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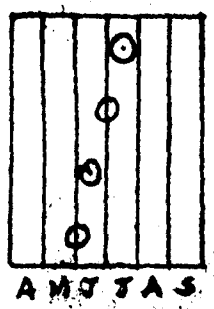
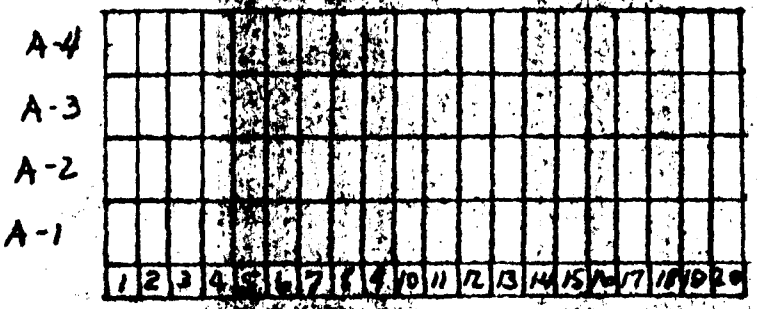
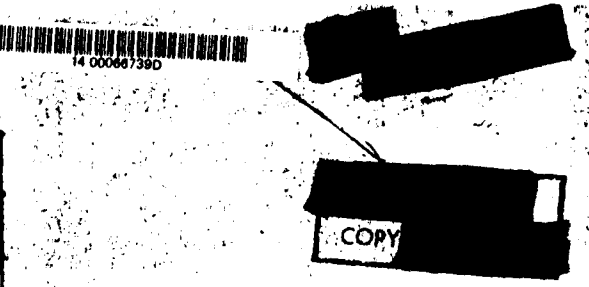
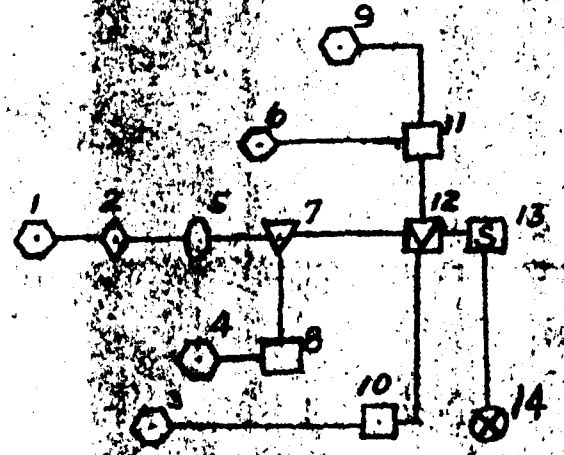
LMED PRODUCTION PROGRESS

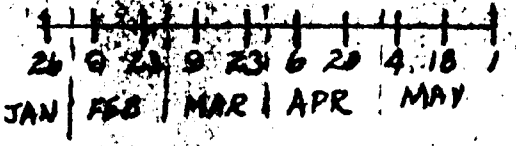


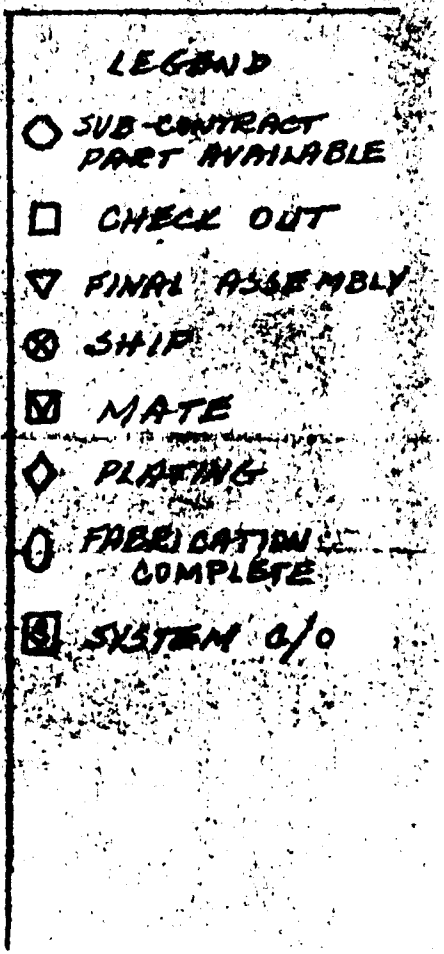




# ARGON SCHEDULE



PROJECT ARGON

Preliminary World Grid Mapping System

Precision Mapping Camera Subsystem

3" - 4½" x 4½" Terrain Camera

3" - 1½" Dia. Stellar Camera

Pressurized Camera System

Film Capacity - 4000 ft. (7"/Frame)

Recovery of Exposed Film

Automatic Data Handling System

Location Accuracy 1000 ft. (or better)

## ORBIT TRACK

Operational flight presently under investigation with parameters of

Perigee Altitude

Eccentricity

Period of Orbit

Launch Azimuth

Exposure Conditions

Launch Time

Recovery Time

Land Masses

Film Footage

## WEIGHT STATEMENT

| ITEM | OCTOBER 21 |
|---|---|
| Recovery System | 230 lbs. |
| Vehicle Fairing and Accessories | 62 |
| Camera and Accessories | 92 |
| Film | 40 |
| Vehicle Clock | 10 |
| Pressurization System | 8 |
| Recovery System Telemetering | 9 |
| Miscellaneous Instrumentation | 6 |
| TOTAL | 457 lbs. |

## AGENA VEHICLE PERFORMANCE

469 lb. payload

200 St. Mi. Orbit (nominal)

.01 to .03 Eccentricity (determined by pre-flight settings of integrator)

4-day Active Lifetime

Margins:

