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INDEX

	<u>PAGE</u>
VTO Efficiency Chart.	1
Flow Distribution -	
Hovering & Ground Cushion	2
Transition.	3
Forward Flight.	4
General Arrangement	5
Cutaway G. A.	6
Intake Arrangement.	7
Impeller & Turbine Assy	8
Flame Tube & Nozzle	9
Control Assy Arrangement.	10
Stabilizer System	11
1/6 Scale Model	12
Intake Model.	13
Supersonic Control Model.	14
Ground Effects Model.	15
AVRO Wind Tunnel.	16
Mission Profile	17
V-N Diagram	18
Rate of Climb vs Altitude	19
Time to Altitude.	20
^T Thrust-Drag Curve	21
Thrust-Drag Curve	22
Zero-Lift Drag Coef. vs Mach Nr	23
Thrust vs Rim Speed - Cold.	24
Thrust vs Rim Speed - Hot	25

Declassified on June 14, 2001 by the
Air Force Declassification Office
IAW EO 12958

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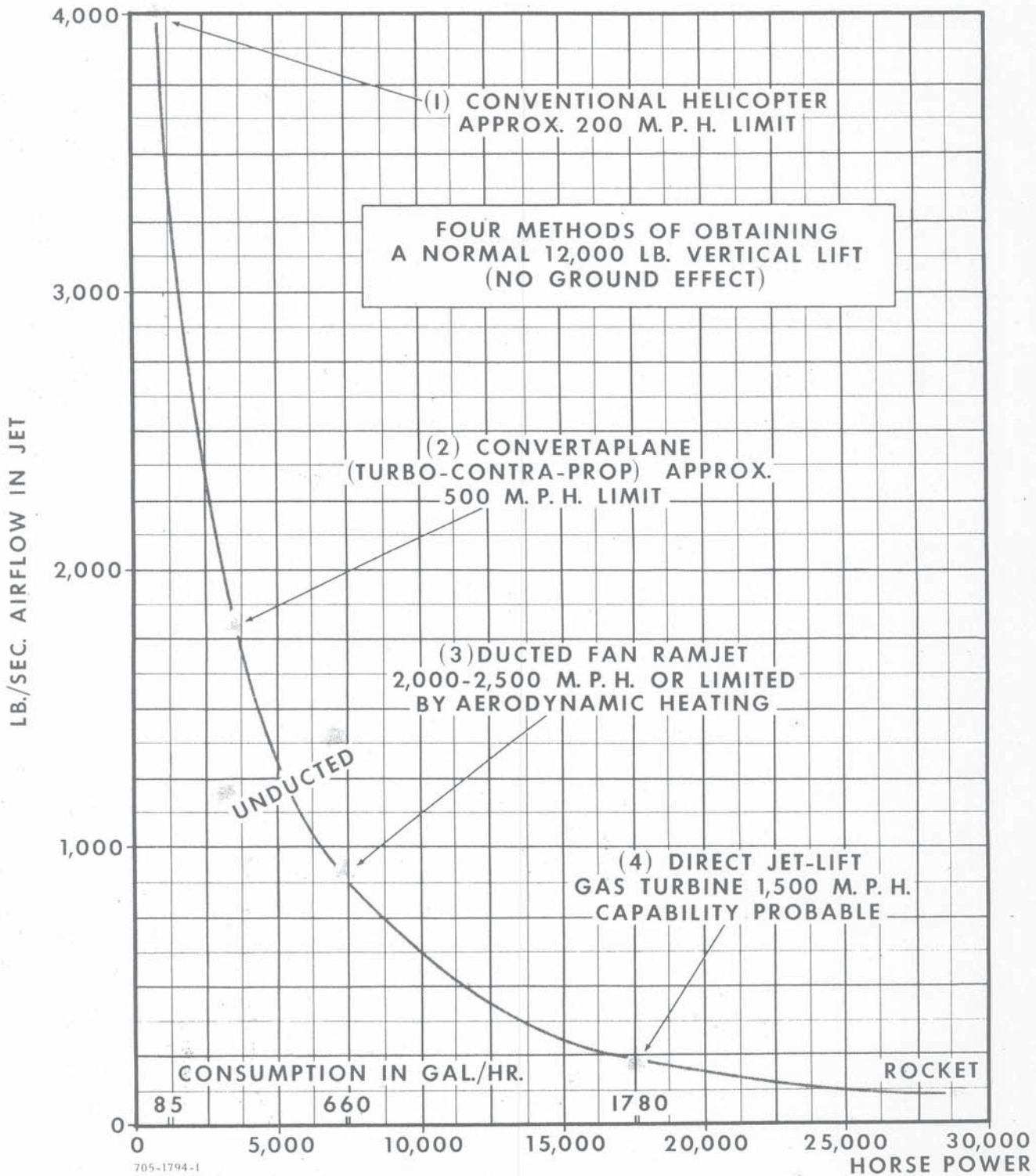
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INDEX

	<u>PAGE</u>
C_L & C_J vs Mach No.	26
Control Effectiveness	27
Capture Area Ratio.	28
Ground Effect Curves.	29
Effect of Scale	30
Effect of Contour	31
Effect of Nozzle Pressure Ratio	32
Effect of Nozzle Aspect Ratio	33
Effect of Nozzle Aspect Ratio	34
Effect of Local Jet Blockage.	35

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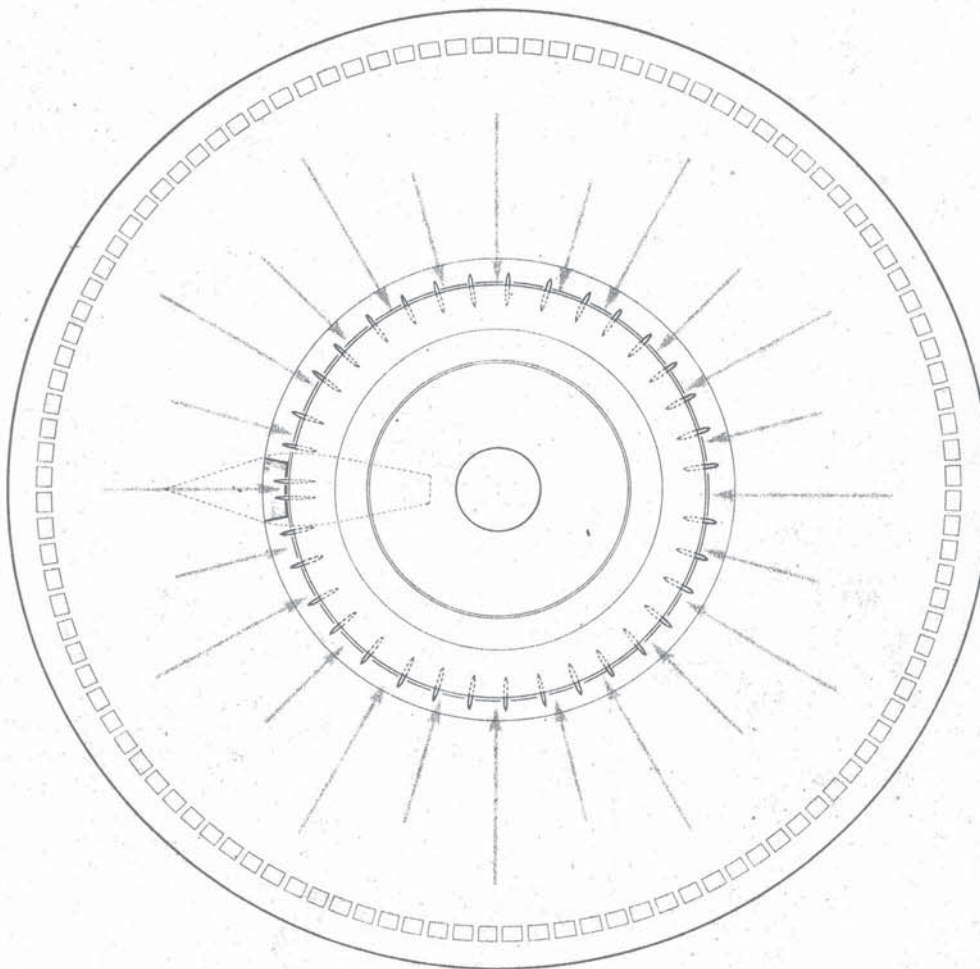
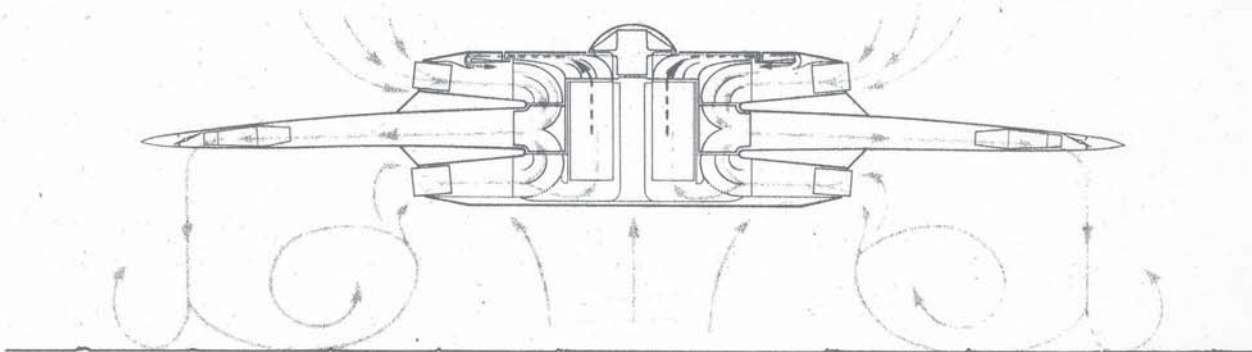


