WELCOME TO CAPE KENNEDY AIR FORCE STATION

ATLANTIC MISSILE RANGE

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Welcome

FROM
BRIG. GEN.
HARRY J. SANDS, JR.
COMMANDER,
ATLANTIC MISSILE RANGE

I am glad to welcome you to Cape Kennedy Air Force Station. I wish that every American could have the opportunity to visit this famed launch site of the Atlantic Missile Range - the starting point of our nation's most remarkable space and missile exploits.

Probably no military installation in history has been known to so many people, not only in America but throughout the world. Nor has any other bit of real estate so fired the imagination and dreams of man and child alike.

Dr. Kurt H. Debus, Director, John F. Kennedy Space Center, National Aeronautics and Space Administration, joins me in hoping that during your visit you will recall some of the exciting events that have occurred amid this expanse of sand and palmetto, and that in doing so you will feel the same pride in America's accomplishments as do the thousands of men and women who make them possible.

H. J. Sands, Jr.

H. J. SANDS, JR.
Brigadier General, USAF
Commander

This running account of your tour through Cape Kennedy has been specially prepared to explain many of the structures and objects visible from your car window as you drive along, and to point out those areas having a historical interest. The narrative begins immediately following your entrance through the south gate. The photographs are as seen from the road. The green tour markers with numbers relate to the underlined check points herein and will help you locate your position along the route.

On RIGHT is the entrance to Port Canaveral, which was visible as you approached the gate. Here nuclear submarines such as the USS George Washington are equipped with Polaris fleet ballistic missiles for test launching some 20 to 30 miles out to sea. The USS Observation Island, a surface vessel from which Polaris missiles are fired, and the heavily instrumented ships of the Atlantic Missile Range, also operate out of this deep-water port.

AHEAD AND TO THE RIGHT after making the curved left turn, you may be able to see a group of white ball-shaped domes in the distance. They are a part of a sophisticated radar system known as the Azusa Mark II. This remarkable electronic gear, capable of tracking missiles to a range of 2,000 miles, is accurate within 40 feet at a distance of 150 miles. The data gathered by the Azusa is transmitted instantly to an IBM 7094 computer which accurately calculates a missile's position in space ten times per second.

CHECK POINT #1

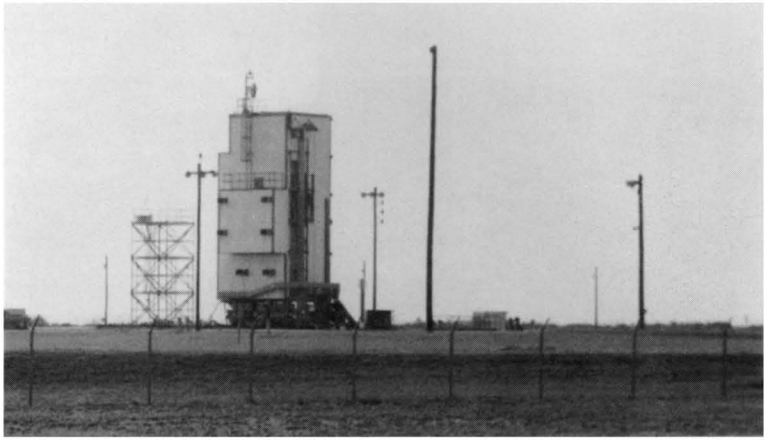
On RIGHT, as you continue north, you will see a sizeable antenna field which includes antennae of all sizes and shapes. Each serves a specialized purpose in the communication system which ties the Cape to the down-range stations and the instrumented ships and aircraft. The Atlantic Missile Range also has an around-the-world communications capability as demonstrated during the manned launches of Project Mercury. The orbiting astronauts were in continuous voice contact with the many tracking stations located around the world.

On LEFT you will see a two-story gray building with large outside plumbing. This is our liquid-oxygen-producing plant. Liquid oxygen, or LOX as it is commonly called, is the oxydizing agent used in combination with highly-refined kerosene to fuel such missiles as the Atlas and the Thor. The convenient on-Cape location saves transporting the very cold (-297.9 degrees Fahrenheit) LOX over public highways.

