Characteristics Summary

GUIDED AIRCRAFT ROCKET . . . . . . YGAR-3

FALCON

Hughes

Wing Area: Not Applicable
Span: 24.0 in.
Length: 86.5 in.
Height: 24.0 in.

AVAILABILITY

Number available
ACTIVE RESERVE TOTAL

PROCUREMENT

Number to be delivered in fiscal years

STATUS

1. Extension of GAR-1 development initiated in 1951
2. Improved radome nose shape, antenna reflector, warhead, power supply, and electronic circuitry
3. Improved performance characteristics
4. Development will follow GAR-1 by approximately three years
5. First Air-to-air Hit: Jul 55

Navy Equivalent: None
Mfr's Model: EP

POWER PLANT

- Two-level Thrust Boost-sustain, Solid Rocket T-63
  Hughes Aircraft Co.

THrust RATINGS

S.L.S. @ 70°F LB — SEC

Nominal (Average) —
High-thrust Level: 4640 — 0.61
Low-thrust Level: 685 — 2.95

FEATURES

- Semi-active Radar Seeker
- Pointed-nose Plastic Radome
- Cruciform Surface Arrangement
- “Roll-rate-limiting” Aileron Control
- Blast Type Warhead
- Contact Fuze
- Turbine-driven Electrical and Hydraulic Power Supply
- Miniaturized Precision Components and Circuitry
- Snap-up Capability
- Maximum Fuel: .236 lb

GUIDANCE

INITIAL (BOOST PHASE)— None; Tracking Only
MID-COURSE AND TERMINAL—
Homing, Semi-active X-band
Pulse Radar Target Seeker, Proportional Navigation

CONTROL

Hydraulically Actuated Rear Control Surfaces Provide Necessary Steering and Damping
Steering Signals Generated by Target Seeker Tracking Motion
### Characteristics Summary Basic Mission

![Diagram](image)

#### PERFORMANCE

<table>
<thead>
<tr>
<th>TARGETS</th>
<th>RANGE</th>
<th>SPEED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subsonic propeller-driven or jet bombers</td>
<td>Nominal missile launch range: 3400 ft to 25,000 ft</td>
<td>MAX Launching aircraft speed plus 1200 fps</td>
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<tr>
<td>Supersonic jet bombers</td>
<td></td>
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#### LAUNCHING

<table>
<thead>
<tr>
<th>FLIGHT TIME</th>
<th>ALTITUDE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short-length tracks (4) extended from F-102B fuselage bay</td>
<td>Nominal missile flight time: 4.3 sec to 17.3 sec</td>
</tr>
<tr>
<td>16 sec minimum preparation time from AI radar detection</td>
<td>Effective up to 70,000 ft</td>
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<tr>
<td>Salvos of 2 or 4 missiles</td>
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#### LOAD

<table>
<thead>
<tr>
<th>WEIGHTS</th>
<th>TARGET ACCURACY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warhead and Fuze (installed)</td>
<td>Empty 121.3 lb</td>
</tr>
<tr>
<td>Explosive</td>
<td>Pre-launch 135.0 lb</td>
</tr>
<tr>
<td>Motor (loaded)</td>
<td>End of Boost Phase 119.9 lb</td>
</tr>
<tr>
<td>Useful Fuel</td>
<td>Burnout 111.4 lb</td>
</tr>
<tr>
<td>P_e = 0.87 for salvo of 2 missiles in rear hemisphere attacks against subsonic and supersonic bombers</td>
<td></td>
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#### NOTES

1. Performance Basis:
   - (a) Calculation based on experimental FALCON flight tests, component tests, and estimated data.
   - (b) NACA standard atmospheric conditions.
2. Revision Basis: To reflect latest characteristics and performance data.
3. Probability of kill (P_e) value is based upon 90% missile reliability and 0.90 kills per hit.
4. Nominal values correspond to idealized operation of the fire control system.

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YGAR-3 SECRET 16 MAY 56