V.T.O. EFFICIENCY CHART

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720-1794-1

**FLOW DISTRIBUTION-HOVERING
AND GROUND CUSHION**

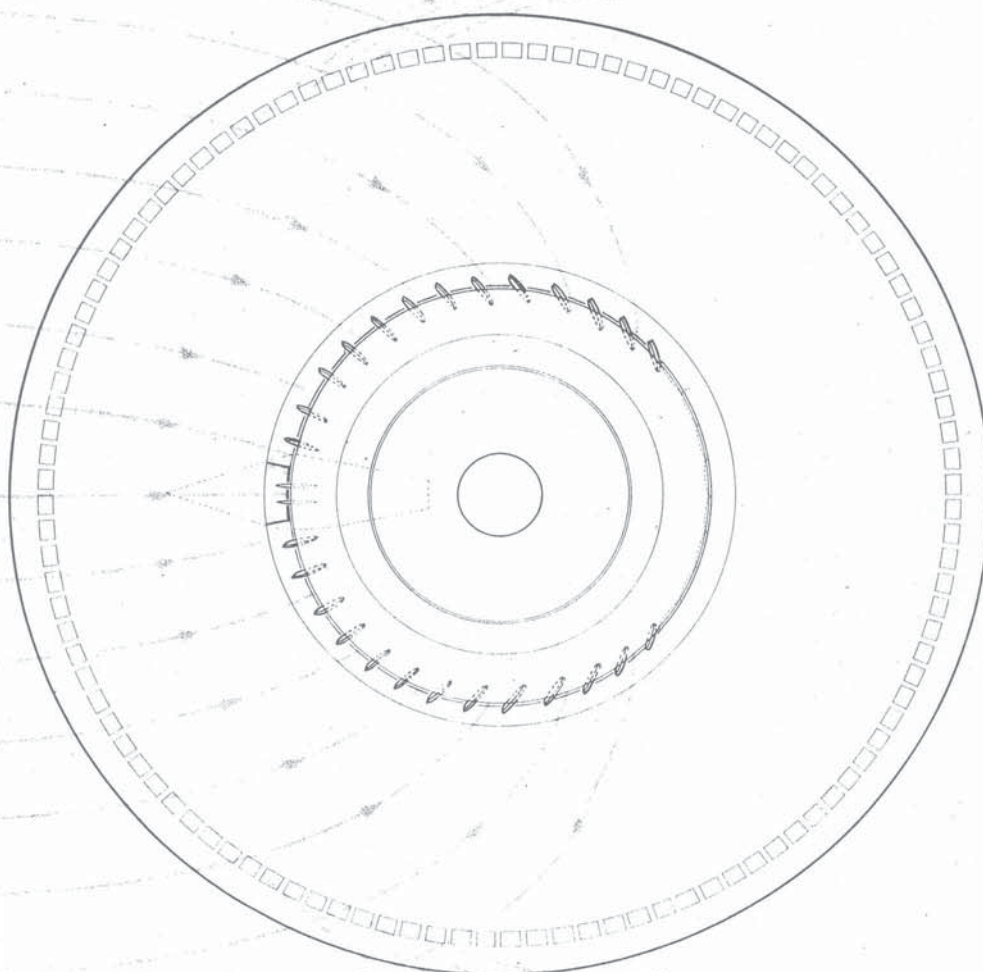
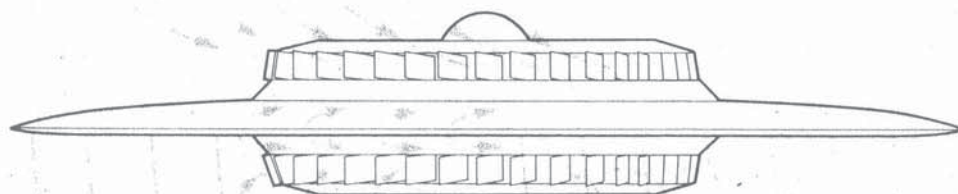
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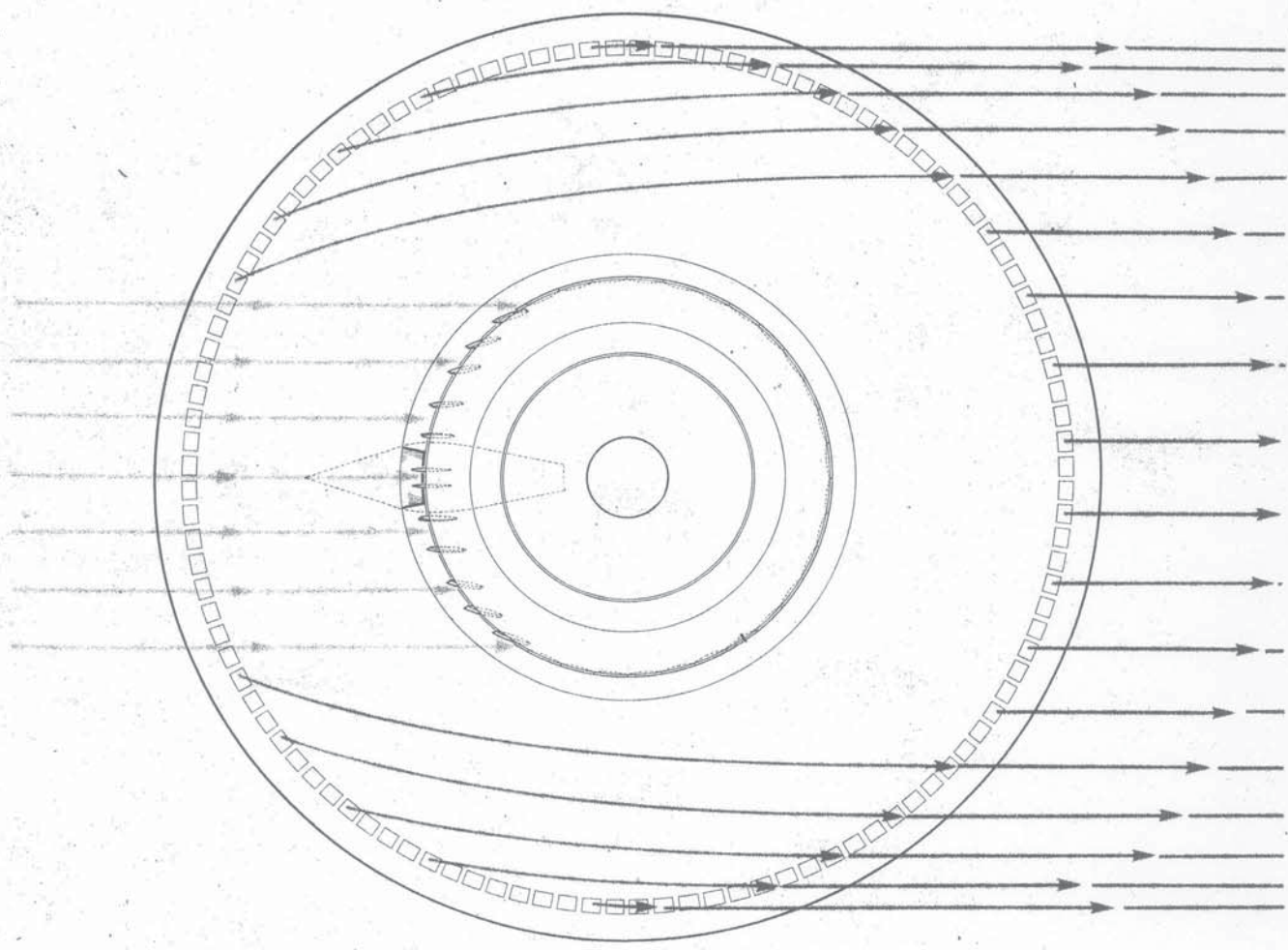
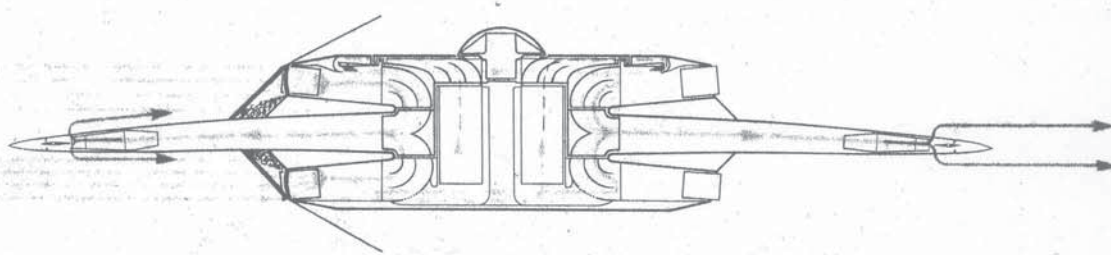
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**TRANSITION TO FORWARD FLIGHT
FROM GROUND CUSHION**

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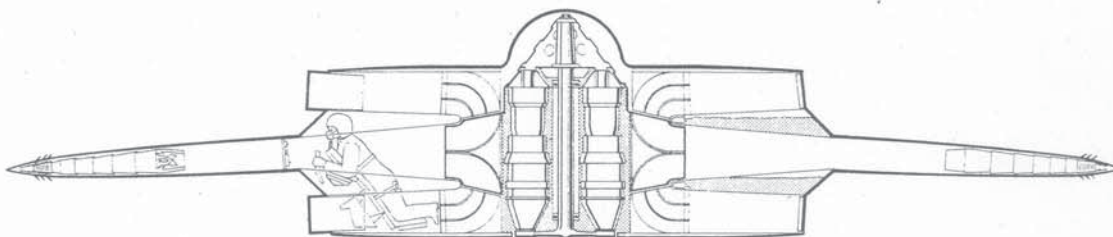
AIRFLOW IN FORWARD FLIGHT

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**2 VIEW GENERAL ARRANGEMENT
-33 FT. AIRCRAFT SCHEMATIC**

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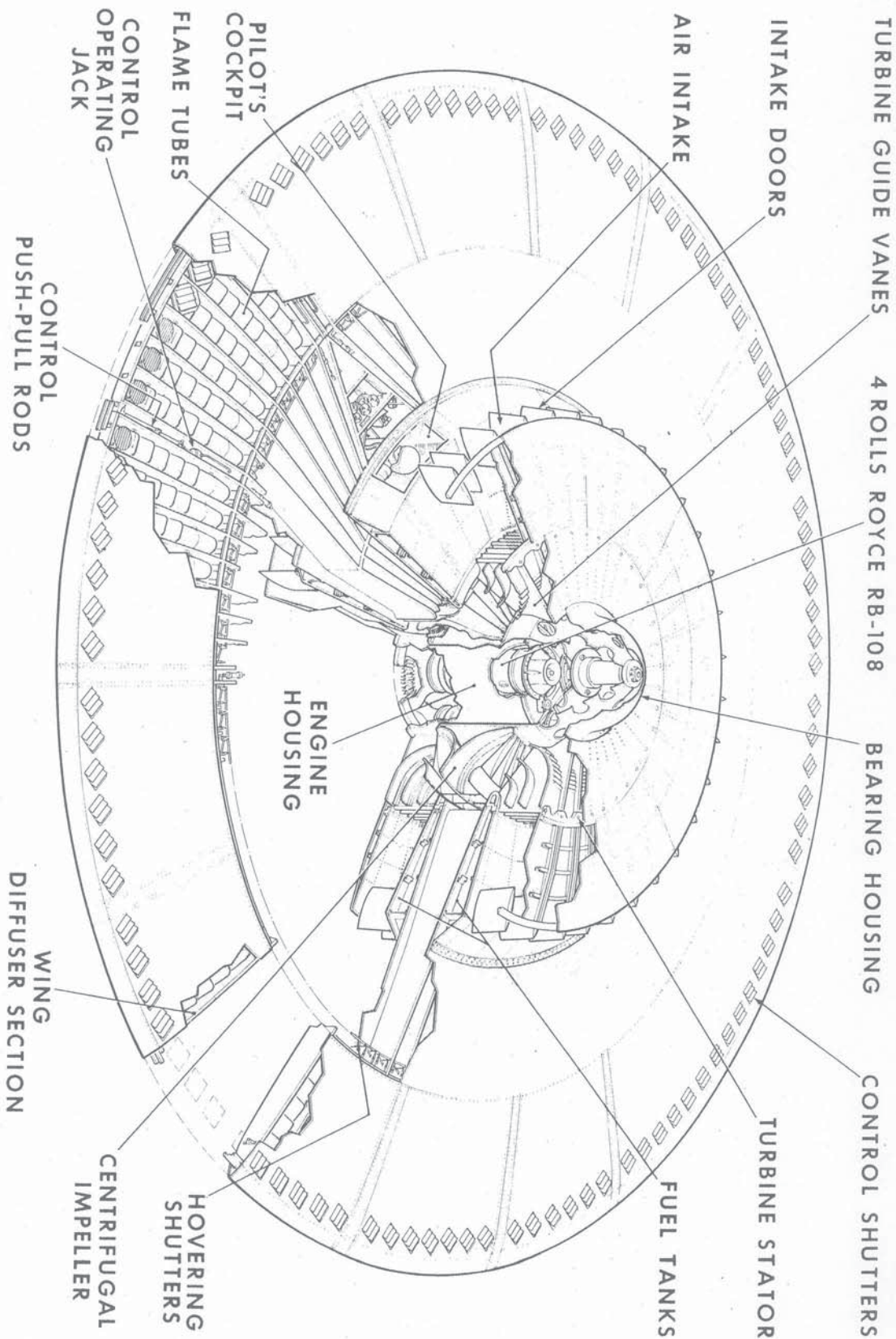
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RAMJET AIRCRAFT-DUCTED FAN ASSISTED

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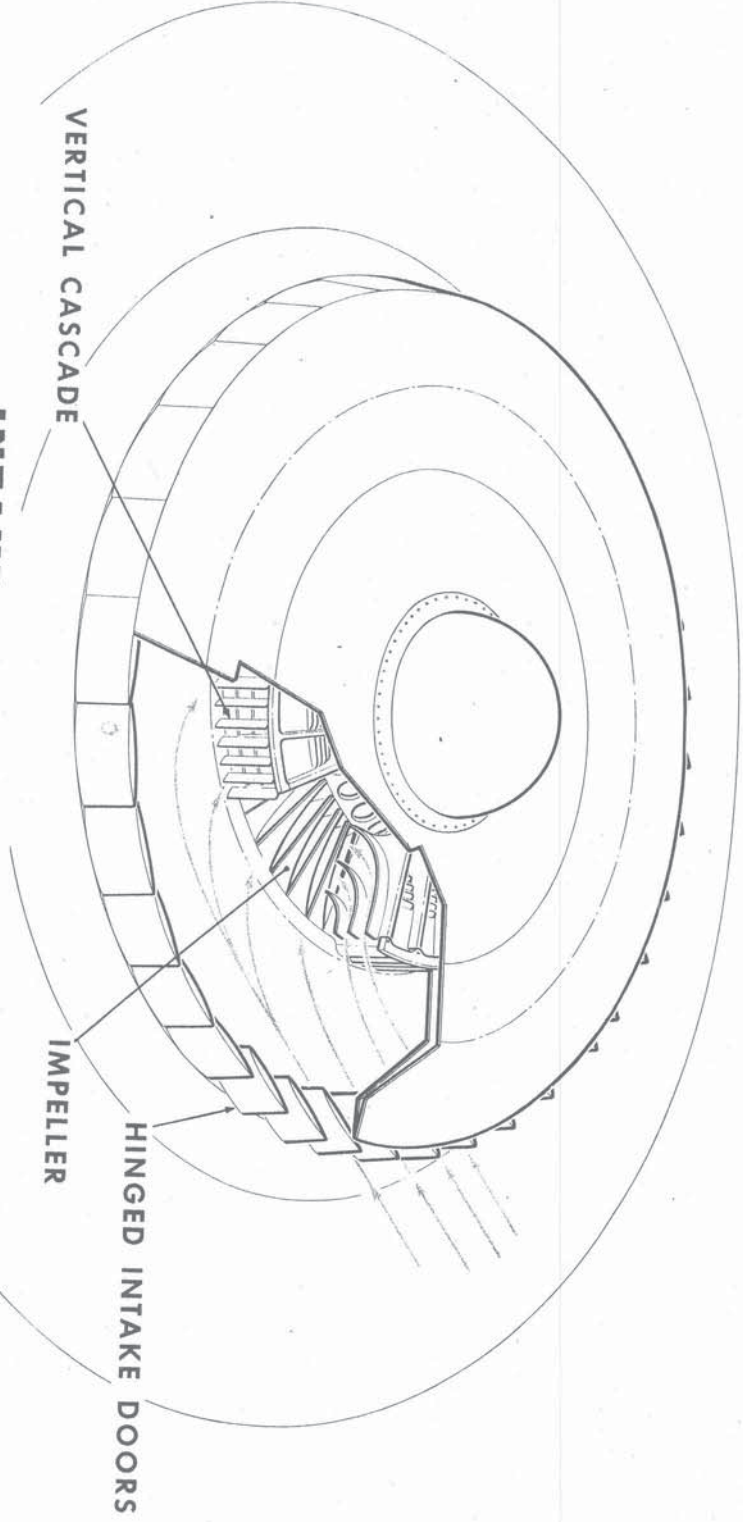
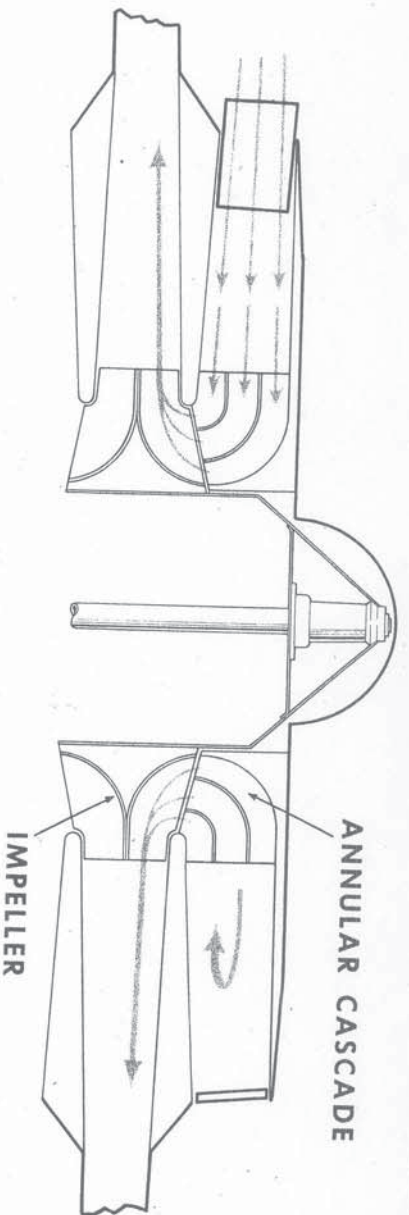
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INTAKE ARRANGEMENT