On RIGHT, after turning right onto Pier Road, you will pass the first group of buildings which make up the Navy's Polaris complex. The Polaris is assembled here rather than in the hangars of the Industrial Area because of the convenience to the launch pads and to Port Canaveral.

CHECK POINT #2

On LEFT, over the scrub brush a relatively small red gantry or service tower is visible. It is part of the Army's Pershing ballistic missile complex. The Pershing is a tactical, selective range missile designed for use in the field. It is easily transportable and can be launched from mobile equipment. This highly-successful solid-propellant missile is no longer tested at the Cape.

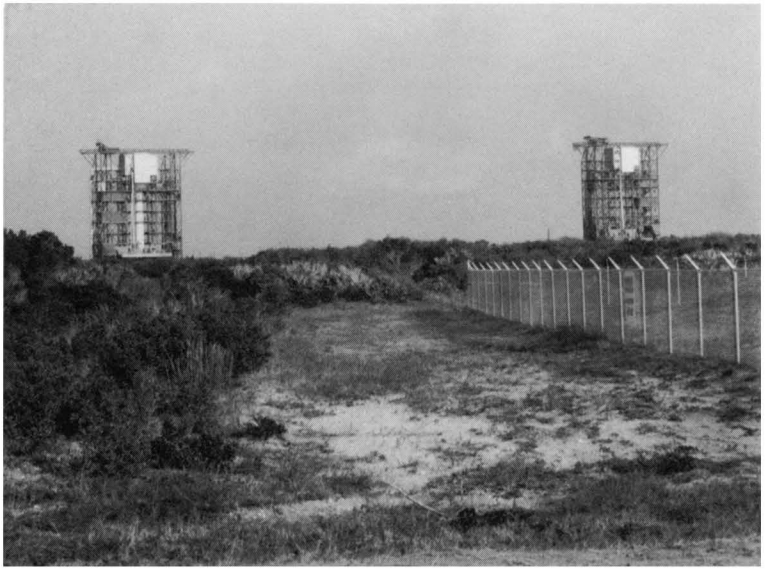


On RIGHT, you can now see the Polaris ground launching stands. The two light-gray service structures are used in the initial test launches. Once the reliability of the Polaris has been established here, further testing takes place at sea from the USS Observation Island. When reliability is obtained at sea from the surface vessel, Polaris missiles are placed in vertical missile launch tubes of one of the various nuclear submarines to undergo the underwater launch phase of the test program.

CHECK POINT #3

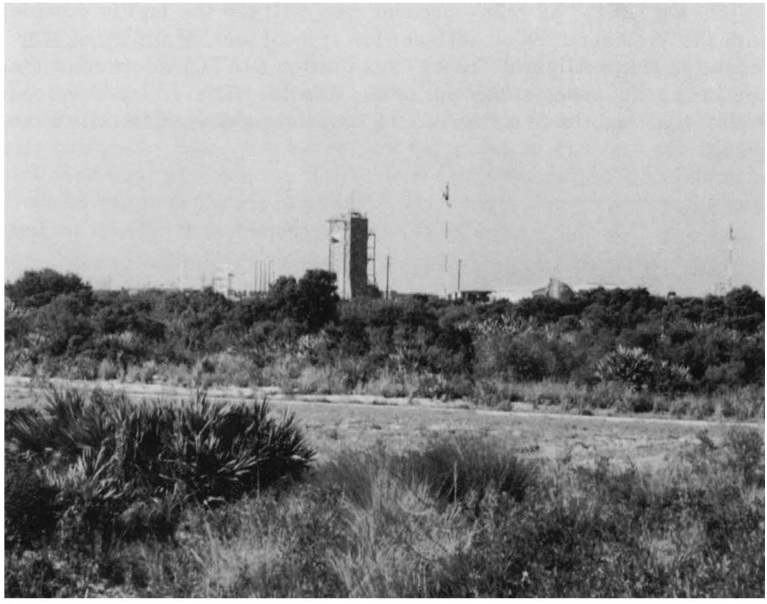
On LEFT, after making a left curve and directly across from the Polaris complex is the old Army Redstone launch area. This particular complex is famous as the launch site of the Mercury-Redstone vehicle which carried America's first man into space, Navy Commander Alan Shepard, Jr., on May 5, 1961. Air Force Captain Virgil "Gus" Grissom flew the second sub-orbital flight on July 21, 1961. Both of these space pioneers were launched directly over your head in a path moving to your right. (You will enter this area later on your tour.)