200 Ft. per Sec. (Based on proven specific impulse of Agena engine and tag values of Thor performance.)

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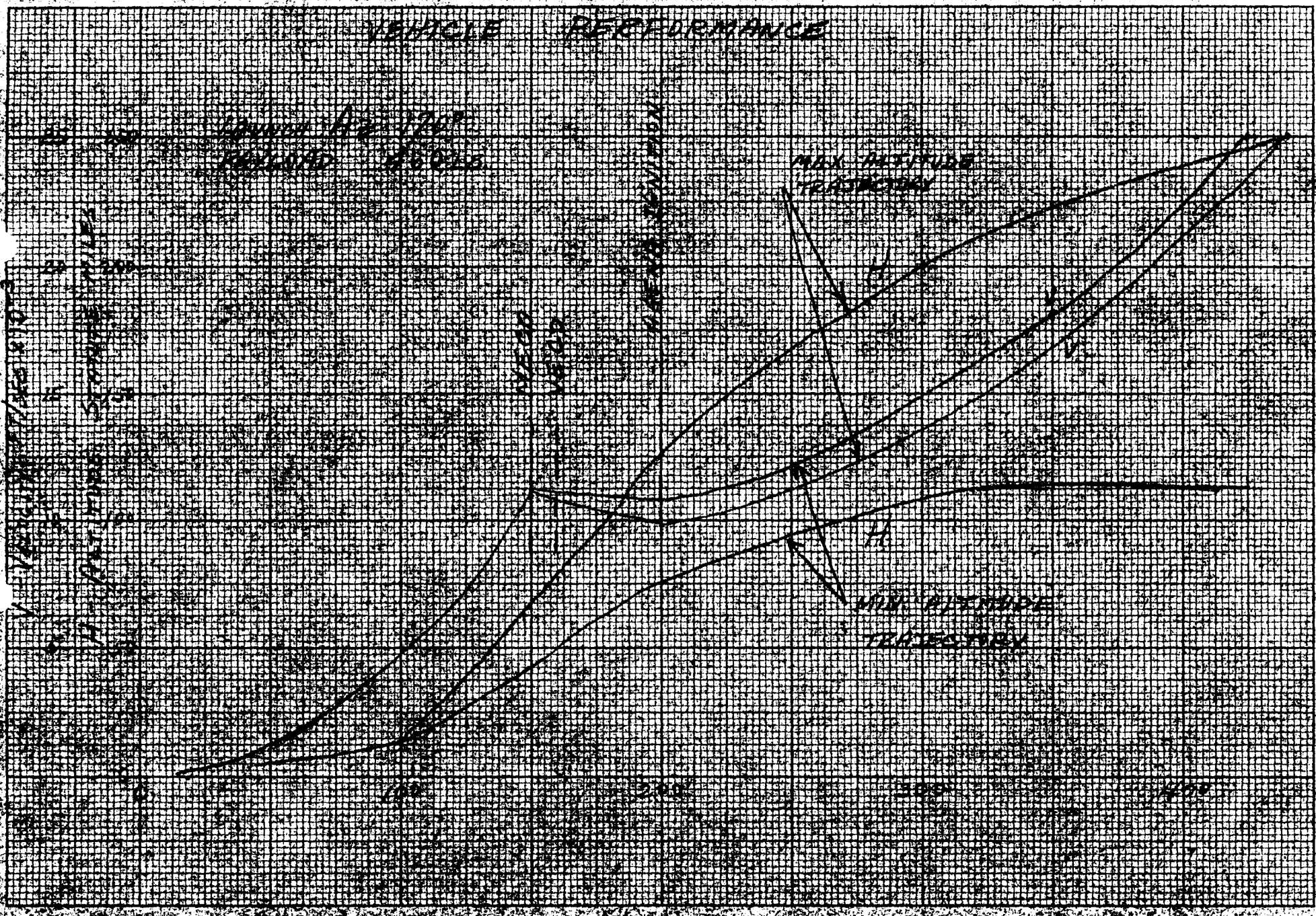

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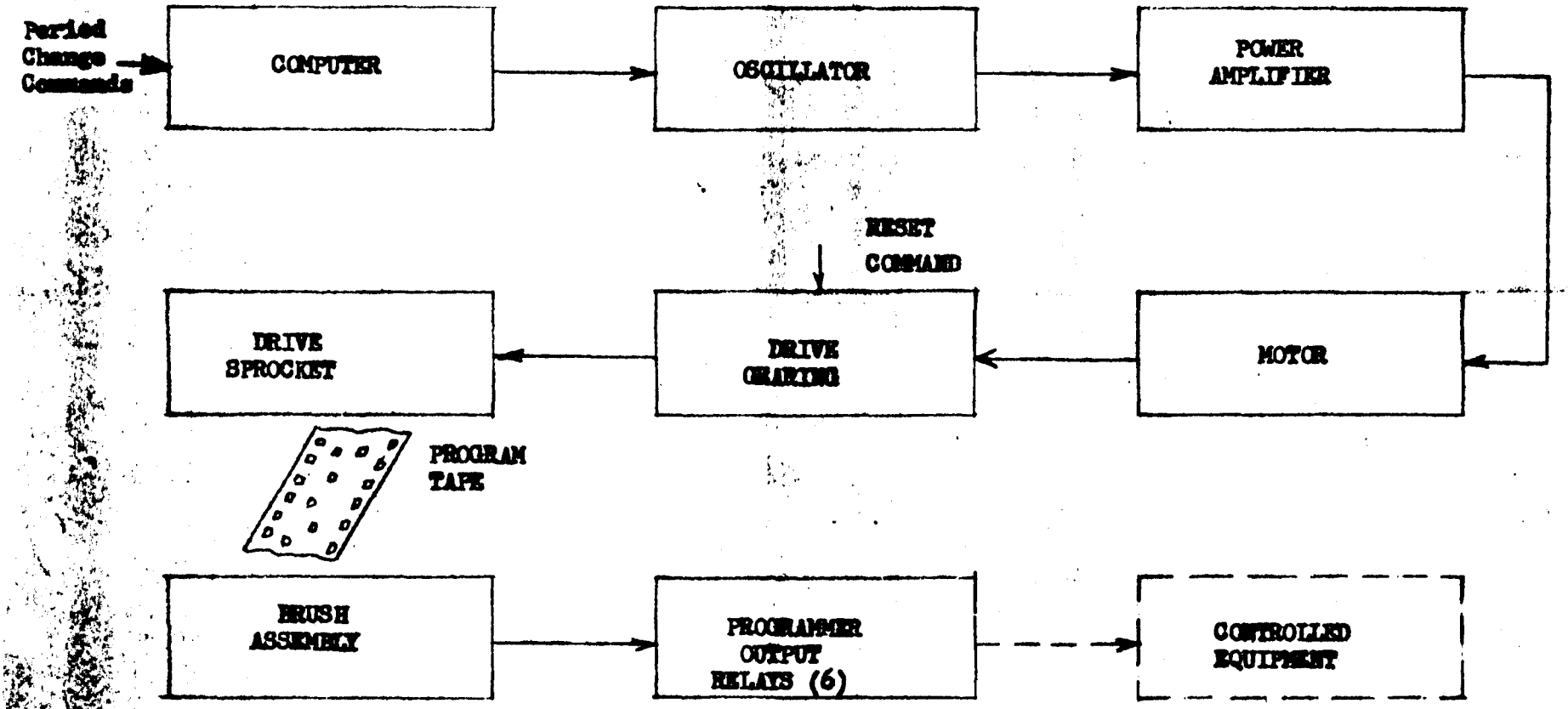
SIMPLIFIED FUNCTIONAL BLOCK DIAGRAM

SECONDARY PROGRAMMER




PROGRAMMER PERIOD IS ADJUSTABLE BY COMMAND TO BE EQUAL TO VEHICLE ORBIT PERIOD TO ± 5 SECONDS
PROGRAMMER CAN BE RESET BY COMMAND TO SYNCHRONIZE PROGRAMMED EVENTS WITH POSITION OF VEHICLE IN ORBIT
ANY ORBIT PROGRAM CAN BE REPEATED OR SKIPPED BY COMMAND
CAPACITY - 120 ORBIT PROGRAMS - ALL DIFFERENT.