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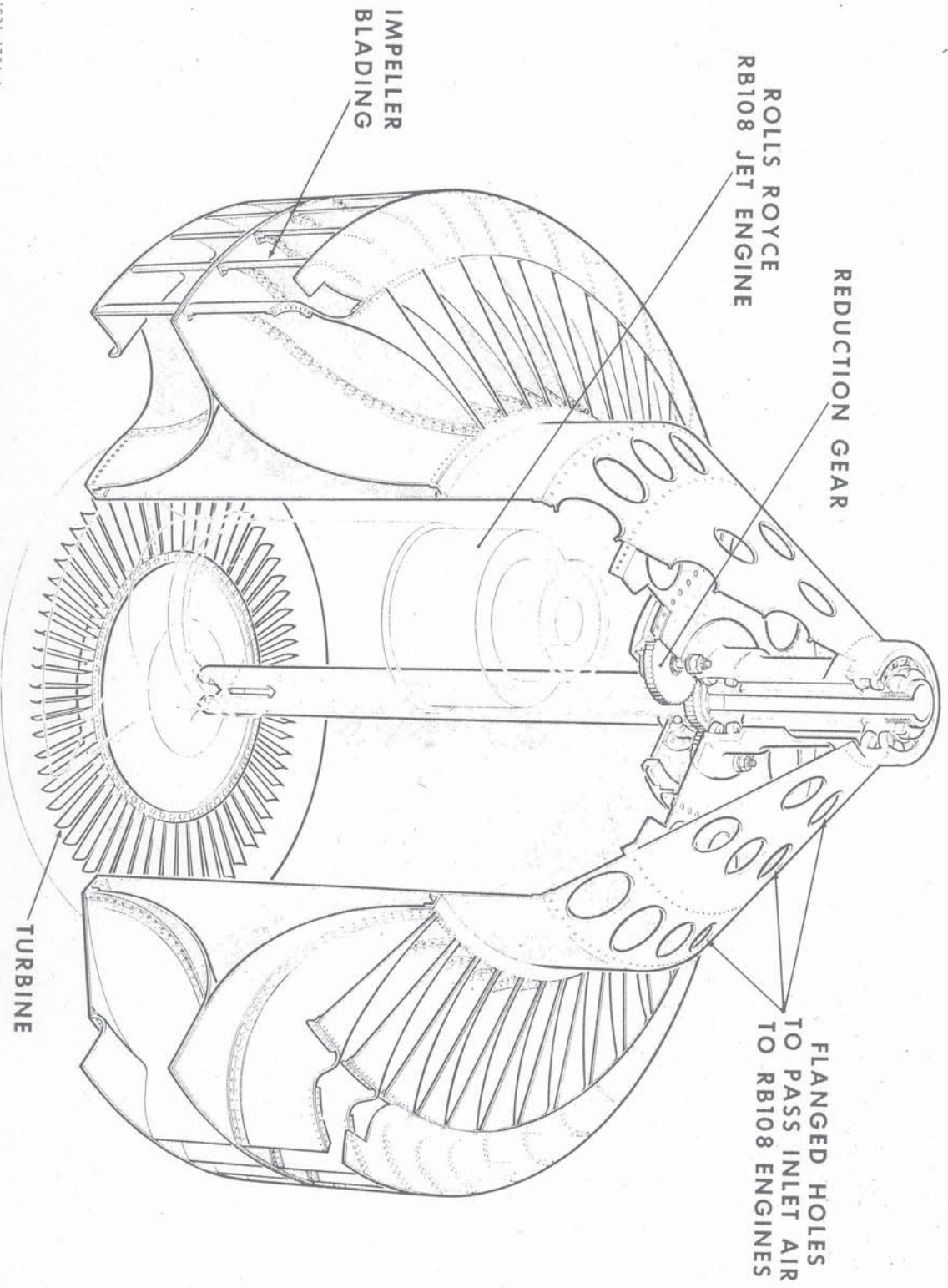
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ROLLS ROYCE
RB108 JET ENGINE

REDUCTION GEAR

FLANGED HOLES
TO PASS INLET AIR
TO RB108 ENGINES

IMPELLER
BLADING

TURBINE

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IMPELLER AND TURBINE ASSEMBLY

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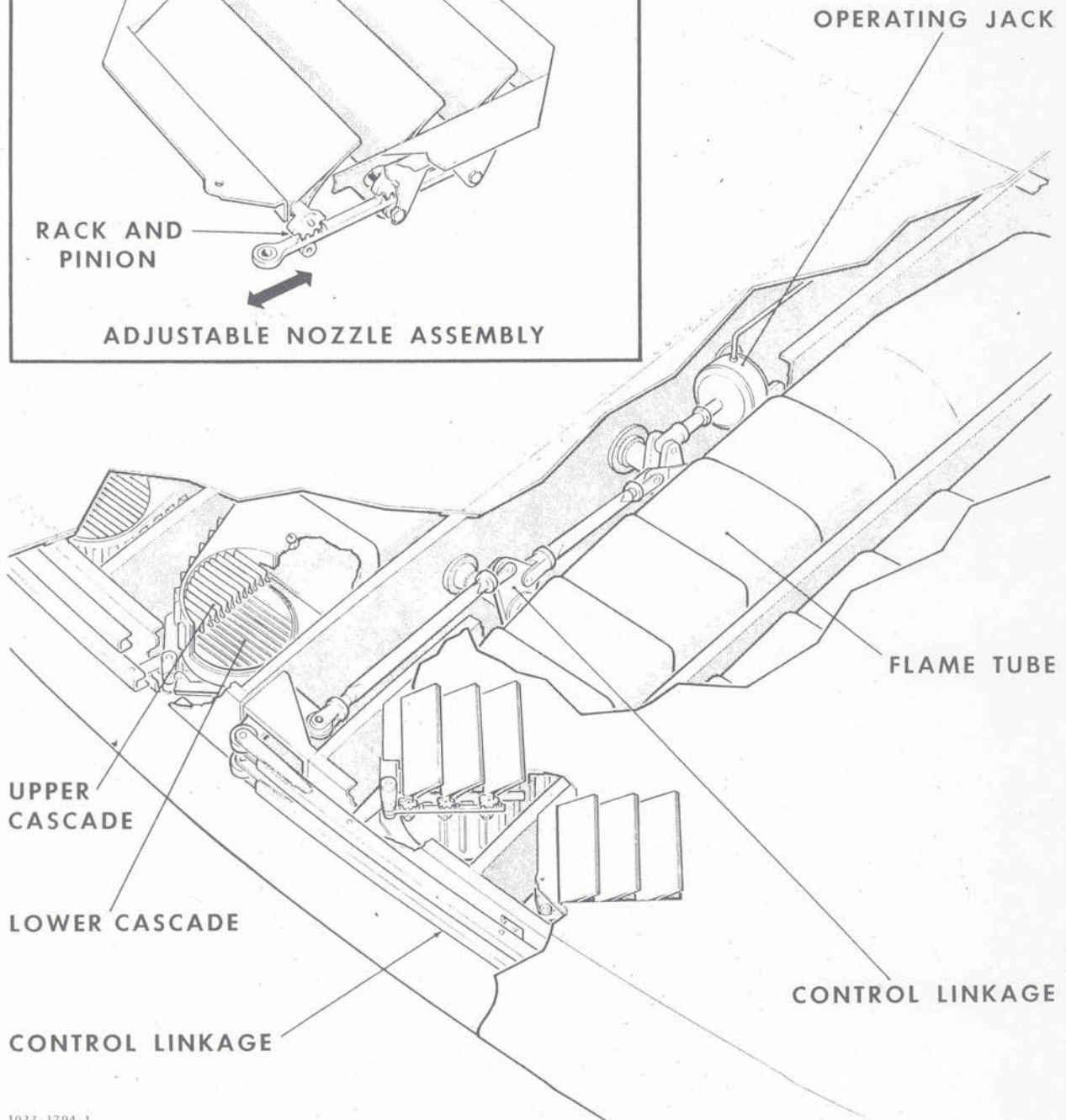
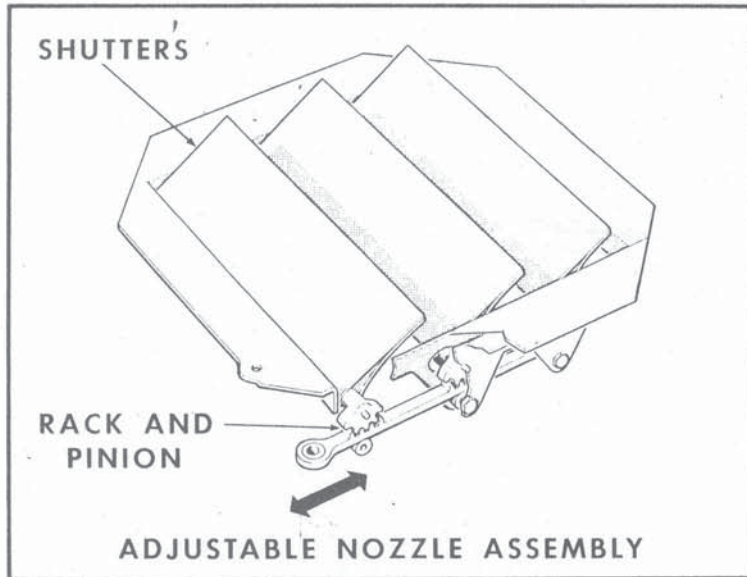
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FLAME TUBE AND FINAL NOZZLE ASSEMBLY