On LEFT, as you continue you will see the Jupiter complex with the "A-shaped" or oilwell-derrick type of service structure. Until recently, North Atlantic Treaty Organization (NATO) troops conducted training launches of this particular missile. The Army-developed Jupiter has established a fine record in various space and satellite programs.



On LEFT, the next two complexes with the tall, red, box-shaped towers support the Thor missile. This is an Intermediate Range Ballistic Missile (IRBM) that was originally developed as a mighty weapon but which found its greatest fame as a booster in many of our nation's satellite programs. Some of these programs are Echo, the picture-taking Tiros, and the television relay Telstar. The mammoth Echo permitted the world to see a man-made satellite with the naked eye, the Tiros satellites furnish weathermen valuable information, especially during the hurricane seasons, and the Telstar carried the first live television programs between the United States and Europe.

On LEFT, the third red tower is similar to the two Thor towers but smaller. This complex serves the Air Force Blue Scout, a multiple-stage solid-propellant, relatively inexpensive missile which is sometimes called the poor man's rocket. Stages can be mated in various combinations to meet the needs of any particular program - whether it be to place a small payload in orbit or send it deep into space.

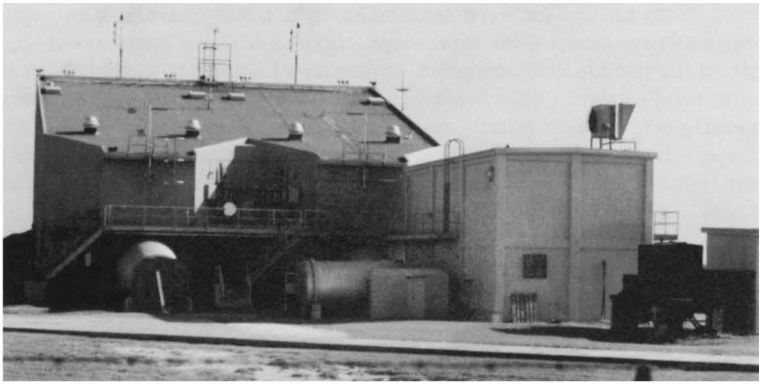


On LEFT, after leaving Pier Road and beginning Lighthouse Road, is the last complex of the IRBM area, the Minuteman. However, this missile is not an IRBM but rather an ICBM (Intercontinental Ballistic Missile). The three-stage solid-propellant Minuteman has a range in excess of 5,000 miles. This missile is now test-launched from underground silos not visible from the road. All that remains of its early above-ground testing structure is one short red service tower and two sandbagged blockhouses which resemble beehives. The two underground silos of the complex are 12 feet in diameter and 90 feet deep. Minuteman, now operational with SAC (Strategic Air Command) is one of America's most vaunted military missiles.

CHECK POINT #4

As you enter the light-house area you are coming upon the scene of our earliest missile launches, some of them dating back to the early 1950's.

On LEFT is Hangar C, the assembly and check-out hangar for the 1,200 nautical-mile Mace tactical cruise missile.



On RIGHT, the gray concrete building with the sloping green roof is the simulated hardsite used to launch the Mace. The two large pipes coming from the lower back part of the hardsite are blast deflectors. The Mace, as well as other aerodynamic cruise missiles such as the earlier Snark and Matador, were built to fly in the atmosphere and require air to support combustion in their engines. They operate very much like a pilotless aircraft. In contrast, the ballistic missiles such as the Minuteman, Atlas and Titan, carry their own oxygen and fly beyond the atmosphere through space.

On LEFT, and very prominent, is the 165-foot black and white striped lighthouse. This lighthouse has been a Cape landmark since it was built in 1868. Constructed originally of wood, it was later rebuilt with riveted steel plates lined with brick. From a distance this structure greatly resembles a missile and more than one hapless newcomer to the Cape - invited to watch a missile launch - has kept his eyes glued to the lighthouse while the real missile lifted off from an entirely different area.

