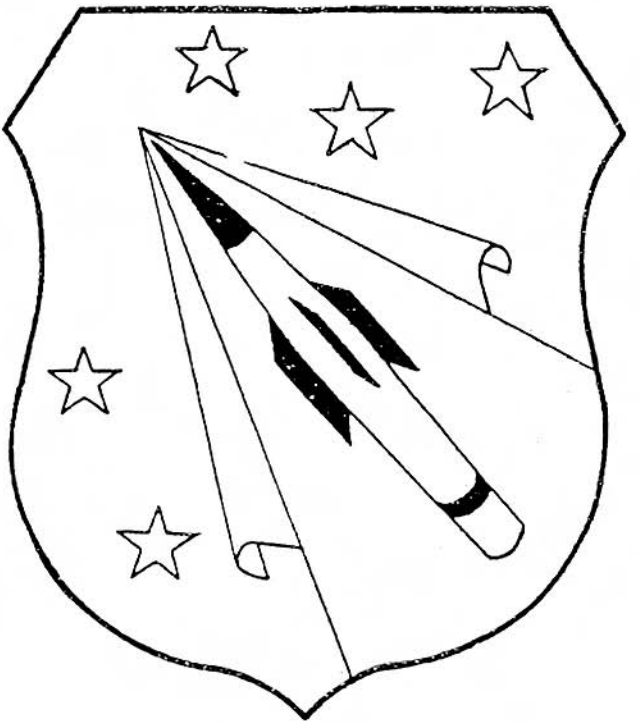
UNITED STATES AIR FORCE

# BALLISTIC MISSILE DIVISION



## FACTS ON

# THE ATLAS ICBM

## AT

## FORBES AIR FORCE BASE

## KANSAS

# GENERAL

About five years ago the first Air Force order was issued for research and development of an Intercontinental Ballistic Missile (ICBM) designed primarily for retaliation in the event of enemy armed aggression. Since that time, military and civilian teams have developed a missile weapons system to the point where it may be employed for actual operational use.

The Atlas Ballistic Missile, now entering the final phase of its development test program, is the United States' first operational intercontinental ballistic missile.

An Atlas Base is currently under construction in the vicinity of Topeka, Kansas. The missile facility construction is being accomplished by the Corps of Engineers, acting as the construction agency for the United States Air Force.

An Air Force Ballistic Missile Field Office has been established at Topeka Air Force Station to represent the Commander, Air Force Ballistic Missile Division in the conduct of the local IOC Program for which AFBMD has full responsibility.

The missile complexes of this base will consist of Atlas Facilities at sites A thru L. The sites are dispersed around on a radius of approximately 25 miles (see attached vicinity map). The facilities will be visible to the public from nearby public roads. When elevated to firing position, the missiles standing vertically on their launching pads will tower nearly hundred feet above the ground.

Maintenance and Support facilities to be located at Forbes Air Force Base will include a missile assembly building, a 25 ton per day liquid oxygen plant, and Re-entry Vehicle Assembly Building.

# ATLAS MISSILE INFORMATION

The Atlas is powered by a cluster of 3 rocket engines, 2 boosters and one sustainer burning liquid oxygen and RP-Fuel, a kerosene like hydrocarbon fuel and is designed to deliver a thermonuclear warhead on target in excess of 6,000 miles The nominal thrust at sea level is more than 360,000 pounds.

The propulsion unit consists of 2 large booster engines in the first stage, one sustainer engine and two small vernier engines in the second stage. All five rockets are ignited prior to launching. After a few minutes of flight during which time the missile is propelled well into its trajectory, the two booster engines and associated equipment are jettisoned to reduce the load. The sustainer engine continues to accelerate the missile unit until a velocity of approximately 16,000 MPH is reached. Then the sustainer is shut off, and the "vernier" rockets are used if needed to trim the velocity to the exact value required. After the venier guidance is discontinued, the missile will follow a purely ballistic missile or unguided course to the target area.

As the "venier" is shut down, the re-entry vehicle (formerly called the nose) cone) becomes disassociated from the rocket. REMARKS: This remaining framework is destroyed by heat generated by aerodynamic friction as it re-enters the atmosphere.