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FORWARD FLIGHT SHUTTERS

CONTROL VALVE ASSEMBLY

IMPELLER

HOVERING SHUTTERS

SELECTOR VALVE

TURBINE

OPERATING JACK
FOR HOVERING SHUTTERS

OPERATING JACK FOR
FORWARD FLIGHT SHUTTERS

TYPICAL ARRANGEMENT OF CONTROL ASSEMBLY

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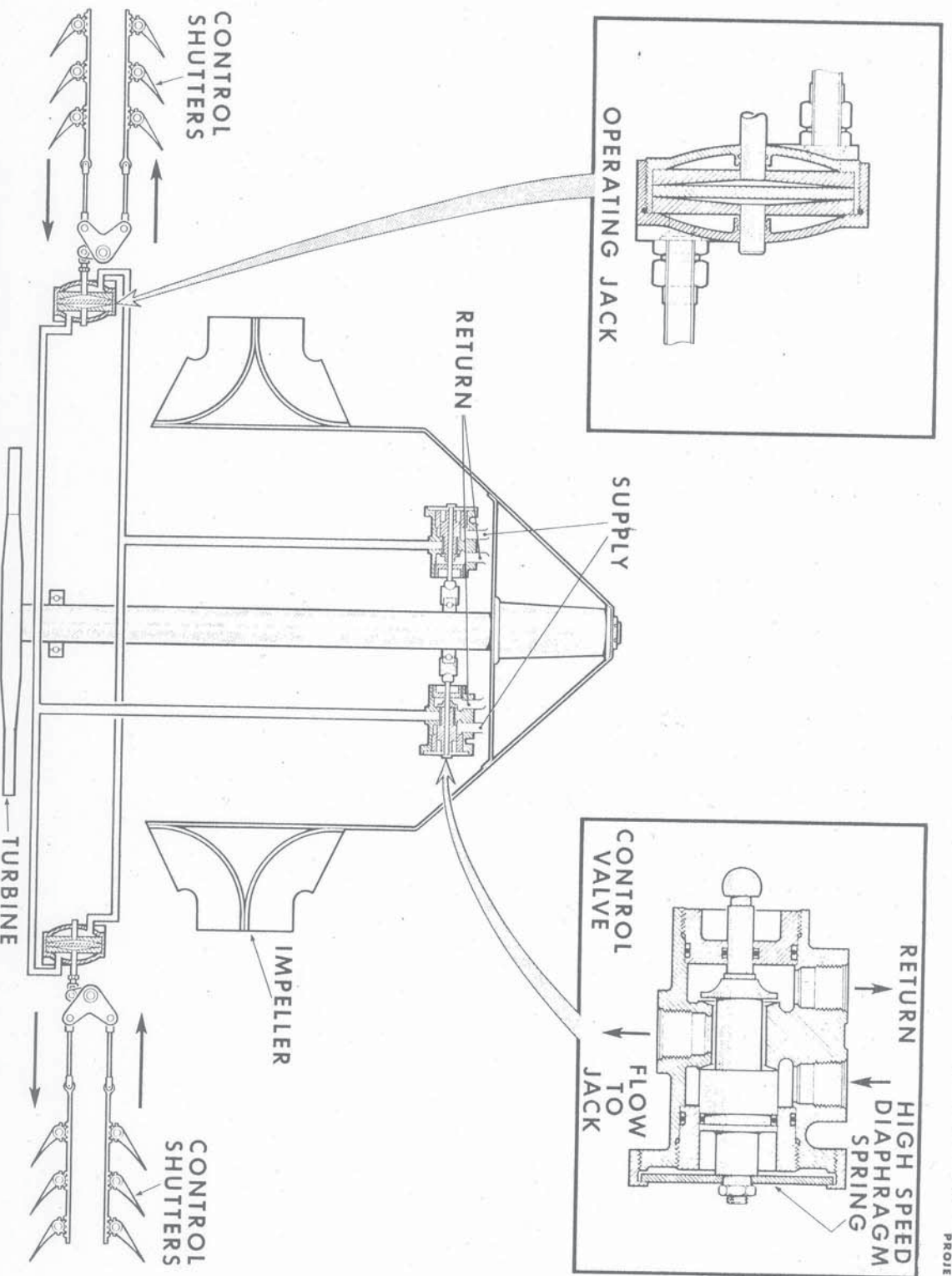
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SCHEMATIC DIAGRAM OF STABILIZER SYSTEM

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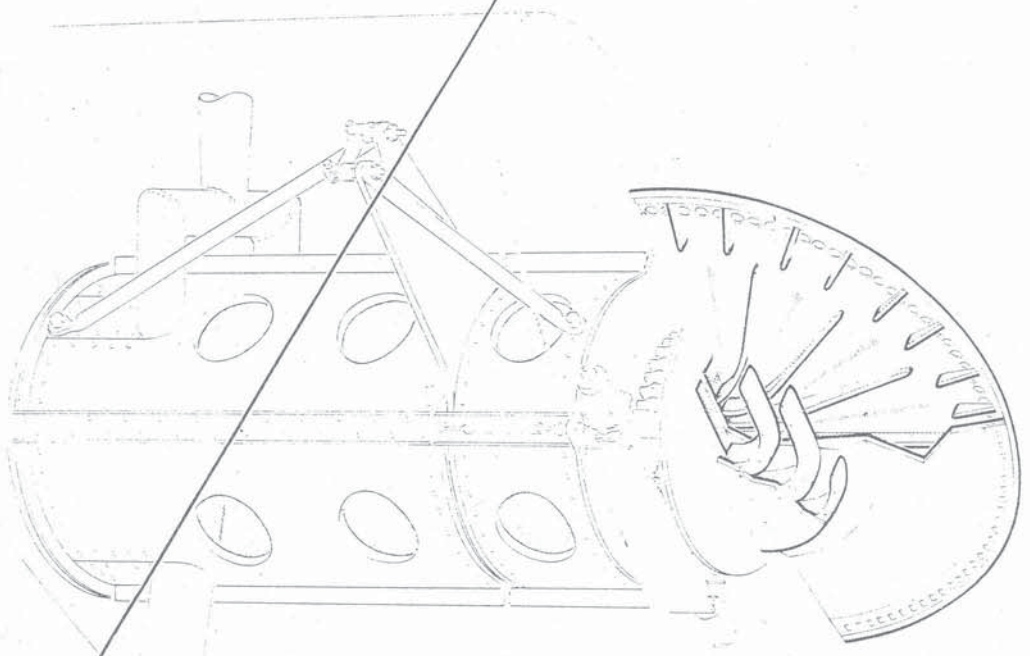
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6TH SCALE SUBSONIC MODEL

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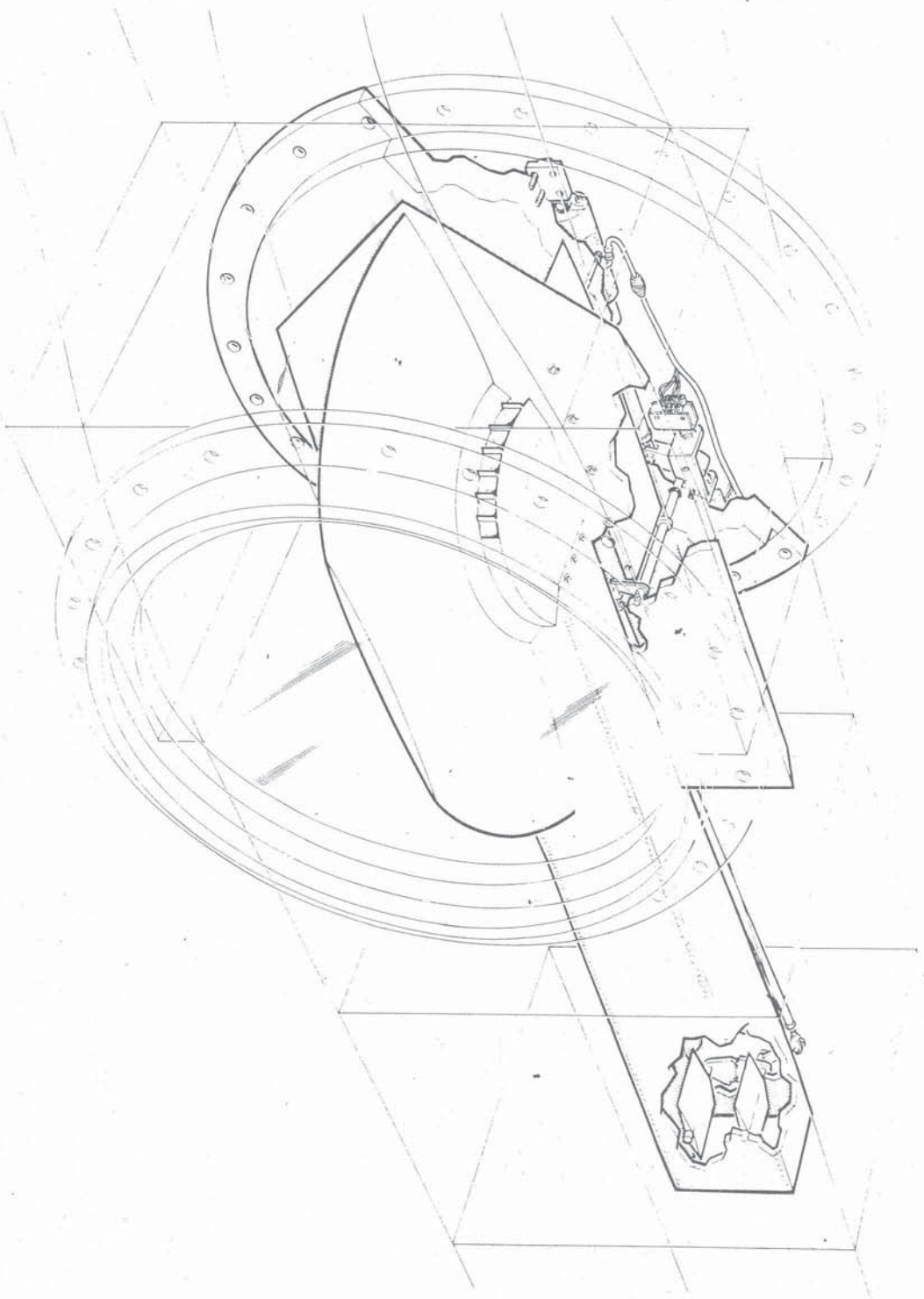
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INTAKE MODEL

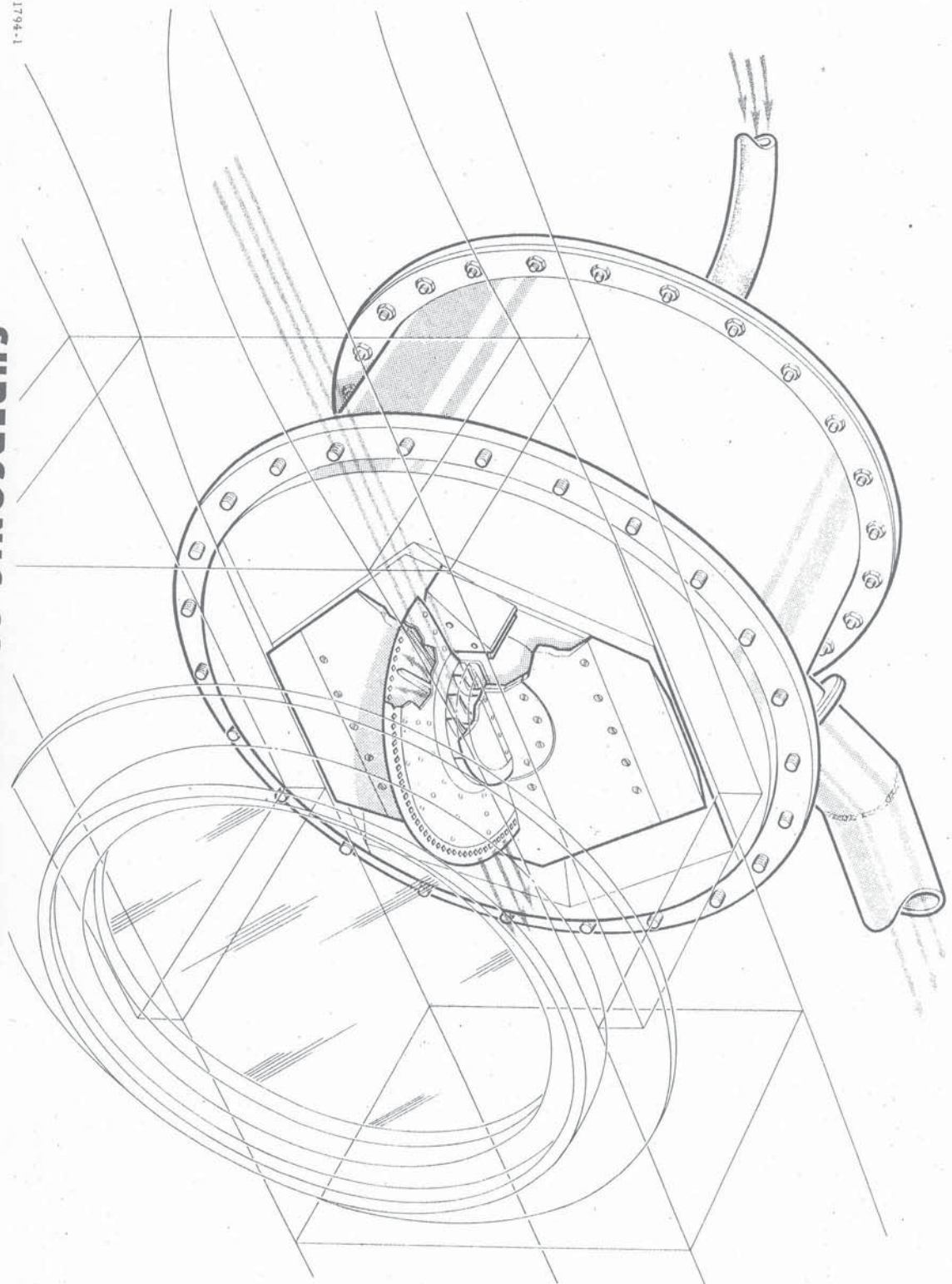
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SUPERSONIC CONTROL MODEL