LMSD-7

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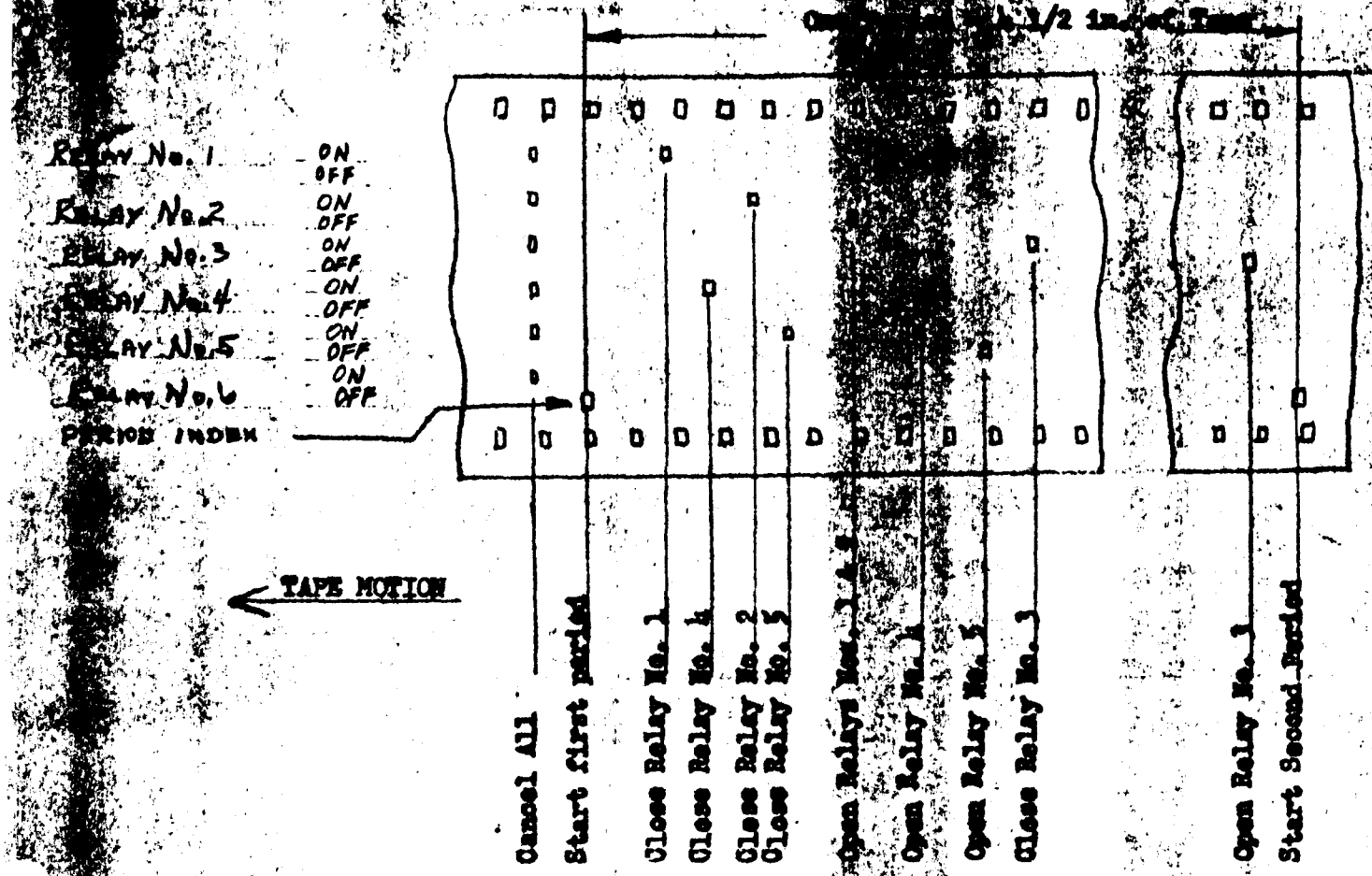


TYPICAL TAPE

SECONDARY PROGRAMMER

EMSD-8

## DOPPLER SYSTEM COMPARISON

| Characteristic | Strad | [redacted] | PDTS |
|---|---|---|---|
| Accuracy | 200 Feet | 600 feet | 600 feet |
| Weight | 8 pounds | 9 pounds | 8 pounds |
| Power (Max. Input (Average | 6 watts 6 watts | 14 watts 3 watts | 2 watts 2 watts |
| Availability of Flight Hardware | Six months | Two months | On hand |
| Availability of Track. Sta. (Devel.) | Six months | Two months | In operation |
| Compatibility | APL network LMSD | [redacted] network | APL network LMSD net with minor mod. |
| Airborne Complex | Complex | Complex | Simple |
| Countermeasures Susceptibility | High | Highest | Least |

