraft away from earth at a speed of 25,000 m.p.h. on a path to the moon. This single J-2 engine generates 225,000 pounds thrust. On recent moon flights this stage has been guided to impact the moon in order to record seismographic information. This stage without rocket engine and related components will be converted to living quarters for three astronauts and used as the Skylab space station for missions of 28 and 56 days.

Instrument Unit—The instrument unit serves as the central brain of the total vehicle. This unit is packed with computers and electronic controls designed to maintain a path of flight that will place the astronauts at the required point in space (not shown here—on exhibit in building).

Apollo Spacecraft—The 100,000 lb. Apollo consists of the lunar module, service module, command module and launch escape system. The Lunar Module not seen here,



is stored with its legs folded inside the container directly behind the Apollo Command and Service Modules. The astronauts are in the Command Module for most of the flight, and this is the only part of the Apollo-Saturn vehicle that makes a complete round trip back to earth. The launch escape tower, the most forward part of the rocket, is used in the event of a failure on the pad and just after liftoff. Its rocket motor has a thrust of 150,000 lbs. — twice that of a Redstone rocket.

This Apollo-Saturn V vehicle was used for ground testing here on earth. It has never been in space. However, it is very similar to those moon rockets that have launched astronauts to the moon. Standing on the pad, the vehicle is 363 feet tall, or about the length of a football field, and weighs 3,000 tons fueled and ready for launch. This is the only Apollo-Saturn V moon rocket on public exhibit in the world.

## **12. SIMULATED MOON SURFACE**

"Here men from the planet Earth first set foot upon the moon July 20, 1969, A.D." This simulated moon crater features the Apollo Lunar Module and other equipment used by the astronauts to explore the moon's surface. The crater was designed and built with the assistance of NASA scientists and astronauts who have explored the lunar surface. It closely resembles the texture of certain areas on the moon. The lunar module, the landing craft used by the astronauts to land on the moon, is a two-stage vehicle. The landing stage stays on the moon and is used as a launch pad as the cabin or ascent stage lifts off. The space suited astronauts are shown wearing the backpack necessary for extended exploration work on the moon's surface.

## **13. LANCE**

Lance is a surface to surface ballistic missile which is to provide greater fire support to Army divisions.

## **14. ENTAC**

ENTAC is a surface to surface guided missile of French manufacture used in limited numbers by the U. S. Army. No longer in use, it was effective against tanks, armored vehicles and bunkers.

## **15. SERGEANT**

Sergeant is a Field Artillery Ballistic Missile System that is reliable, rugged, accurate, and mobile. It utilizes an inertial guidance system and solid propellant motor, giving it immunity to known electronic countermeasures.

## **16. HERCULES**

The Nike Hercules is the United States' primary high altitude air defense weapon in operational status. The weapon has successfully killed every winged target ever flown against it.

## **17. NIKE AJAX**

The Nike Ajax was this country's first operational Air

Defense Guided Missile System. No longer in service use, the Ajax was replaced by the more advanced Nike Hercules system during the 1960's.

## **18. NIKE ZEUS**

The Nike Zeus missile, developed by the U. S. Army Missile Command, played a key role in proving the feasibility of an effective ballistic missile defense.

## **19. HAWK**

Hawk can search out and destroy attacking aircraft. The Hawk Air Defense System is transportable and capable of maintaining a high rate of fire.

## **20. HERMES**

Hermes began in 1945 as an Army project covering a general program of research and development. This technology led to long range surface to surface and high altitude air defense missiles. The Hermes was designed to carry a heavy warhead to a range of 90 nautical miles.

## **21. CORPORAL**

The Army Corporal is a surface-to-surface guided liquid fueled missile capable of engaging tactical targets far beyond the ranges of artillery.

## **22. HONEST JOHN**

The Army's Honest John is a simple, free-flight rocket. It is a highly mobile self-propelled launcher and retains the accuracy of standard artillery weapons.

## **23. LITTLEJOHN**

Littlejohn is one of the Army's most advanced free-flight rocket systems. It is highly mobile and packs the explosive power of heavy artillery.

## **24. LACROSSE**

Lacrosse represents one of the Army's first attempts to obtain extreme accuracy with a surface to surface guided missile. Launched on a ballistic trajectory from a rear area, it could be picked up in flight by a forward observer and then steered directly to its target with radio controlled commands.

## **25. PERSHING**

Pershing is a two-stage, solid propellant ballistic missile with selective range capability. It carries a nuclear warhead to a range of 400 miles.

## **26. HOUND DOG**

The U. S. Air Force Hound Dog is a supersonic, jet-propelled, air-surface standoff strategic missile. It is carried in pairs under the wings of B-52 bombers and has a range of 500 miles. The missile carries its own unjammable guidance system effective at high or low altitudes. A B-52 pilot can use the Hound Dog's engines for added power on take off, or in the air, and refuel them later for target runs. The missile is exhibited through the courtesy of the Air Force Museum, Dayton, Ohio.





# TOUR NASA

## SEE MARSHALL SPACE FLIGHT CENTER

NASA invites you to take a look at the Marshall Space Flight Center, the space agency's largest field installation. Tour buses, departing regularly from the Alabama Space and Rocket Center, give you a cross section view of the Marshall Center. At several stops, you can leave the bus and enter buildings and test areas of significant historical and current interest.

One of the most impressive stops will be at the Neutral Buoyancy Simulator where astronauts train in a huge tank of water to simulate the weightless environment of space that they will experience during the Skylab missions.

At other stops you will see payloads being designed for the Space Shuttle, you will view a facility in which space experiments can be tested before flight, and you can photograph the historic test stands where Saturn rocket engines were fired before flights to the moon in Project Apollo and into earth orbit in the Skylab Program.

Be sure to bring your camera and plan two hours for the bus tour.

## HISTORY BEING MADE Today!