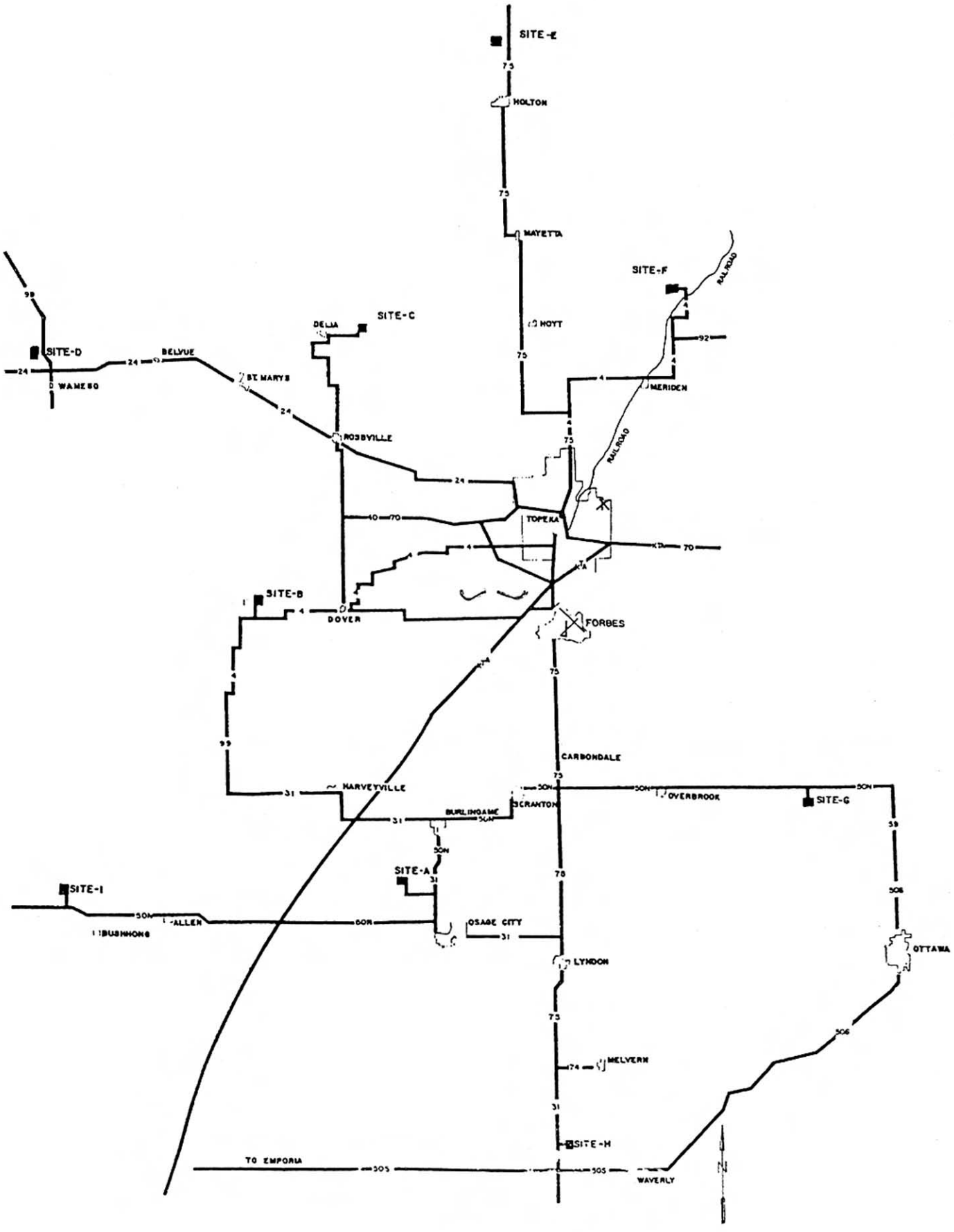
The rocket control is accomplished by the guidance system which essentially employs Arma all inertial type guidance through the early portion of the rocket's flight.