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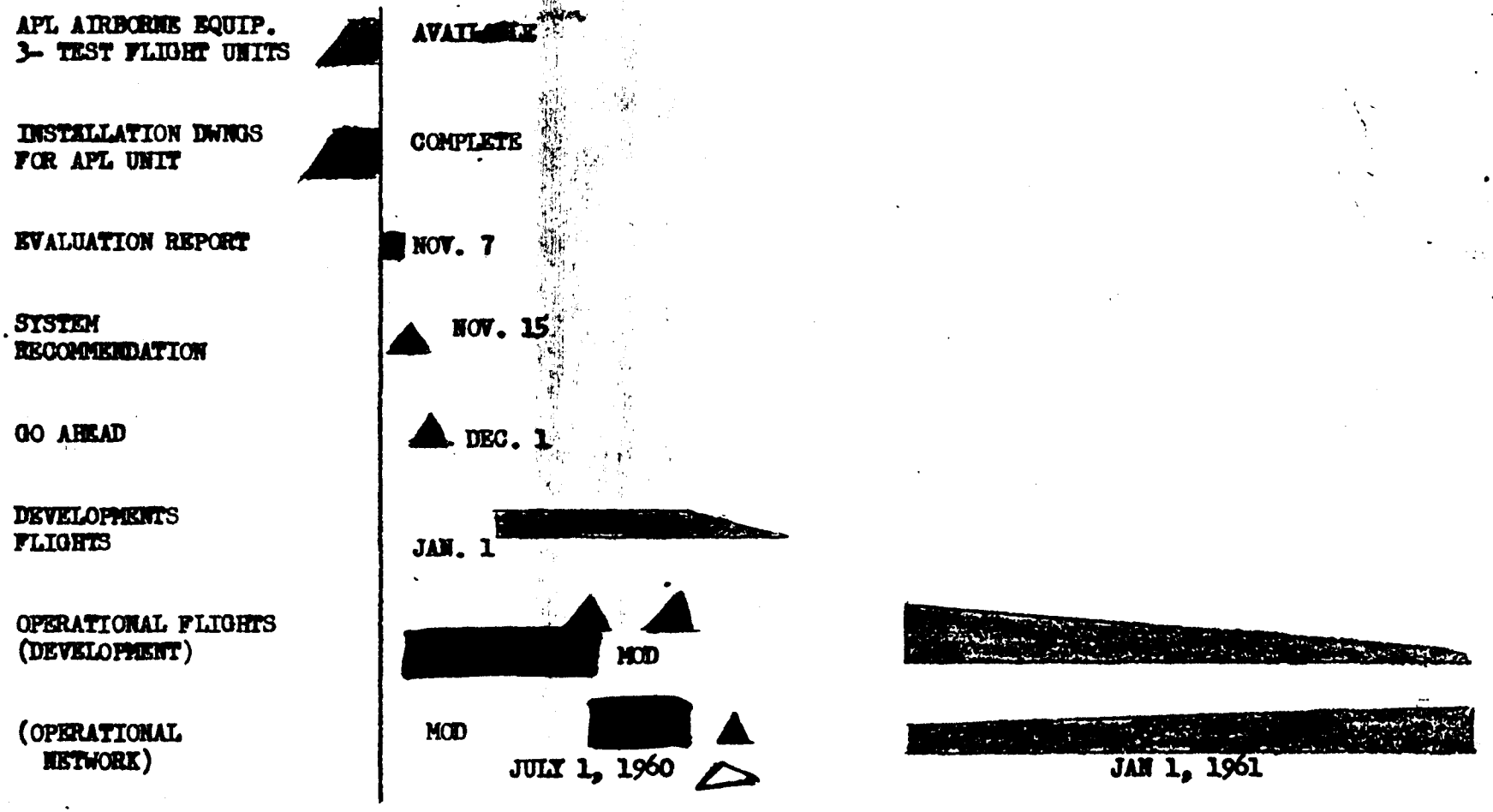
# REQUIRED DOPPLER SYSTEM SCHEDULE




LMSD-10

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Copy #1

COPY

1. SUBSYSTEM DESCRIPTION

(a) Mechanical Schematic

(b) Configuration and Interface Drawing

(c) Electrical Schematic

(d) Weight Analysis

(e) Recommended Telemetering

SUBSYSTEM - 1A

## MECHANICAL SCHEMATIC

A. Film Supply

B. Film Transport Drive

C. One Rev. Timing Motor

D. Terrain Camera

E. Recording Camera

F. Data Recording

G. Pressure System

H. Film Take Up Cassette

## CONFIGURATION

A. Mounting Plate

B. Pressurized Box

C. Terrain Lens

D. Recording Lens

E. Film Path

F. Film Chute

G. Cassette

**Cassette**

1. Take up Torquer
2. Telemeter

**Camera**

1. Supply Torquer
2. Shutter rewind motor
3. Metering motor
4. Shutter Trip Solenoid
5. Monitoring and Telemetering

CAMERA - Cont.

6. Film Transport Programmer
7. Unit 1 cycle timer and [illegible] Programmer
8. Shutter Timer
9. "J" Box
10. Vehicle Clock

WEIGHT

| Part Name | Weight - Est. |
|---|---|
| Rollers | 3.0 |
| Bearings, Gears and Shafts | 4.0 |
| Film Transport Motor | 2.0 |
| Spider | 1.0 |
| Main Plate | 5.0 |
| Main Box and Cover | 12.0 |
| Main Lens and Barrel | 12.0 |

| PART NAME | WEIGHT - EST. |
|---|---|
| Lens Cone | 1.5 |
| Shutter (2) | 10.0 |
| Platen (2) | 1.5 |
| Recording Lens and Barrel | 3.0 |
| Lens Cone | 1.0 |
| Spool (2) | 6.0 |
| Cassette Assembly (Less Spool) | 6.5 |
| Gas Pressure System | 4.0 |
| Attitude Ref. Recording | 1.0 |

| PART NAME | WEIGHT - EST. |
|---|---|
| Film Transport Programmer | 2.5 |
| "J" Box and Power Supply | 7.0 |
| Recording Lights, Telem. and Wire | 8.0 |
| Unit 1 Cycle Timer | 1.2 |
| F.C.I.C. Sub Total | 92.5 |
| Gas System | 5.0 |
| Vehicle Clock | 10.0 |
| Film | 40.8 |
| Total | 148.3 |

## RECOMMENDED INSTRUMENTATION FOR TELEMETERING

A. Temperature Sensors (No. and location to be determined)

B. Presence of film in film path.

C. Internal Pressure (2)

D. Film Transport (input and output)

E. Film Footage (supply and takeup spools)

F. Light Sensor

G. Shutter operate pulse (main and recording)

SUBSYSTEM 1E CONT.