On RIGHT, after turning at the intersection, is the huge rectangular service tower of the Atlas Centaur at Complex 36-B. In the background is Centaur Complex 36-A. This missile was the first successful hydrogen-fueled missile ever to be launched from the Cape. The Centaur is being groomed for space programs which call for the tremendous power developed by liquid hydrogen engines.

CHECK POINT #5

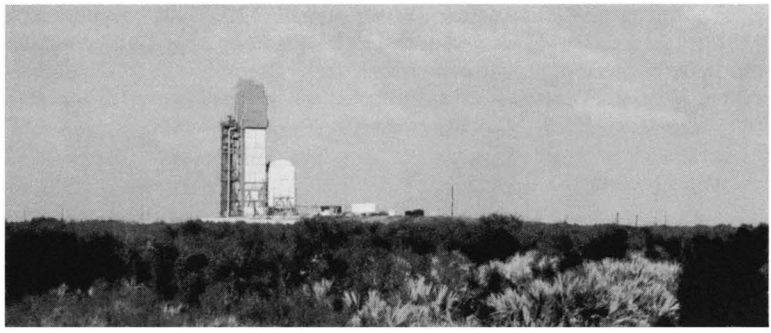
On RIGHT, after jogging onto ICBM Road and to the left of the Centaur pads, are the four Atlas complexes beginning with Complex 11. Complex 11 is one of the numerous complexes operated by the Air Forces 6555th Aerospace Test Wing. Testing of the military version of the Atlas has been completed and the missile is operational with SAC. The Atlas, our first ICBM, has been the work-horse of the heavyweights and it has boosted many satellites into orbit and many payloads deep into space.

On RIGHT, the next two Complexes, 12 and 13, support Atlas Agena programs which are concerned with deep space exploration. Mariner, for example, was launched from Complex 12 to fly past the planet Venus. The moon-exploring Ranger series was also launched from here.

On RIGHT, the last of the A-frame Atlas gantries is by far the most famous. It was from Pad 14 that all of our earth-orbiting astronauts were launched and its structure is familiar to millions who watched on television. Project Mercury has now been replaced by the more advanced Gemini program placing two men in earth orbit using the more powerful Titan missile as a booster.

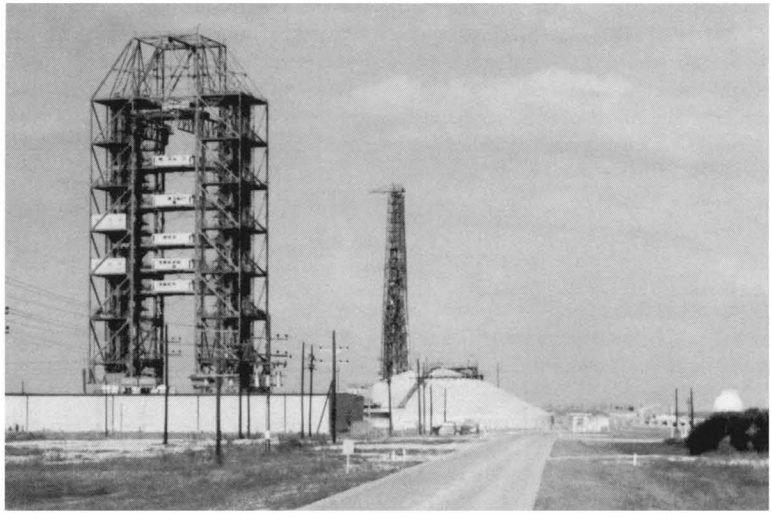
CHECK POINT #6

On RIGHT, you will notice a change in the shape of the service towers as you pass by Complexes 15 and 16, two of the four Titan II ICBM Complexes. Titan, like Atlas, is a liquid-fueled heavyweight. The Titan I test program has been completed for some time and, like Atlas and Minuteman, is in the SAC arsenal. The 103-foot Titan II, a larger, more advanced version using storable hypergolic fuels, is being adapted to an additional role as a space booster.