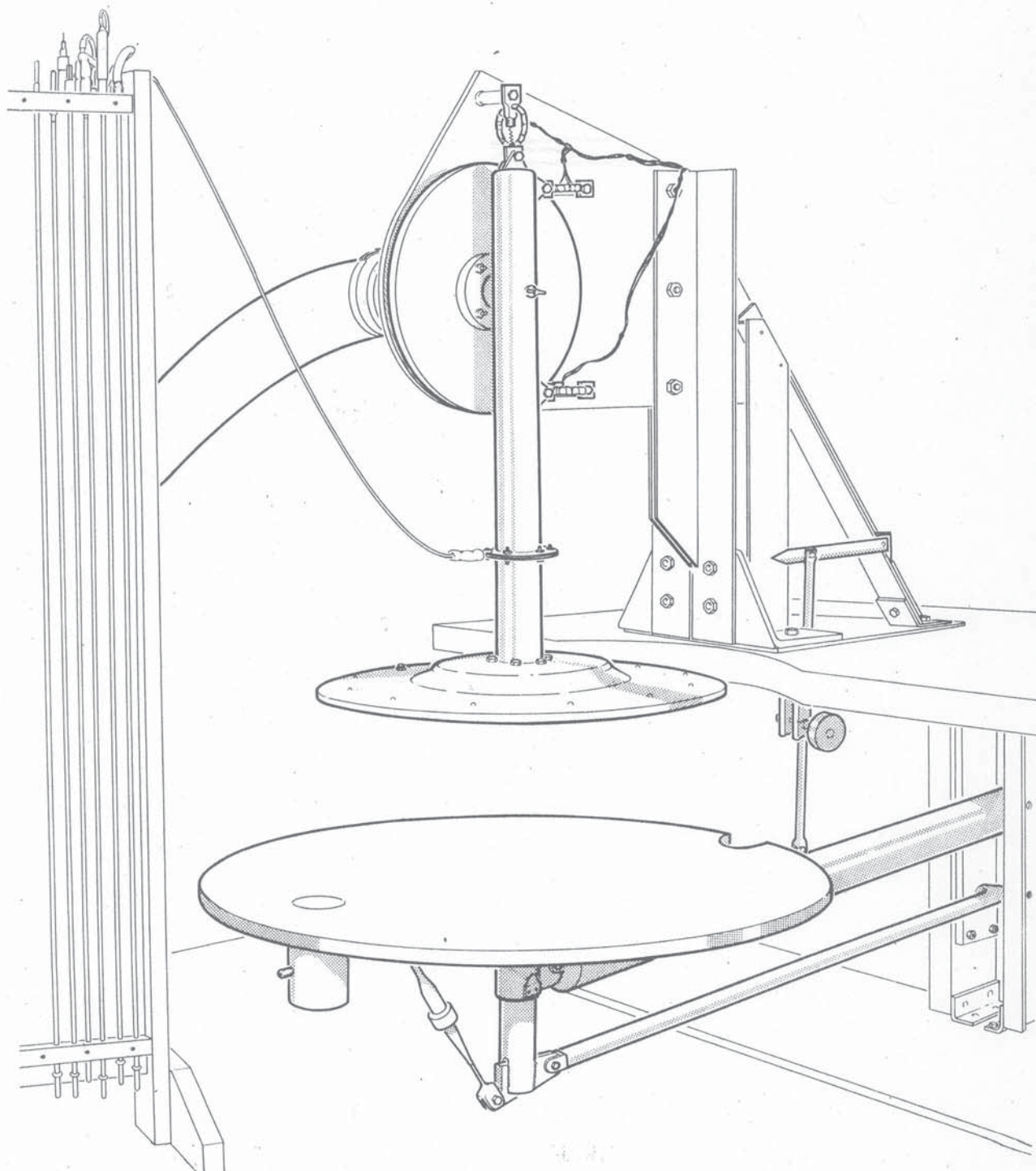
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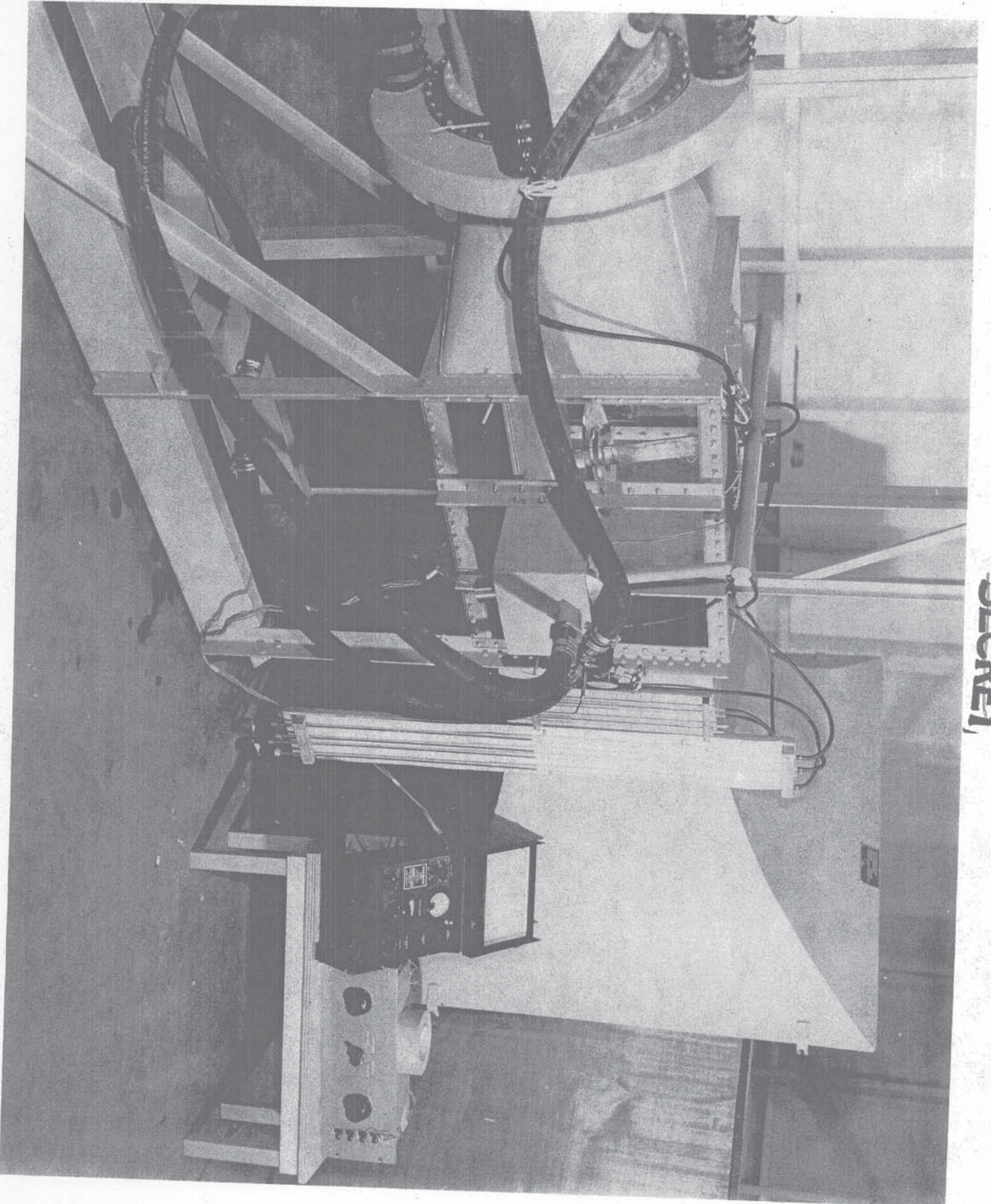
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GROUND EFFECTS MODEL
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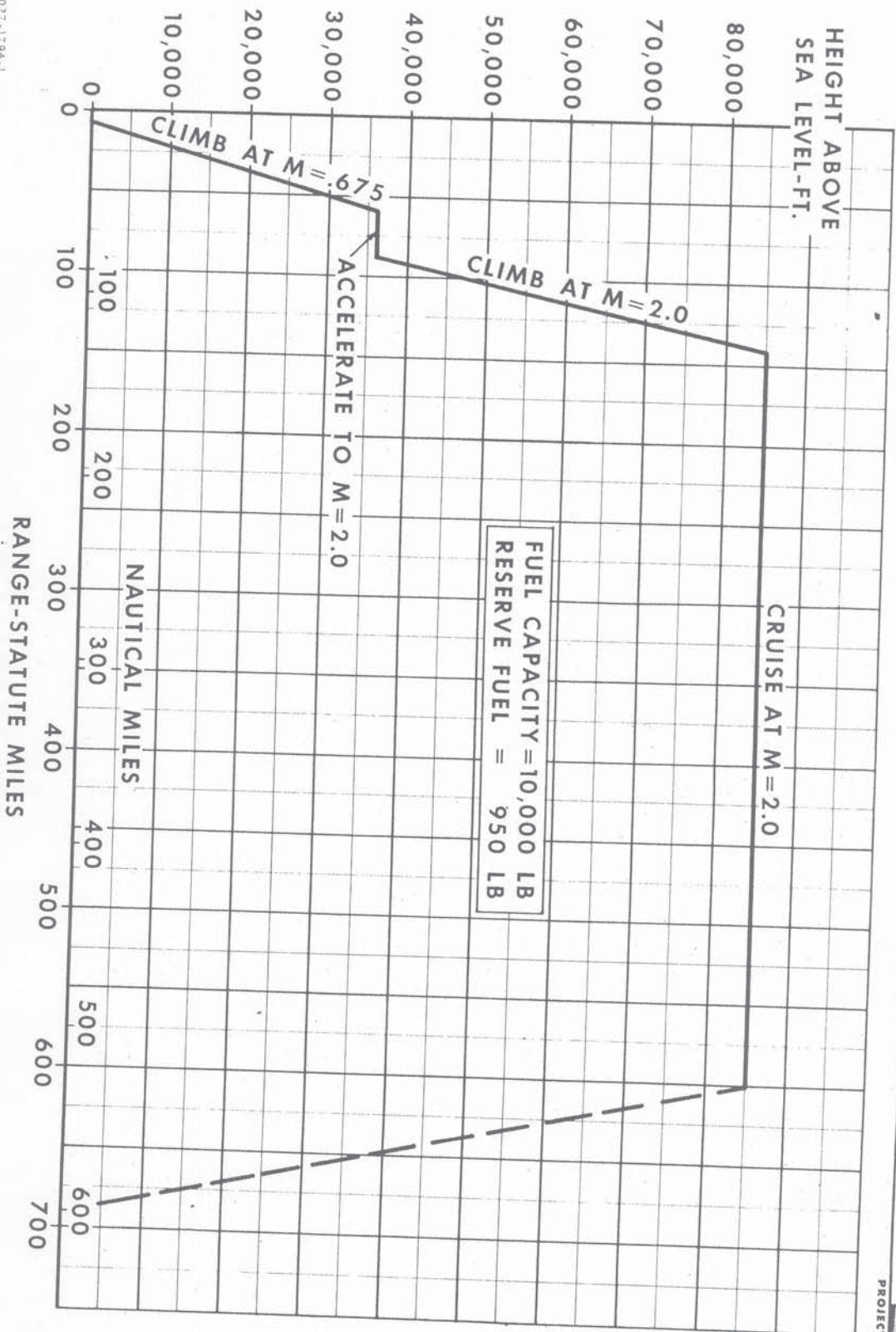
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**4 RB108 DUCTED FAN-RAMJET AIRCRAFT
STILL AIR RANGE**