H. All one Rev. shaft pulses.

I. Metering Brake

J. Commutated Rollers (2)

K. Shutter Rewind Clutch

L. Binary Vehicle Time Code (serial)

M. Vehicle Time Freeze Pulse.

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Encl #2

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# SATELLITE RECOVERY SYSTEM

October 20, 1959

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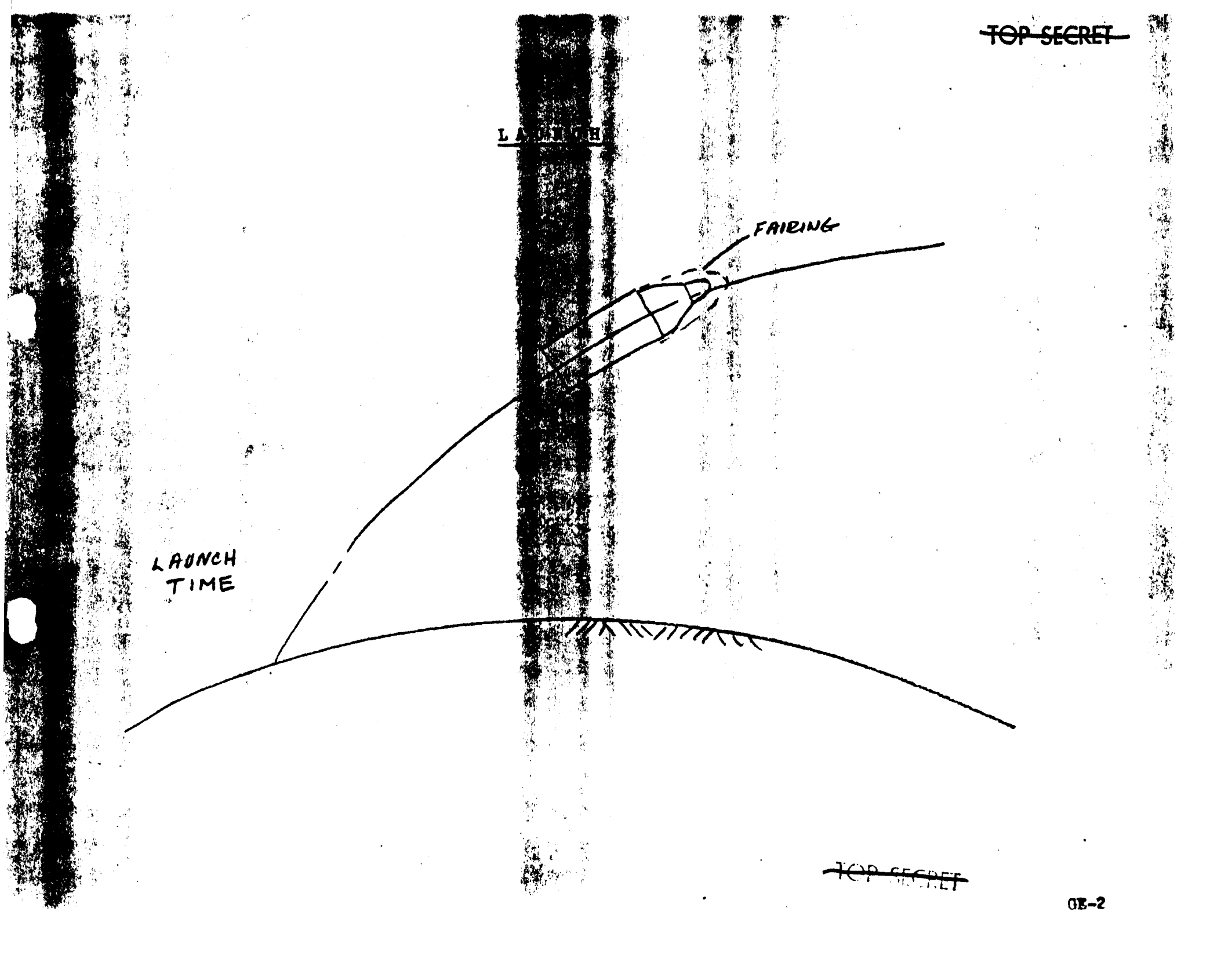

FAIRING
LAUNCH TIME

## THERMAL BALANCE

**PROBLEMS:**

1. New launch times: Noon ± 6 hours.
2. Requirement that system be passive
3. Requirement that system:

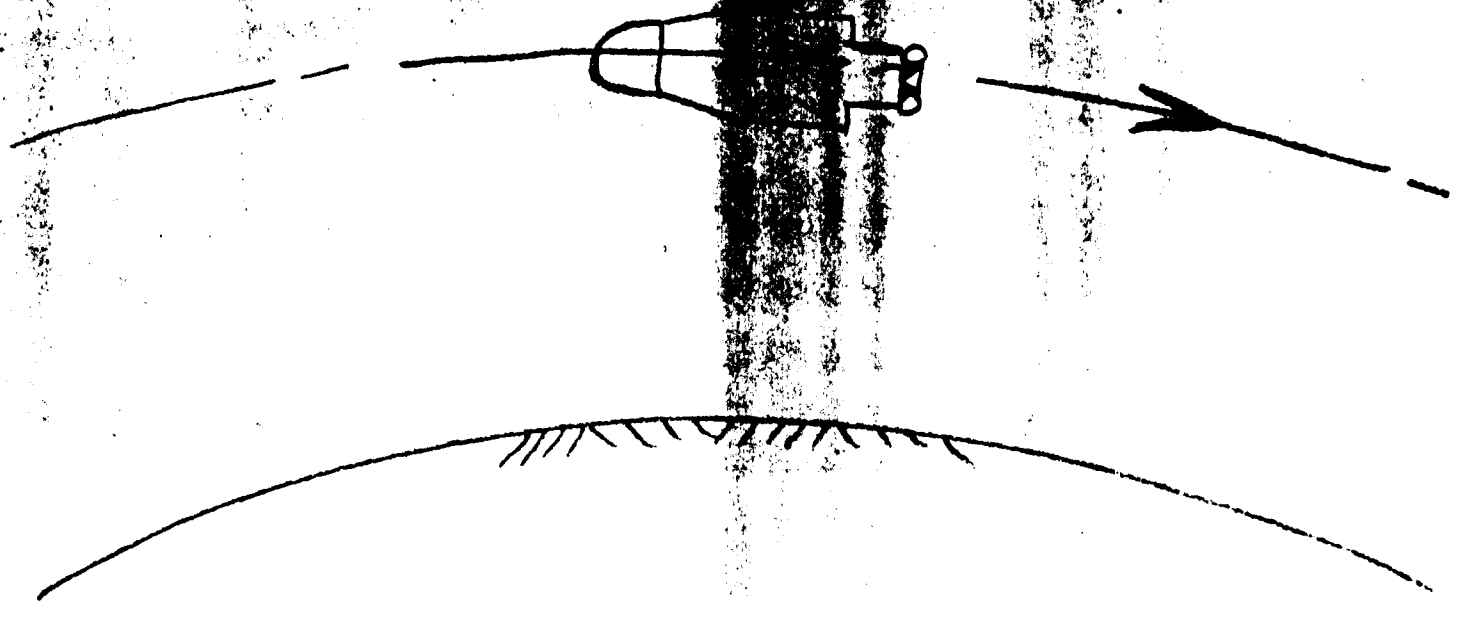
   Survive powered flight.

