

PROPULSION SYSTEM

The "IRIS" is powered by a high performance, end burning solid propellant rocket motor supplying nearly 4,000 pounds of thrust for 56 seconds. In addition, a separate booster unit is used to increase the launching tower exit velocity. The unit shown in the accompanying photo consists of a cluster of seven 4 inch diameter rocket motors, burning for 0.8 seconds. The ignition system incorporates a time delay relay to insure that the booster motors ignite before the sustainer does. Not attached to the main "IRIS" vehicle by mechanical means, the booster's thrust ring fits directly against the boat-tail of the main "IRIS". This booster unit falls away immediately after the "IRIS" clears the launching tower.

ROCKET MOTOR DATA

DIMENSIONS

Overall Length (inches)	238.12
Motor Length (inches)	159.12
Diameter Maximum (inches)	12.75
Diameter Nominal (inches)	12.12
Fin Span (inches)	47.14

WEIGHTS

Weight of loaded rocket motor (lbs)	1202.5
Weight of nose cone (lbs)	11.5
Total rocket weight (100 lb. payload) (lbs)	1313.5

BALLISTIC PERFORMANCE DATA

Burning time (seconds	56
Chamber pressure (psi)	1200
Thrust (lbs.)	4000
Total impulse (lb-sec)	210,000

PAYLOADS

The aluminum "IRIS" nose cone has a tangent ogive configuration 80 inches long and containing 7,860 cubic inches of volume. For larger payloads, a 20" cylindrical extension is added to increase the payload volume to 10,120 cubic inches.

The "IRIS's" long duration thrust motor allows it to reach extremely high altitudes but with only moderate acceleration loading. In this way, delicate payloads are protected. Many different payloads are carried in "IRIS" rockets, some of which include:

SPECTROSCOPES
CLOUD CHAMBERS
GEIGER–MULLER COUNTERS
ION TRAPS
LANGMUIR PROBES
MAGNETOMETERS
COLD CATHODE PRESSURE GAUGES
HOT CATHODE PRESSURE GAUGES

Safe aerodynamic stability margin is maintained with payloads as light as 75 pounds. Maximum allowable payload weight is 200 pounds. Traveling at a velocity approaching Mach 8, the nose cone skin temperature reaches nearly 900 degrees Farnheit from aerodynamic friction heating.

PAINT PATTERNS AND MARKINGS

NOSE CONE ..... Silver

MOTOR PORTION ..... Black and white checkerboard broken at body tube midpoint and divided into four color areas around the tube.

FINS ..... (Two known versions.)
1. All fins red.
2. Black and white to correspond with the color on the motor section immediately adjacent to it.

MARKINGS ..... "IRIS" - black
"ATLANTIC RESEARCH CORP"
Trademark - white on rear black section of motor tube.