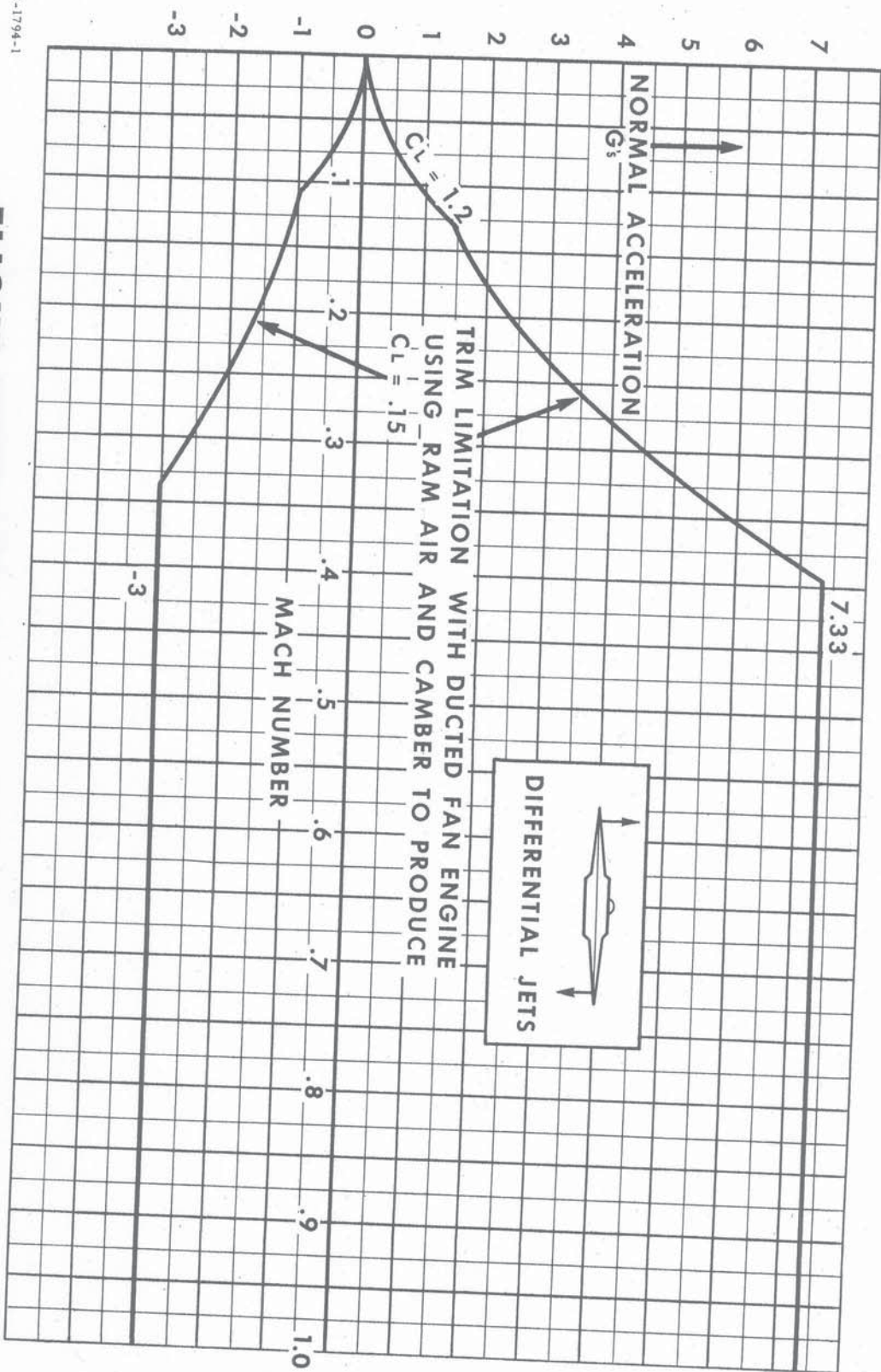
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FLIGHT ENVELOPE OF DUCTED FAN AIRCRAFT USING RAM AIR AT SEA LEVEL

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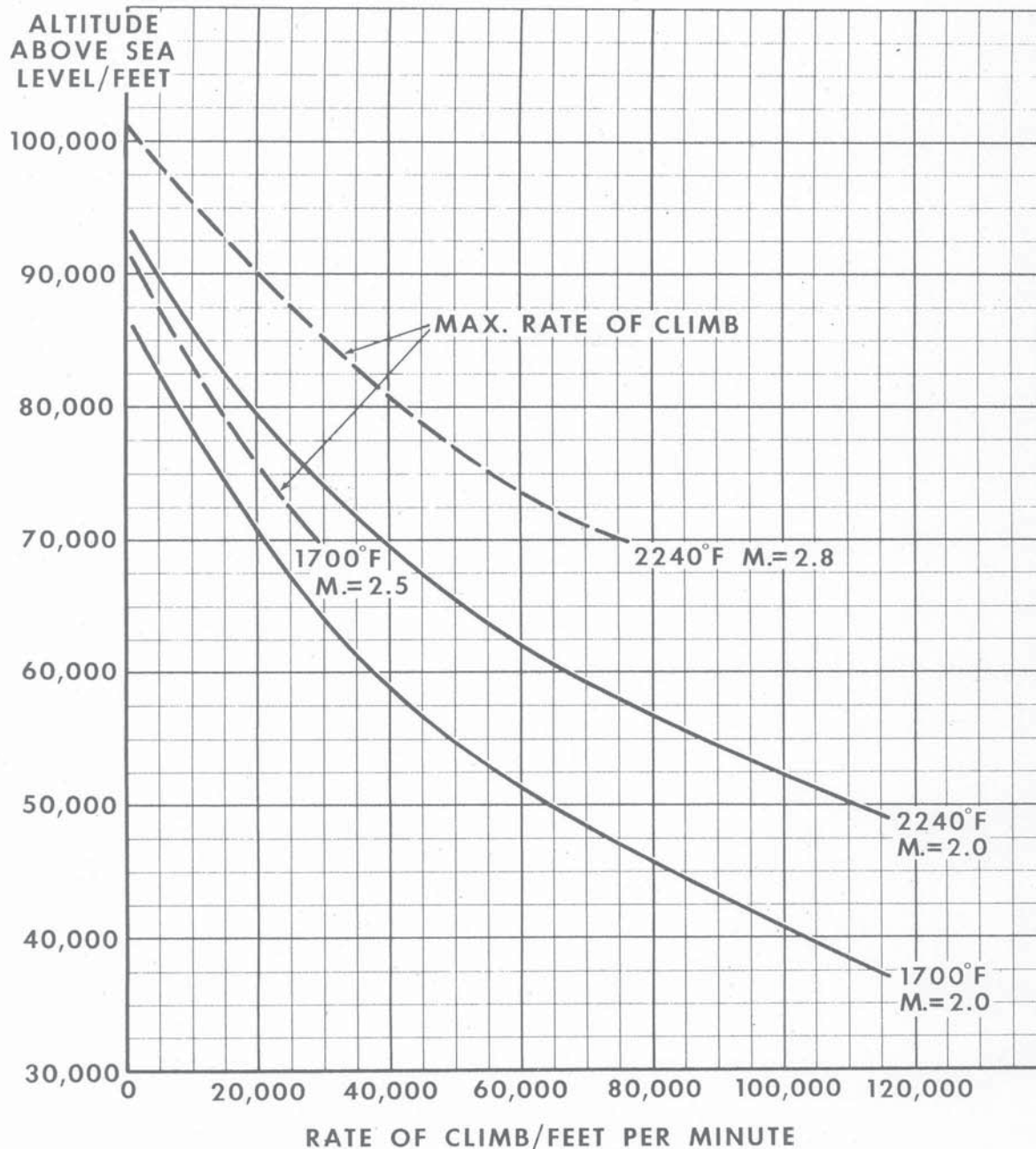
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**4 RB 108 DUCTED FAN RAMJET AIRCRAFT
RATE OF CLIMB VS ALTITUDE**

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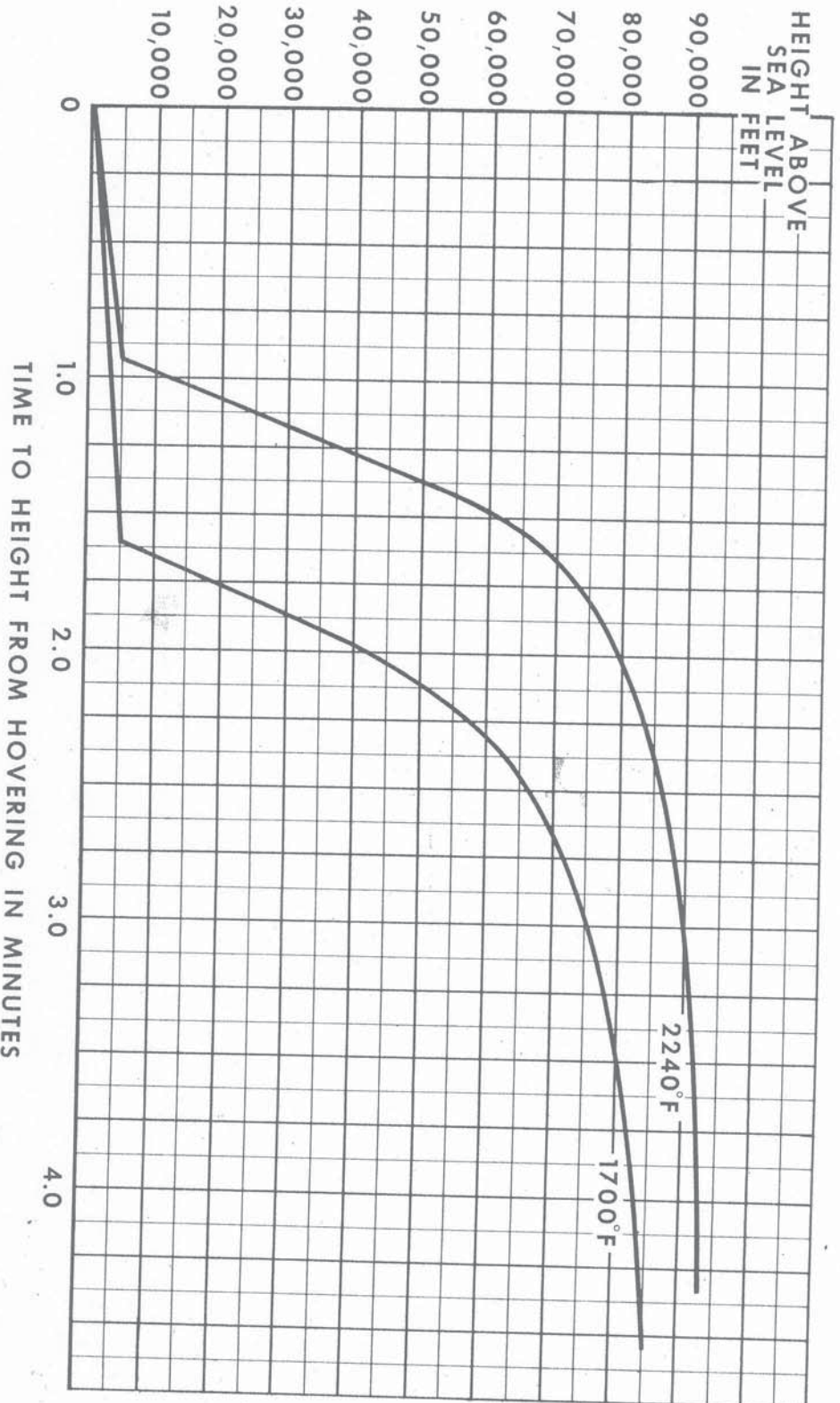
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**4RB108 DUCTED FAN RAMJET
AIRCRAFT TIME TO HEIGHT AND M=2.0
FROM HOVERING AT SEA LEVEL**

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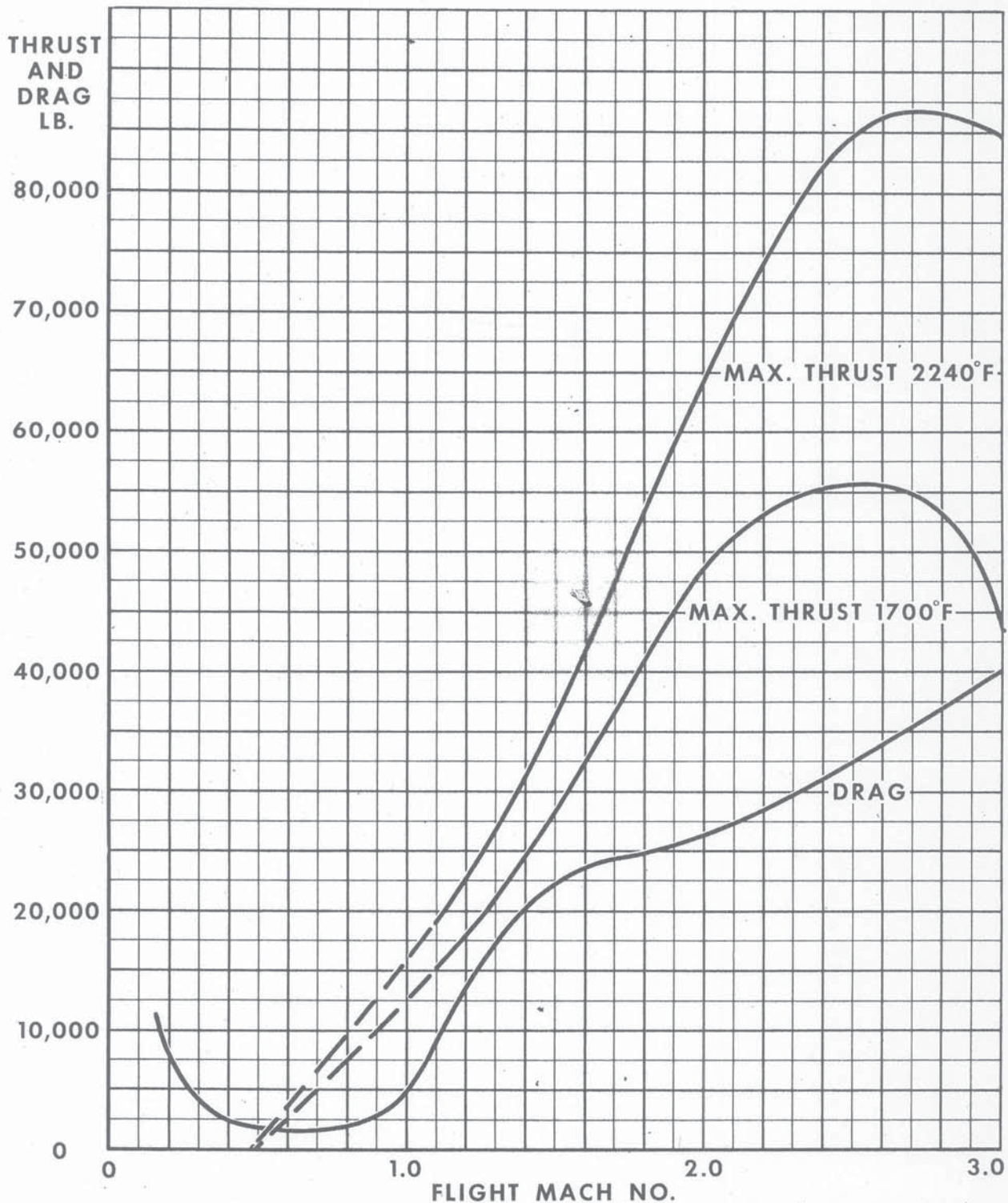
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THRUST AND DRAG VS. M. AT 36,000 FT.