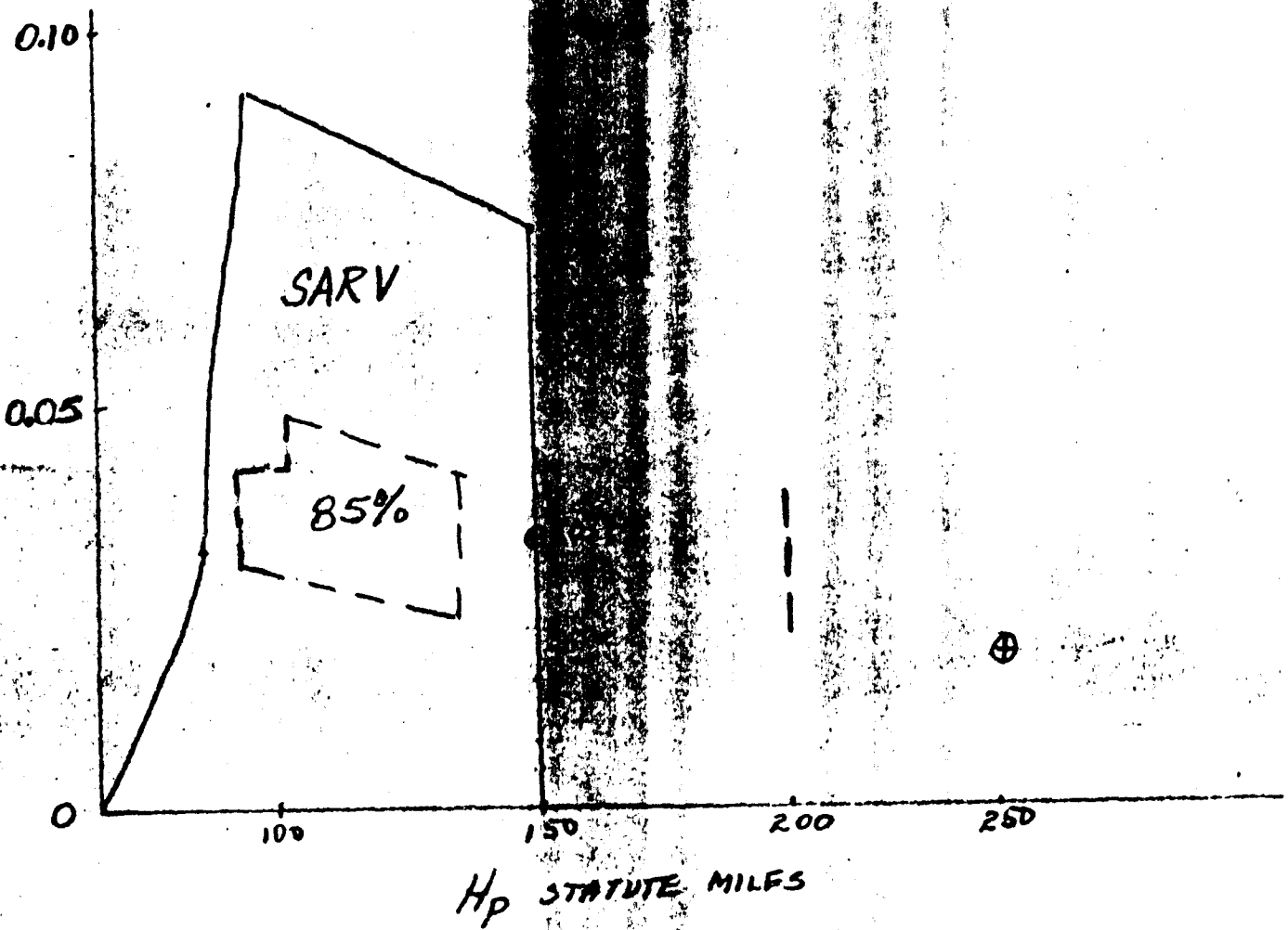
   Provide single $\alpha/\epsilon$ that will provide suitable T° F for all missions.

   Not interfere with reentry.

**SOLUTIONS:**

1. Initially, N/C fairing and simple $\alpha/\epsilon$ coating.
2. Later, $\alpha/\epsilon$ coating with differential properties.
3. Heaters as back up.
4. Investigation of minimum-active systems.