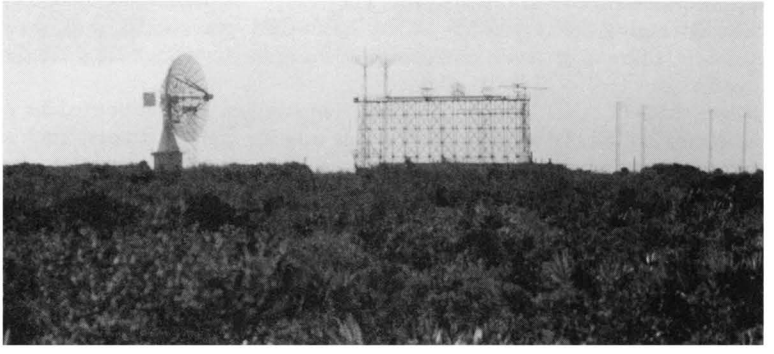


On RIGHT, Complex 19, while similar to 15 and 16, has been greatly modified in preparation for the Gemini two-man space capsule program. The solid "red-room" at the top of the larger erector is the controlled environment enclosure for the Gemini capsule. Titan II will serve as the booster in this program just as did Atlas in the old Project Mercury.

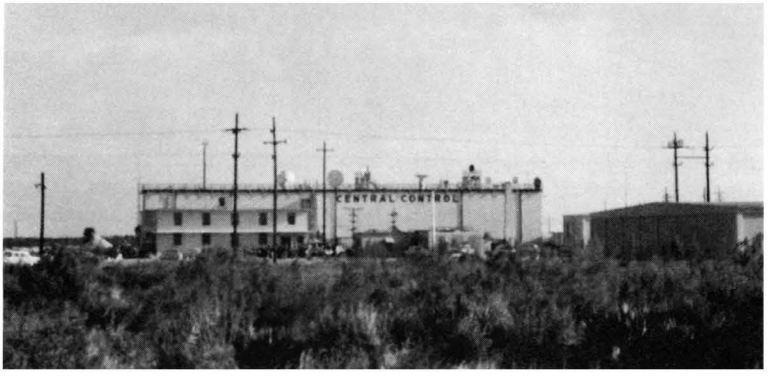
On RIGHT, Complex 20 also seems destined for exciting events in the development of Titan III. Titan III differs from Titans I and II in that it will be flanked by two solid propellant stages which will boost the huge missile on its way into space, then drop off. The Titan III is the booster planned for the Manned Orbiting Laboratory (MOL), a space vehicle about the size of a small house trailer, which is designed to carry at least two men while orbiting in space.



On RIGHT, as you turn left onto Cape Road, stand the two largest known movable structures in the world, the Saturn gantries on Complexes 34 and 37. The nearer tower of Complex 34 stands 310 feet tall, or as tall as a 31-story building. The structure at Complex 37 stands six stories taller at 375 feet. The huge Saturn will play a key role in the lunar landing program of the National Aeronautics and Space Administration (NASA).



On RIGHT, the large curved-dish antenna you see is the TLM-18 Telemetry Receiving Antenna. There are two of these on the Cape. During a missile flight, miniature instruments on board the missile measure physical phenomena such as temperatures, altitude, and amounts of various fuels or coolants remaining. This data is transmitted back to the ground where the weak, coded signals are picked up by the 60 foot antenna. The data, when translated and evaluated, will tell how well the missile operated on its flight. Some 80% of all the Atlantic Missile Range data is gathered in this manner.



On LEFT, one block over, you can see the Central Control Building. This is the nerve center for the entire range and it is from here that the many operations of a missile launch are directed. On any given launch, the people here are in direct voice contact with other technicians in the blockhouse, aboard the instrumented ships and aircraft, and on the down-range islands. The Range Safety Officer, always an Air Force officer, is also located here. He is the one man who has life or death control over a missile and he must decide, often in a split second, whether a questionable missile should be destroyed or allowed to continue on its flight. The safety of people and property has over-riding priority at all times, and safety precautions will never be sacrificed or even compromised in order to launch a particular missile.

RIGHT AND LEFT, the large hangars you see on both sides of the street are assigned to the various missile manufacturers, such as Boeing, Douglas, General Dynamics and others. After arrival on the Cape, almost always by air, the missile is taken to the appropriate hangar where it is thoroughly checked for possible damage occurring in transit. Electronic components are often assembled here and the system checked out. The missile is then hauled by flat-bed trailer to its launch stand.