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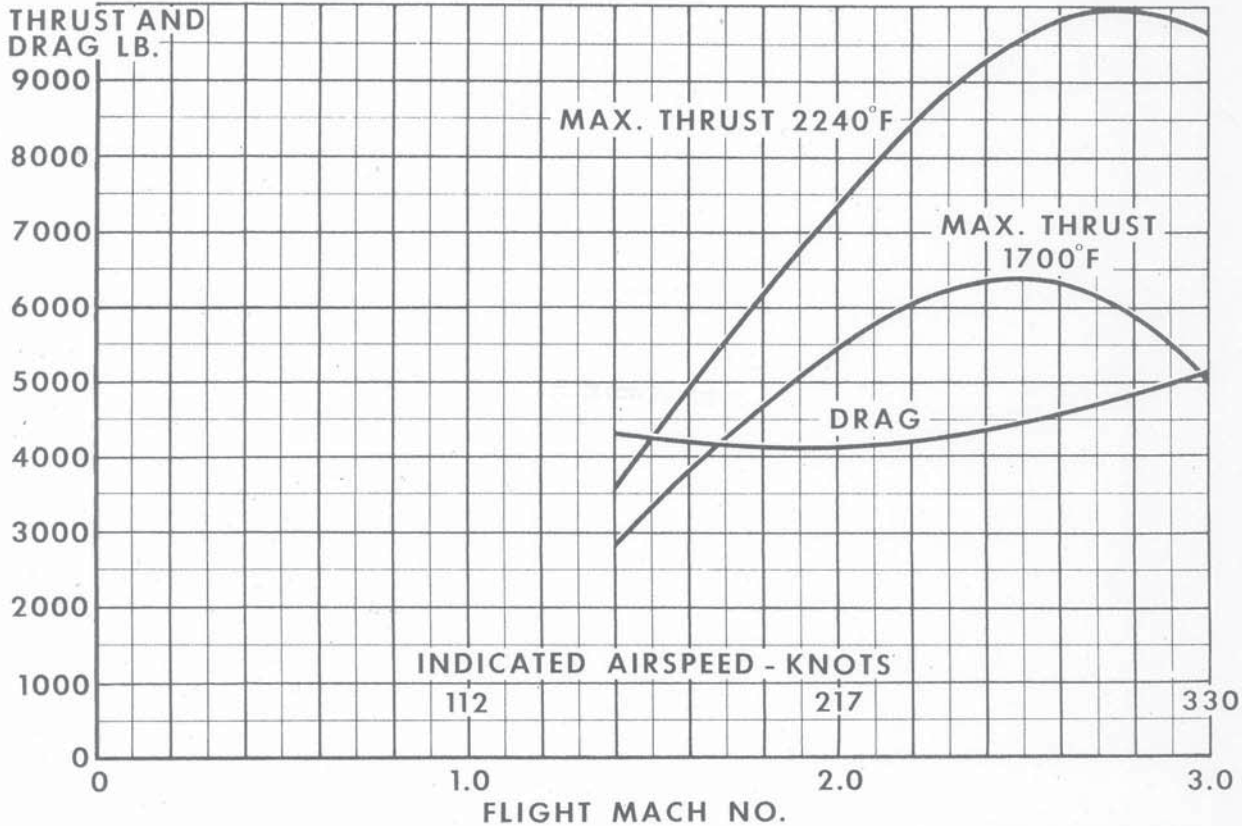
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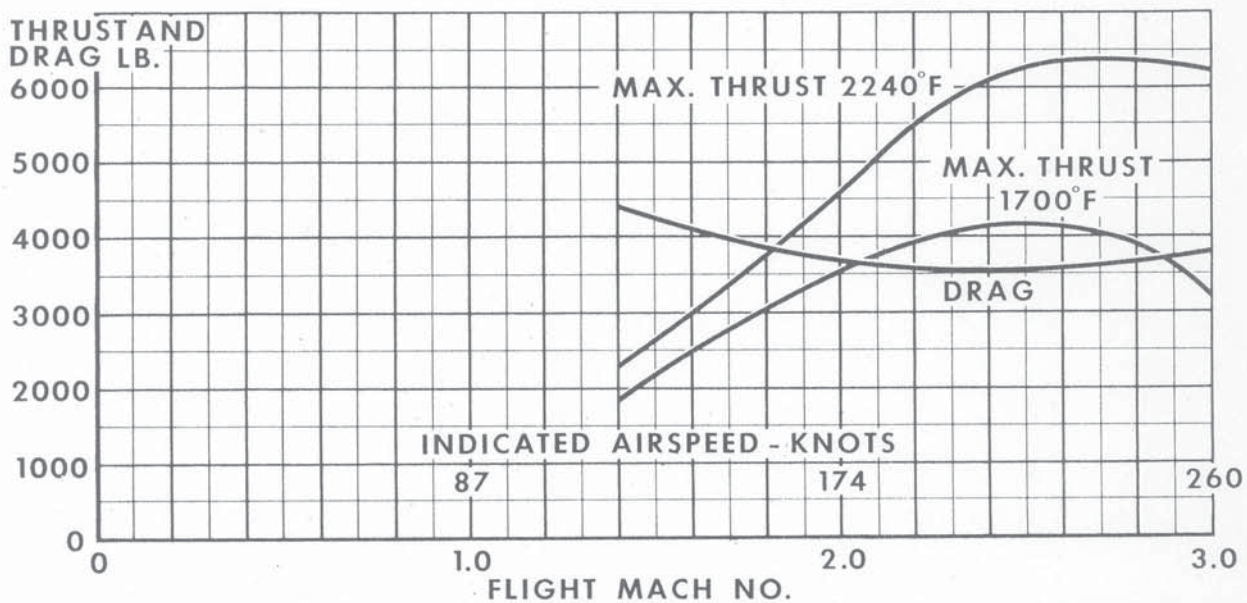
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THRUST AND DRAG VS. M. AT 80,000 FT.



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THRUST AND DRAG VS. M. AT 90,000 FT.

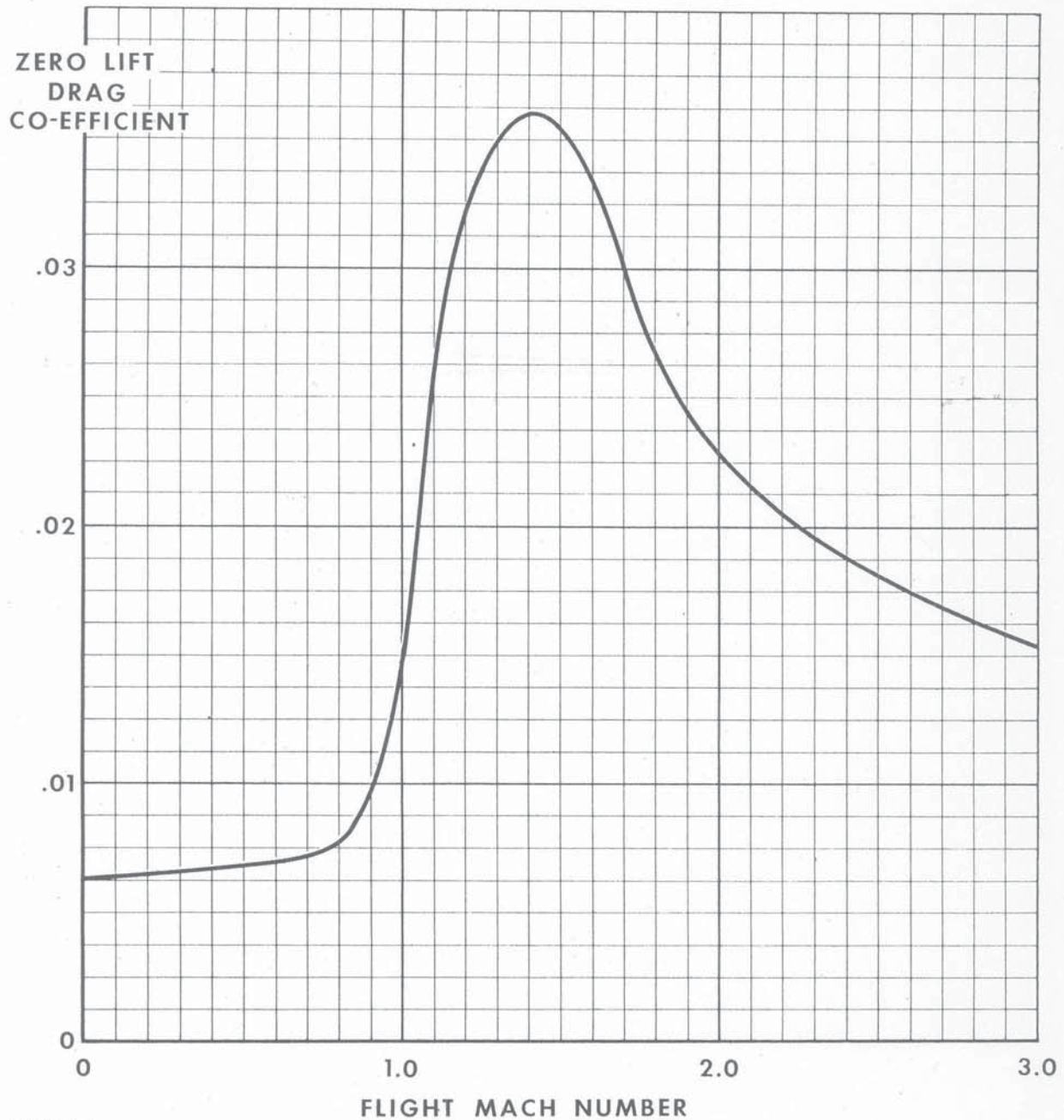
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**DUCTED FAN RAMJET AIRCRAFT
ZERO-LIFT DRAG COEFFICIENT VS.
FLIGHT MACH NUMBER**

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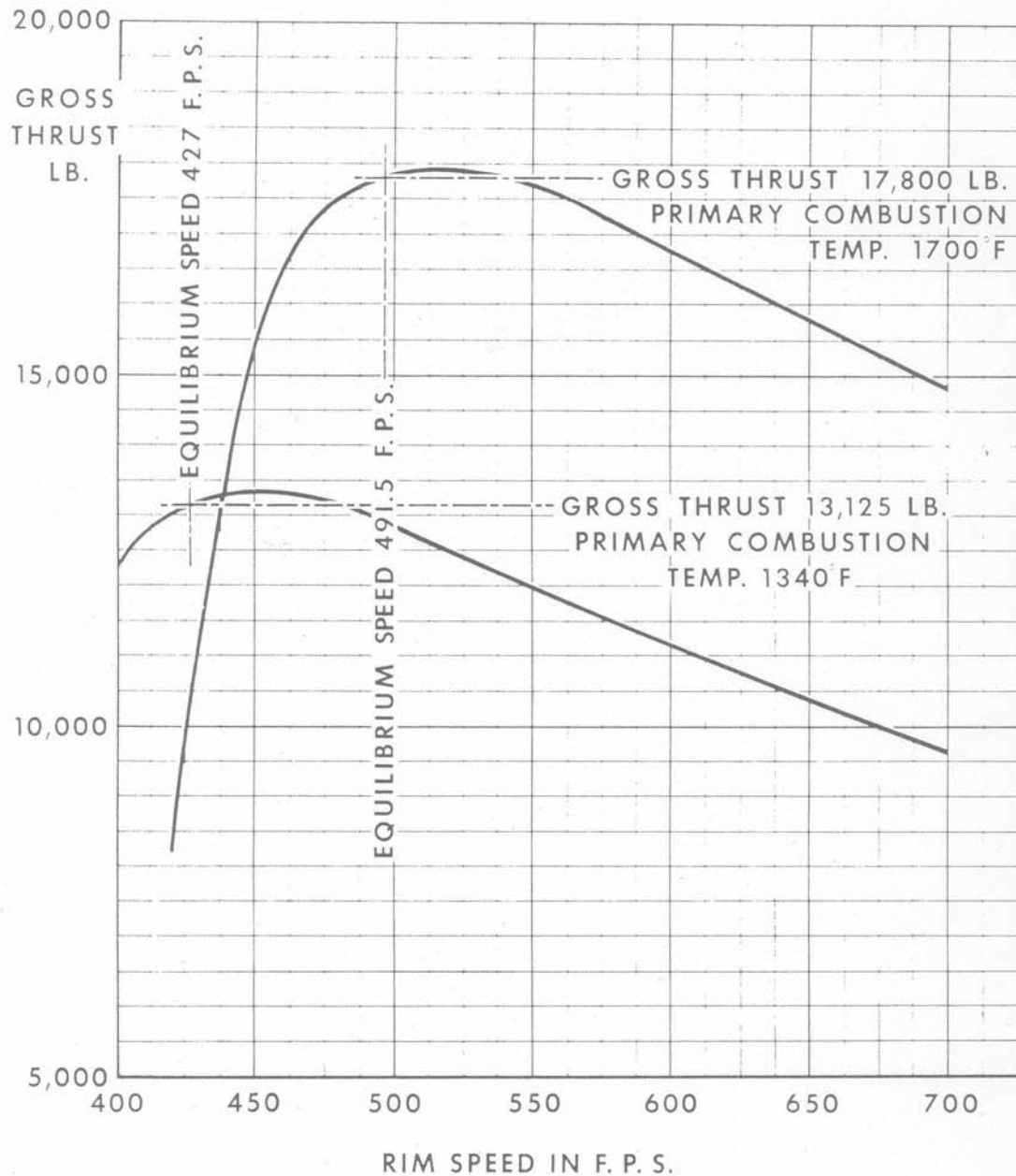
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**STATIC THRUST VS. RIM SPEED
(NO COMBUSTION IN SECONDARY FLOW)**