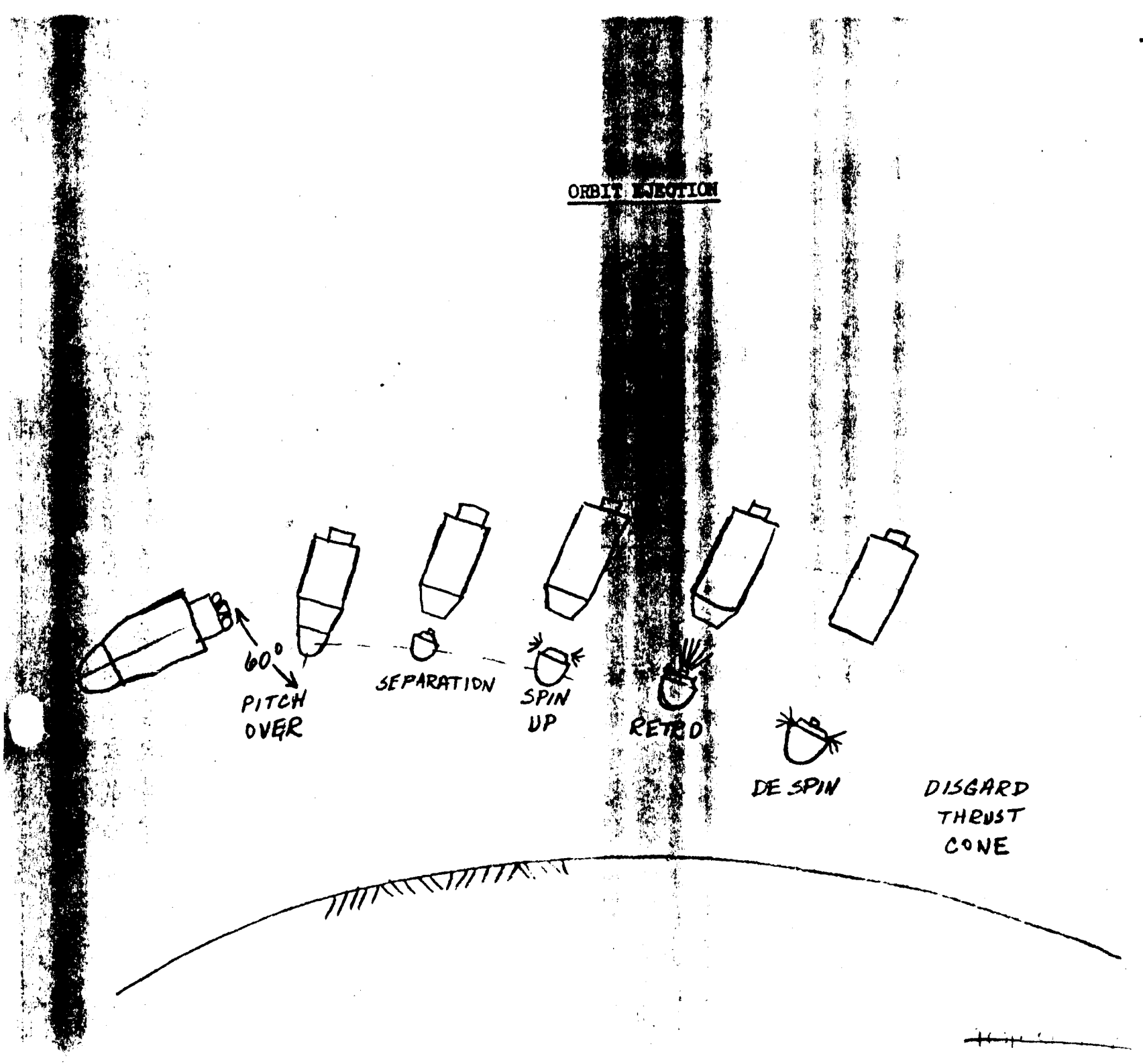

0.10
0.05
0
SARV
85%
100
150
200
250
$H_P$ STATUTE MILES

## REENTRY DEPENDENCE ON ORBIT

1. Orbit survival requirements.
2. Cut-down survival requirements.
3. Powered flight survival requirements.

**SOLUTIONS:**

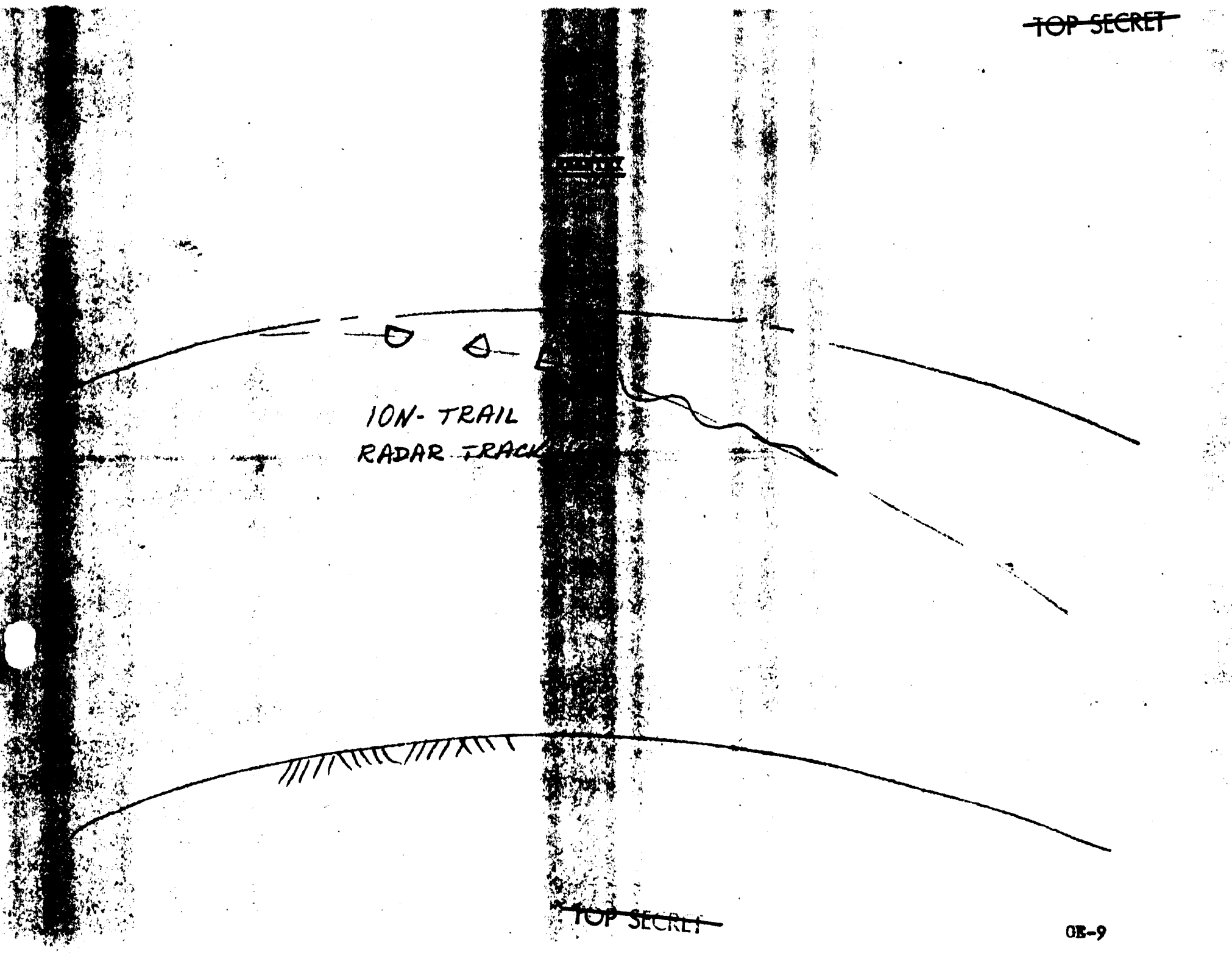
1. SARV configuration.
2. Nylon-glass-phenolic shield.
3. 30 lb. weight-saving objective.
4. Also dependent on C.G. (See recovery).