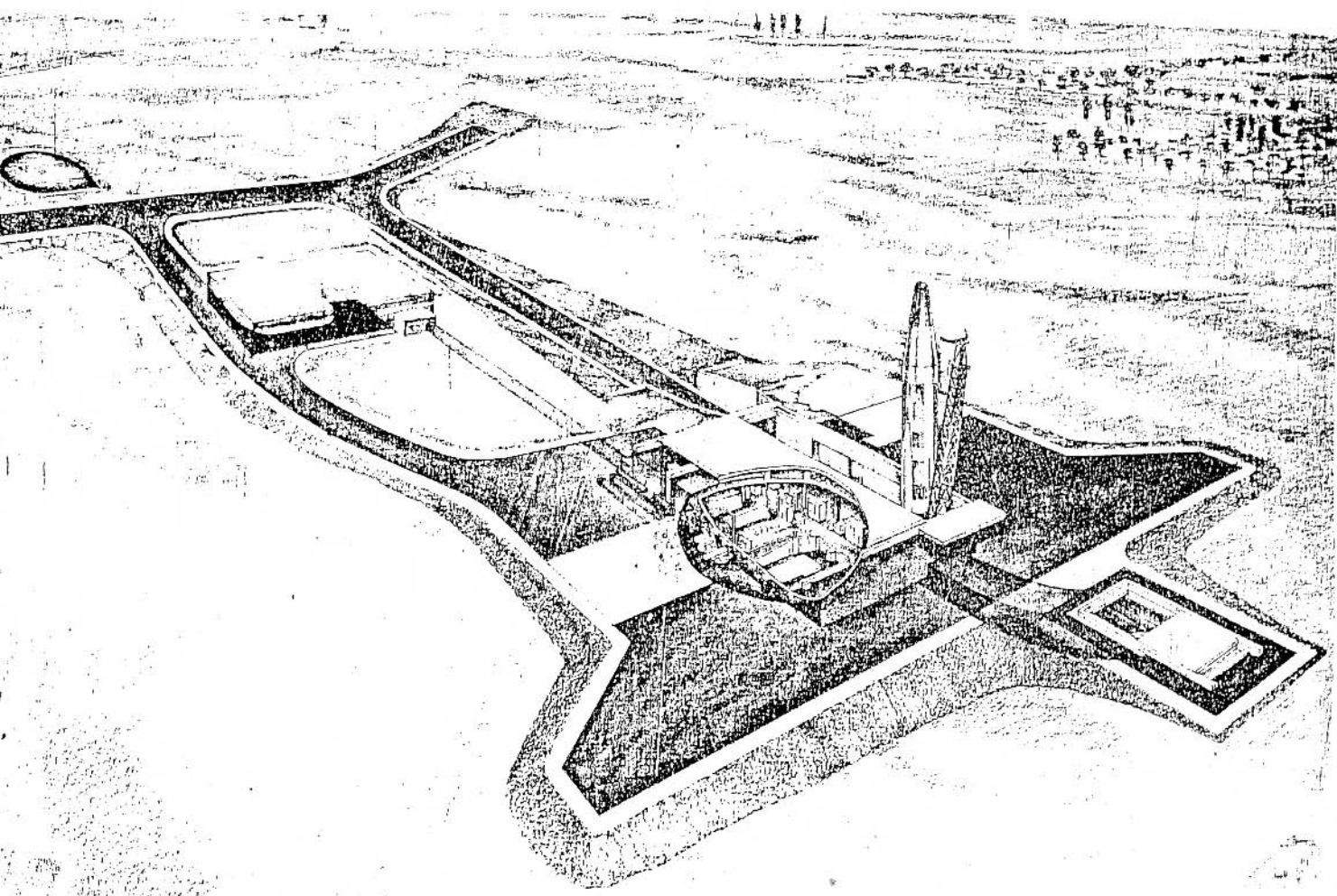
The missile itself, whose structure consists of thin gange stainless steel, contains approximately 300,000 parts and weights approximately 250,000 pounds at moment of launch fully loaded with propellants. The missile is 82½ feet long, 16 feet across flared engine nacelles and 10 feet across the tank section.

Program management is under the direction of Air Force Ballistic Missile Division (Air Research and Development Command) with technical assistance from Space Technology Laboratories, Inc.

Associates in this program are the following:

| | |
|---|---|
| Convair Astronautics Division<br>General Dynamics | Airframe, autopilot system, assembly and checkout of missiles. |
| Rocketdyne Division,<br>North American Aviation | Propulsion System |
| Missile & Space Vehicle Division<br>General Electric Co., Philadelphia | Re-entry vehicle |
| Arma Division,<br>American Bosch Arma Corp. | Guidance. |


SITE-E
HOLTON
MAYETTA
HOYT
SITE-F
RAILROAD
MERIDEN
SITE-C
DELIA
SITE-D
BELVUE
WAMEGO
ST MARYS
ROSSVILLE
TOPEKA
RAILROAD
SITE-B
DOVER
FORBES
CARBONDALE
HARVEYVILLE
BURLINGAME
SCRANTON
OVERBROOK
SITE-G
OTTAWA
SITE-A
OSAGE CITY
SITE-I
ALLEN
BUSHONG
LYNDON
MELVERN
SITE-H
TO EMPORIA
WAVERLY



# HISTORY OF THE TOPEKA CONSTRUCTION

The type of construction for the missile facilities is varied and will include asphalt roads, concrete aprons, water systems, electric power generation and distribution, sanitary sewers and waste disposal, security fencing and lighting, reinforced concrete structures, high pressure fuel process piping and other support facilities.

The missile facilities, include some unusual construction requirements and features. For the storage of liquids and gasses - oxygen, nitrogen and helium - there are 216 vessels (tanks). The fuel and process piping are of heavy stainless steel and operate up to pressures of 8,000 pounds per square inch. Cleanliness is of paramount importance in all propellant system of this nature and consequently the majority of piping must be clean to the extent that the parts are safe for use in contact with liquid oxygen. This necessitates the use of vapor degreasing, mechanical and chemical cleaning processes.

The prime contract to construct the first three missile launchers was awarded to Independent Contractors & Engineers of Dallas, Texas on 5 May 1959. The construction contract for the remaining six sites was awarded to Blaw-Knox Co., of Pittsburgh, Pennsylvania on 30 June 1959.

The Architect Engineer for the missile sites, under the direction of Air Force Ballistic Missile Division, is Bechtel Corporation of Los Angeles and San Francisco, California.

Water supply contracts to insure an adequate quantity for operation were subsequently awarded to Miller Construction Co., Muskogee, Oklahoma, on 20 April 1959 for sites B and C. A contract to furnish facilities to site A was awarded to Mid-Continent Construction on 16 June 1959. The Architect Engineer on these and subsequent sites is Servis Van Doren & Hazard of Topeka, Kansas.

Contracts will soon be let for construction of a missile assembly building, liquid oxygen plant and re-entry vehicle assembly building.