On RIGHT is Hangar S, assigned to NASA. This hangar provides living quarters for the astronauts during their stay at the Cape prior to a manned space launch. This building also contains a pressure chamber large enough to handle a full-scale Mercury-type capsule. On the opposite (left) side of the street is the John F. Kennedy Space Center, NASA.

On LEFT, after a left and then a right turn, is the fire station which furnishes protection for all buildings on the Cape, including the missile hangars and the launch complexes.

On RIGHT, opposite the fire station, is the security police building. Both fire protection and security are provided under contract by Pan American World Airways, the prime contractor for operating the Atlantic Missile Range.

TO YOUR RIGHT are stored the various stages of solid propellant missiles, which must be treated as high explosives. The square concrete building to the rear, which may be flashing a red light, houses one of the world's largest x-rays, used to seek out possible flaws in the missile's solid propellant.

CHECK POINT #7

On RIGHT, after turning left onto Flight Control Road, you will note the large dish-shaped antenna of the second TLM-18 located on the Cape. This particular one is immediately behind the old Mercury Control building - the central point for communications and operational control during the space flights of our astronauts. You may recall the familiar "This is Mercury Control" - which prefaced the official announcements to the public at the time.

On LEFT, after turning right onto IRBM Road, you can see the row of missiles which you saw earlier from the other side. The first is the Minuteman, followed by Blue Scout, two Thor complexes, then Jupiter and Redstone.

CHECK POINT #8

Shortly after turning into the Jupiter complex you will enter onto the perimeter road which circles the famous Pad 5 Mercury-Redstone complex from which our first two astronauts were launched. In addition, America's first satellite, Explorer I, was launched into orbit in 1958. No longer in active use, this area is being preserved for its future historic value.

Leaving Complex 5 and 6, you will turn left on Lighthouse Road, passing to the rear of the Pershing Complex.

Following the left turn onto Cape Road you will note many types of unusual appearing antennae atop a small gray building. This is a part of the "command destruct" system. When it becomes necessary for safety's sake to destroy a missile, the Range Safety Officer in Central Control toggles two switches at his finger tips. The destruct signal is immediately flashed to the missile and the test unhappily ends in a brilliant flash. Fortunately, this is not a common occurance. In twelve years of testing - from 1950 to 1962 - the Range Safety Officer had to destroy only 6.3% or one out of every 15 launched. This is an impressive record for an experimental effort of this nature, especially since this figure includes the many failures of the earlier years when we were still learning to build a reliable missile.

As you round out your tour and prepare to leave the Cape, we hope that you have a clearer picture of the missile and space business. We also hope that you have sensed a bit of the spirit of adventure and excitement that permeates this twenty-five square miles of Florida sand.

America has come a long way since the first missile - a combination of WAC Corporal and German V-2 - roared from its makeshift launch pad back in July of 1950. We still have a long way to go, but the future is full of promise. Space is endless, but so are the dreams of man, and that which man can dream, man can do.

In order to enjoy your visit to Cape Kennedy Air Force Station, please observe the following DO's and DON'Ts . . .