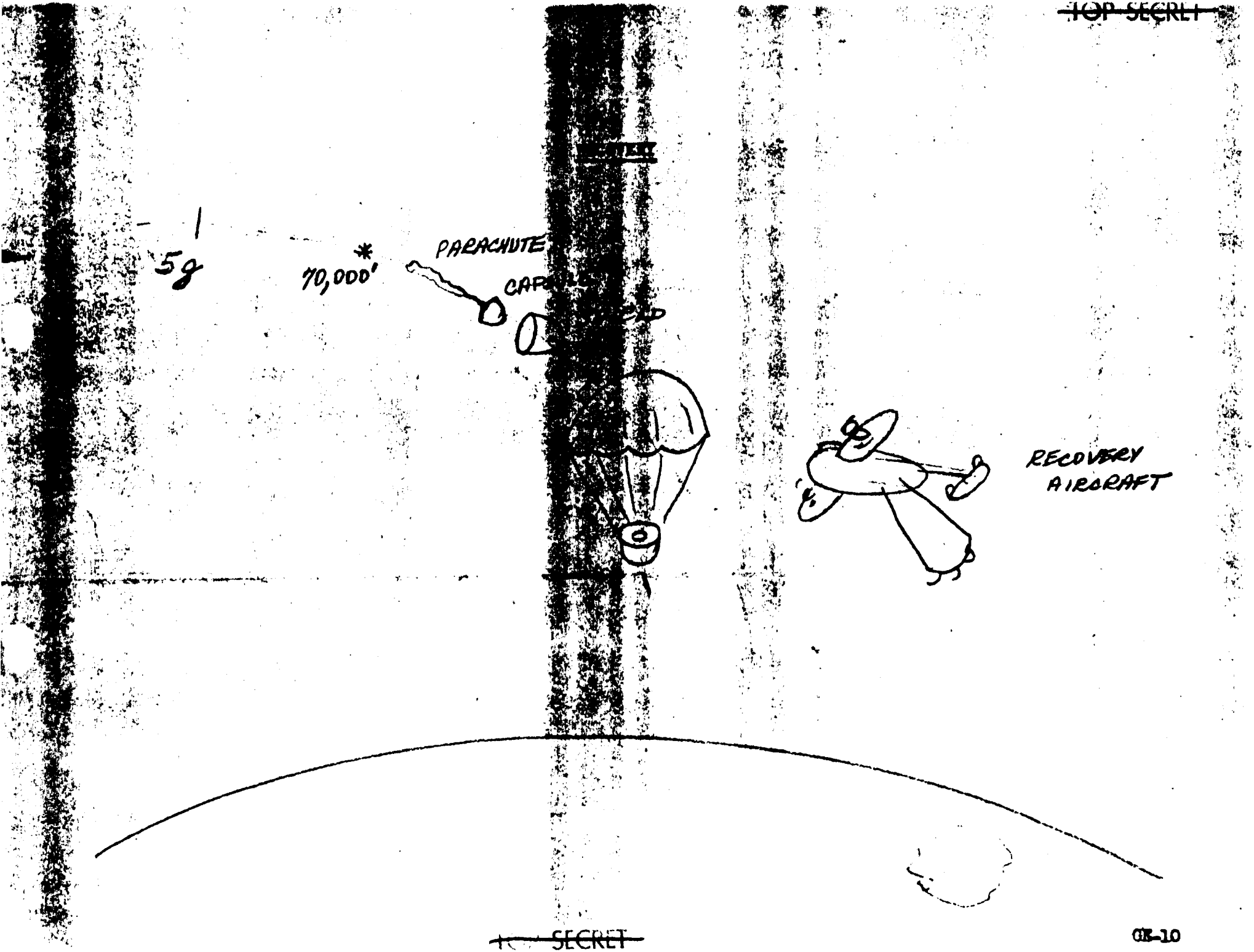

ORBIT INJECTION
60°
PITCH OVER
SEPARATION
SPIN UP
RETRO
DE SPIN
DISCARD THRUST CONE

## ORBIT EJECTION

SOLUTIONS:

1. Increased spin RPM.
2. Increased electrical power margin.
3. IDC-type Pyro qualification and acceptance.
4. Event simplification.
5. Single-point thrust cone detachment.
6. Retro-rocket redesign and requalification.
7. Beacon turn-on.


ION-TRAIL
RADAR


5g
70,000'
PARACHUTE
RECOVERY
AIRCRAFT

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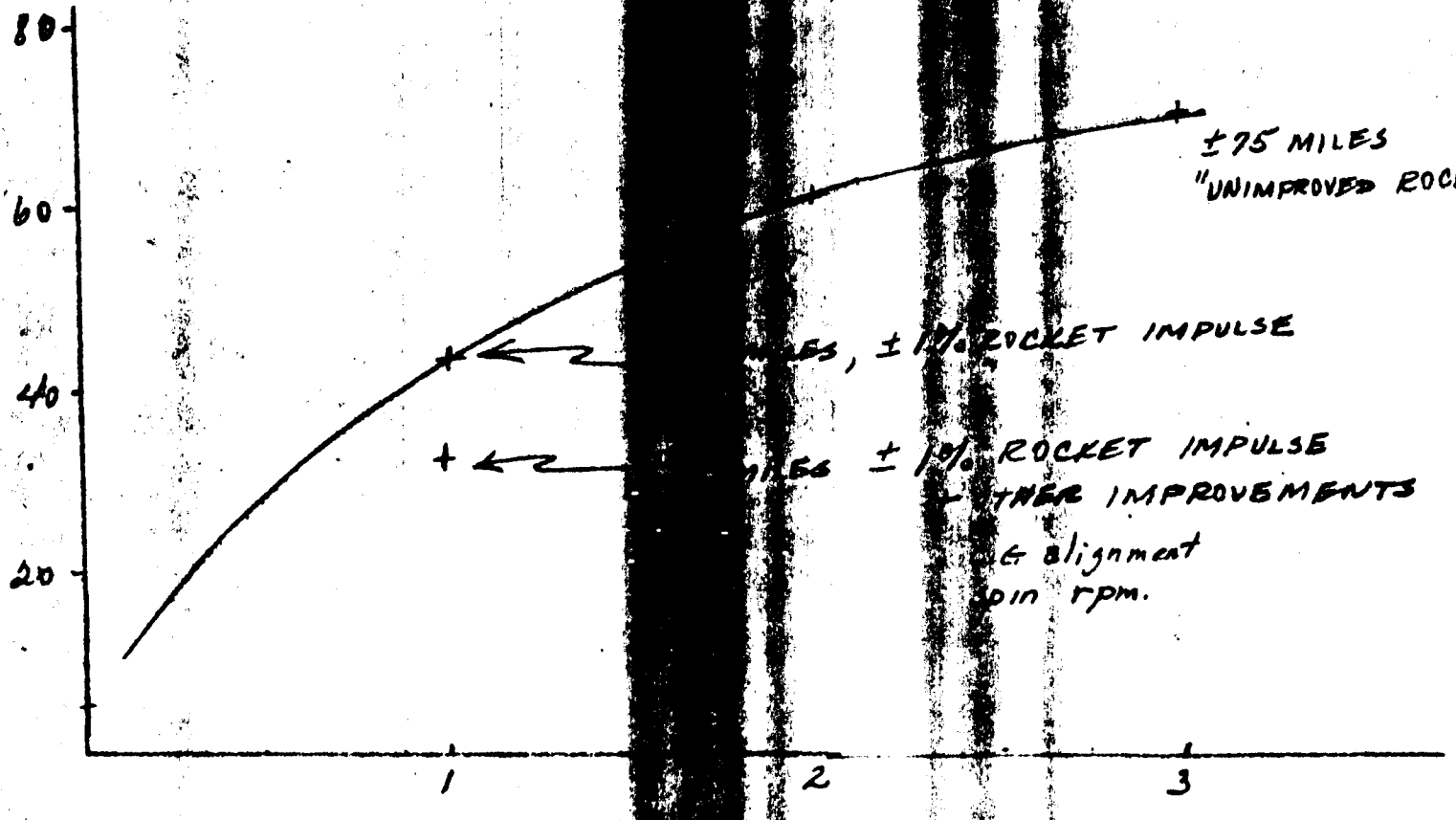
## RECOVERY IMPROVEMENTS

1. Full corridor antenna for beacon.
2. Centralized power supply.
3. Crystal controlled beacon.
4. Minimum detachment points.
5. Backup supersonic chute to eliminate transonic CG problem.
6. Improved flashing light.
7. Programmer event simplification.

DISPER[illegible]PROVEMENTS



## ACCESSIBILITY, MAINTAINABILITY

1. Separated disconnect (through side wall).
2. Thrust cone in-board.
3. Capsule cover Marmon clamp.
4. Single point attachments.
5. Relocated disconnect.