DO follow the prescribed route

DO try to maintain a speed of 25 miles an hour

DO observe instructions of security guards and air police

DO observe posted traffic and other warning signs

DO pull off the road and await assistance if mechanical difficulties occur

DON'T stop or park except in emergency

DON'T fail to observe traffic rules

DON'T transmit over radior equipment while on the Cape

DON'T litter the area

DON'T bring alcoholic beverages onto Cape Kennedy

DON'T fail to enjoy yourself

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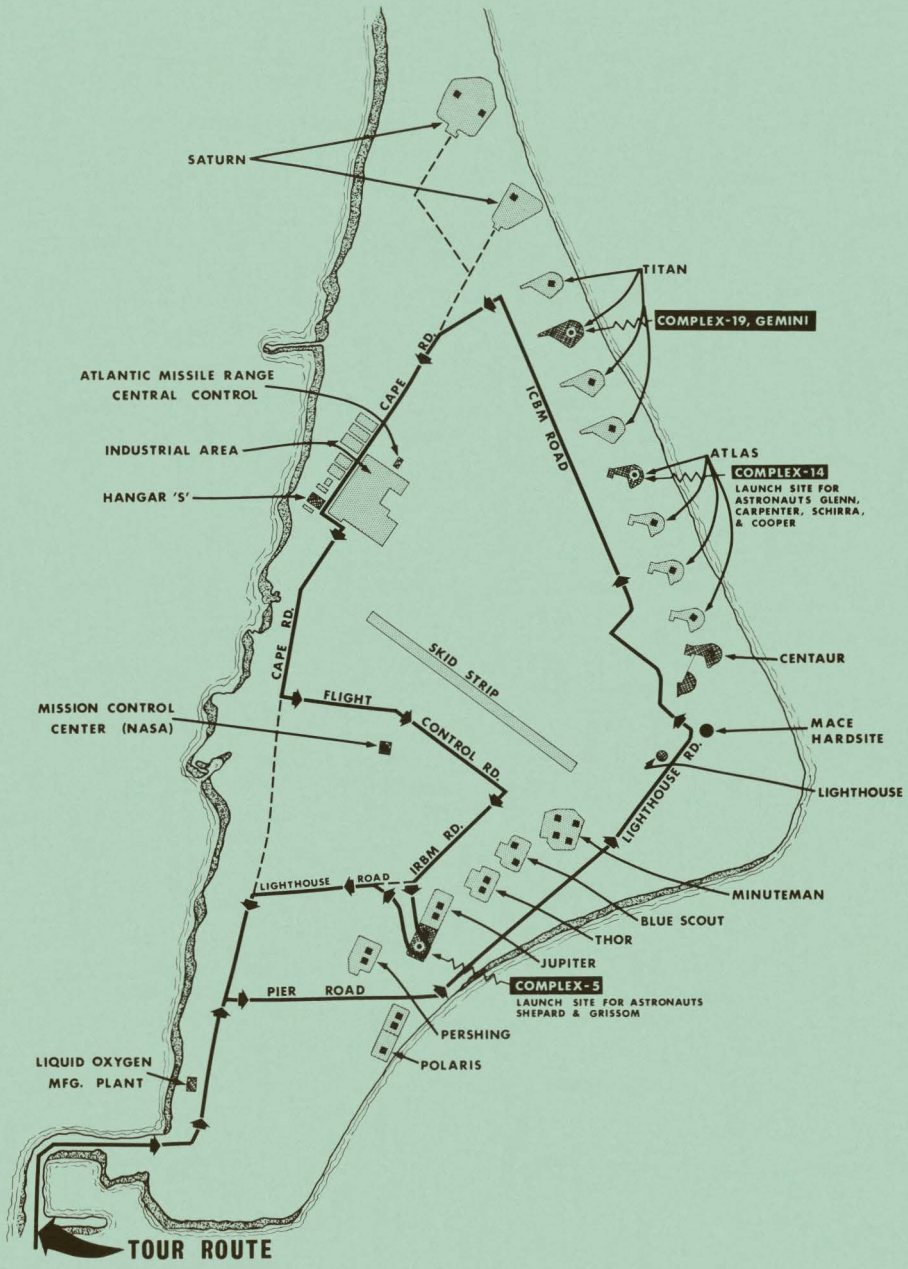
OFFICE OF INFORMATION
AIR FORCE MISSILE TEST CENTER
PATRICK AIR FORCE BASE, FLORIDA


SATURN
TITAN
COMPLEX-19, GEMINI
ATLANTIC MISSILE RANGE
CENTRAL CONTROL
CAPE RD.
ICBM ROAD
INDUSTRIAL AREA
HANGAR 'S'
ATLAS
COMPLEX-14
LAUNCH SITE FOR ASTRONAUTS GLENN, CARPENTER, SCHIRRA, & COOPER
CAPE RD.
SKID STRIP
CENTAUR
MISSION CONTROL CENTER (NASA)
FLIGHT CONTROL RD.
MACE HARDSITE
LIGHTHOUSE RD.
LIGHTHOUSE
IRBM RD.
LIGHTHOUSE ROAD
MINUTEMAN
BLUE SCOUT
THOR
JUPITER
COMPLEX-5
LAUNCH SITE FOR ASTRONAUTS SHEPARD & GRISSOM
PIER ROAD
PERSHING
POLARIS
LIQUID OXYGEN MFG. PLANT
TOUR ROUTE