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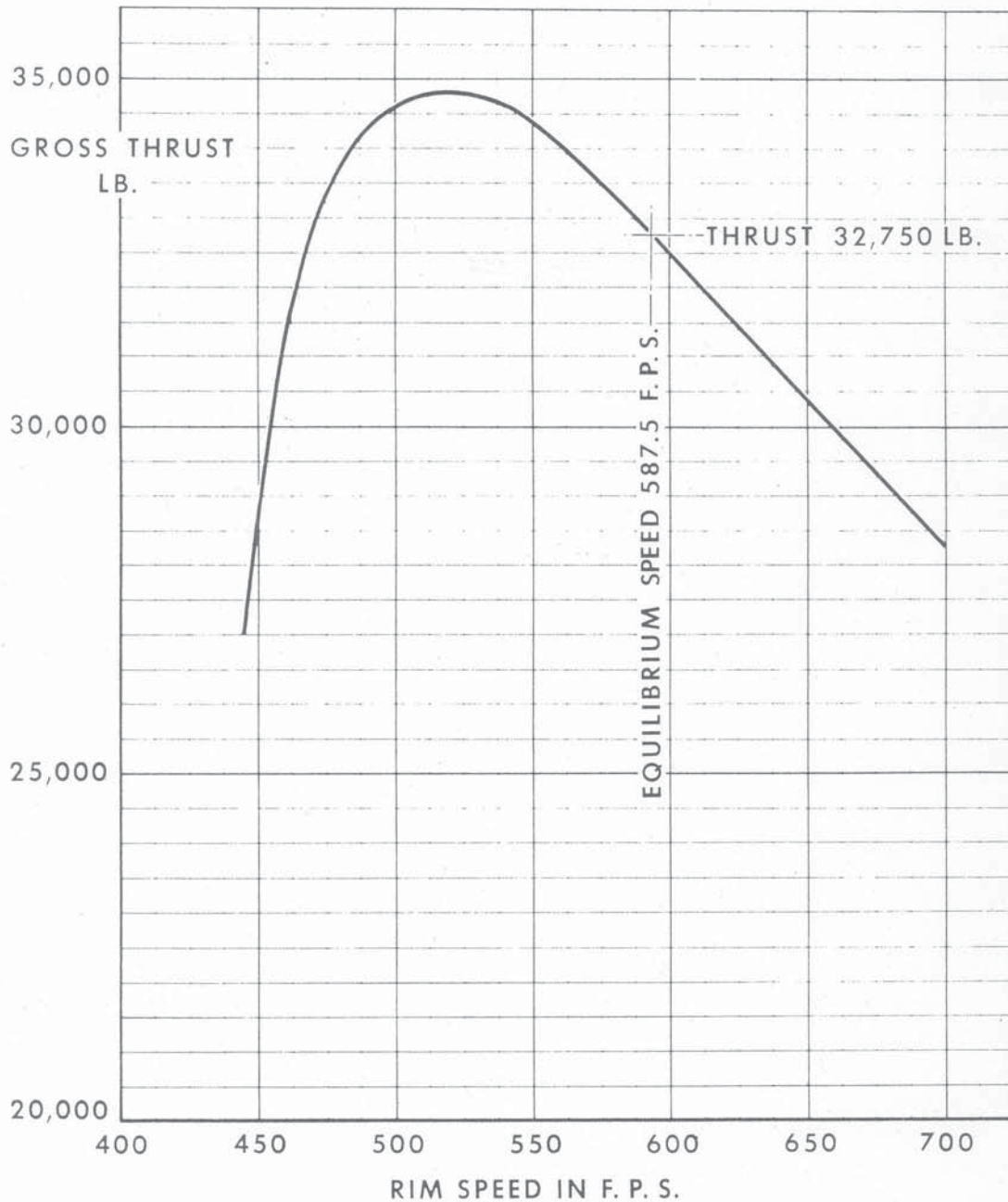
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AND THRUST LIMITED



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**STATIC THRUST VS. RIM SPEED
(COMBUSTION TO 1200°K IN SECONDARY FLOW)**

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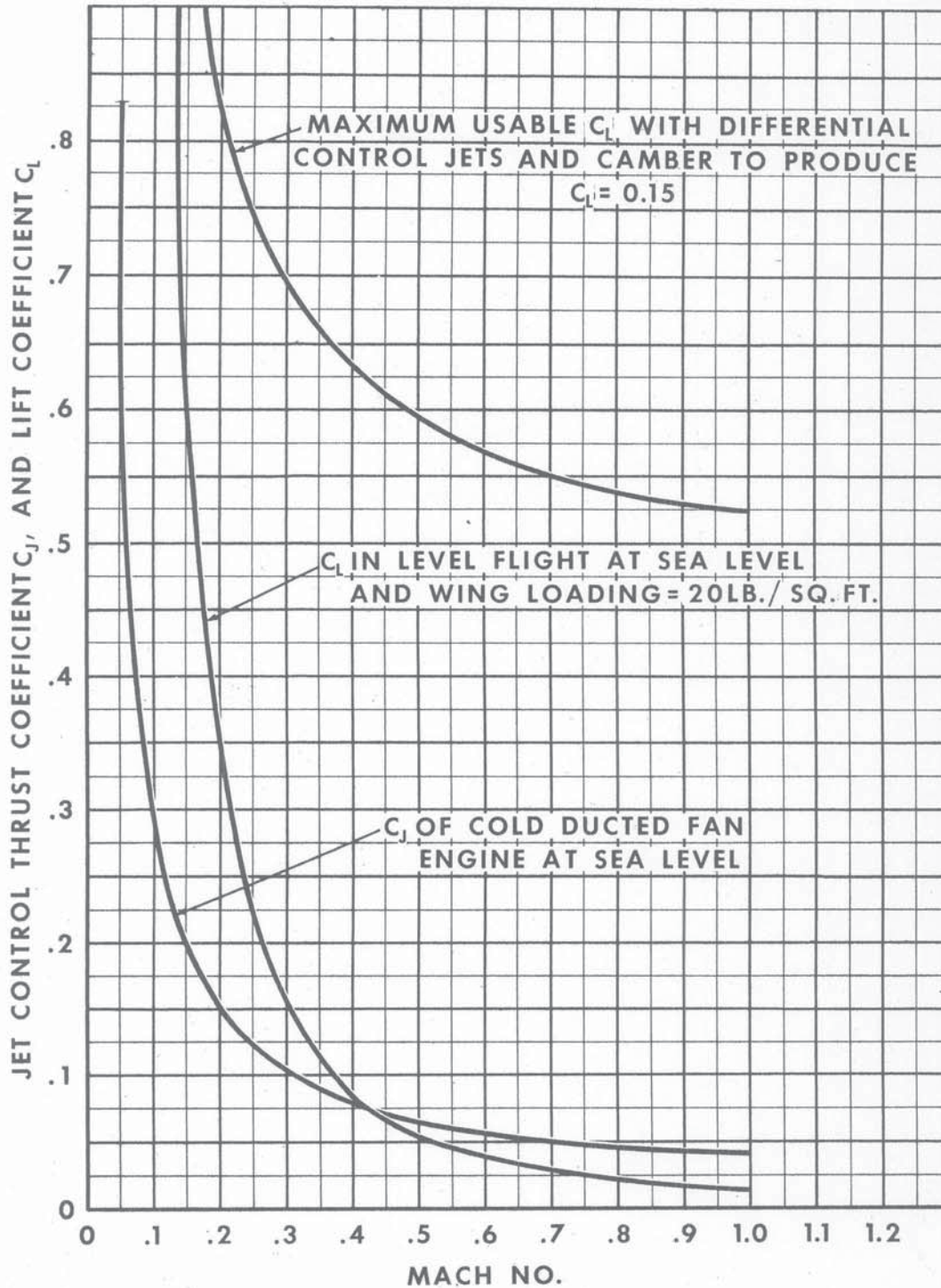
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AVRO AIRCRAFT LIMITED



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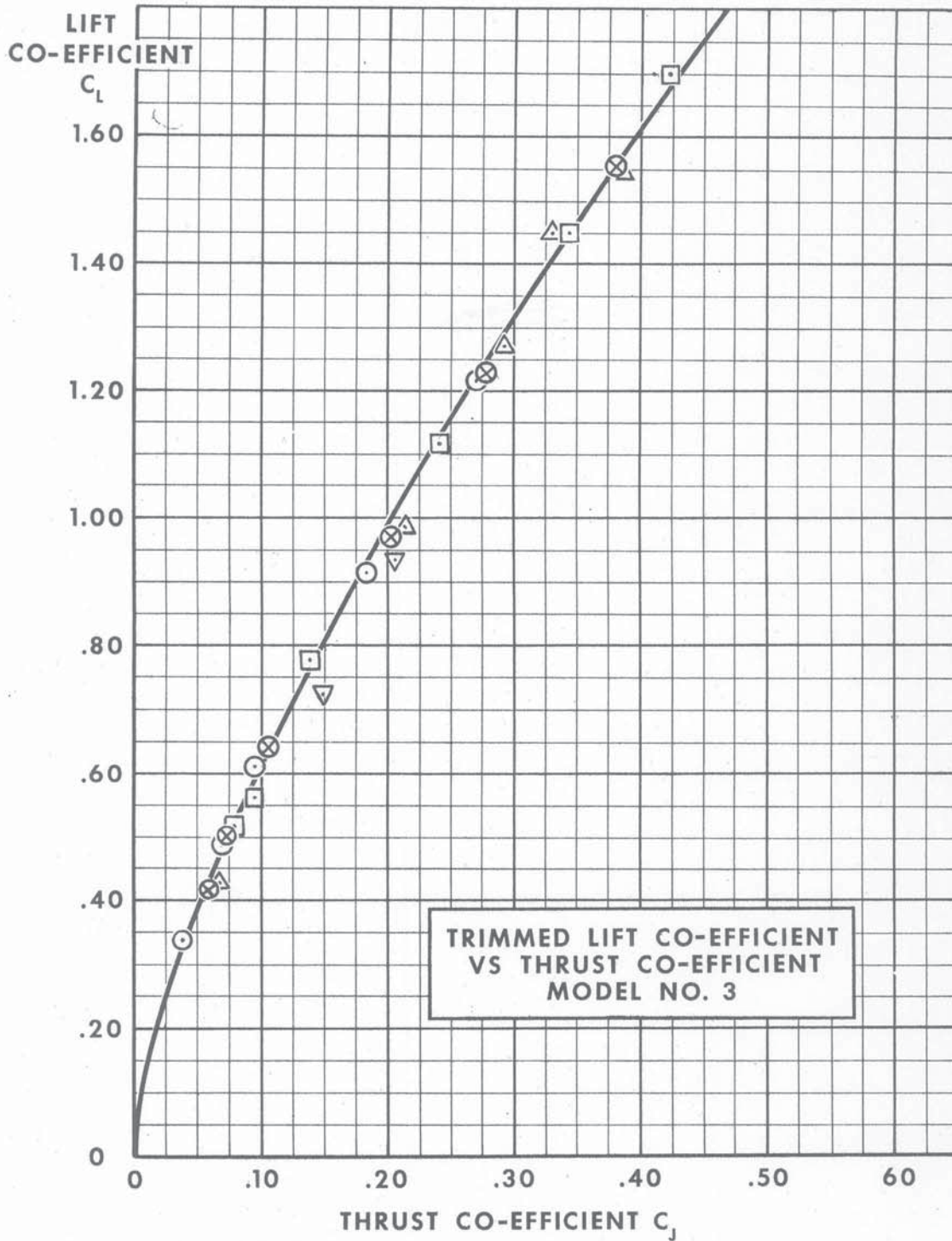
LIFT AND THRUST CHARACTERISTICS OF DUCTED FAN AIRCRAFT AT SEA LEVEL

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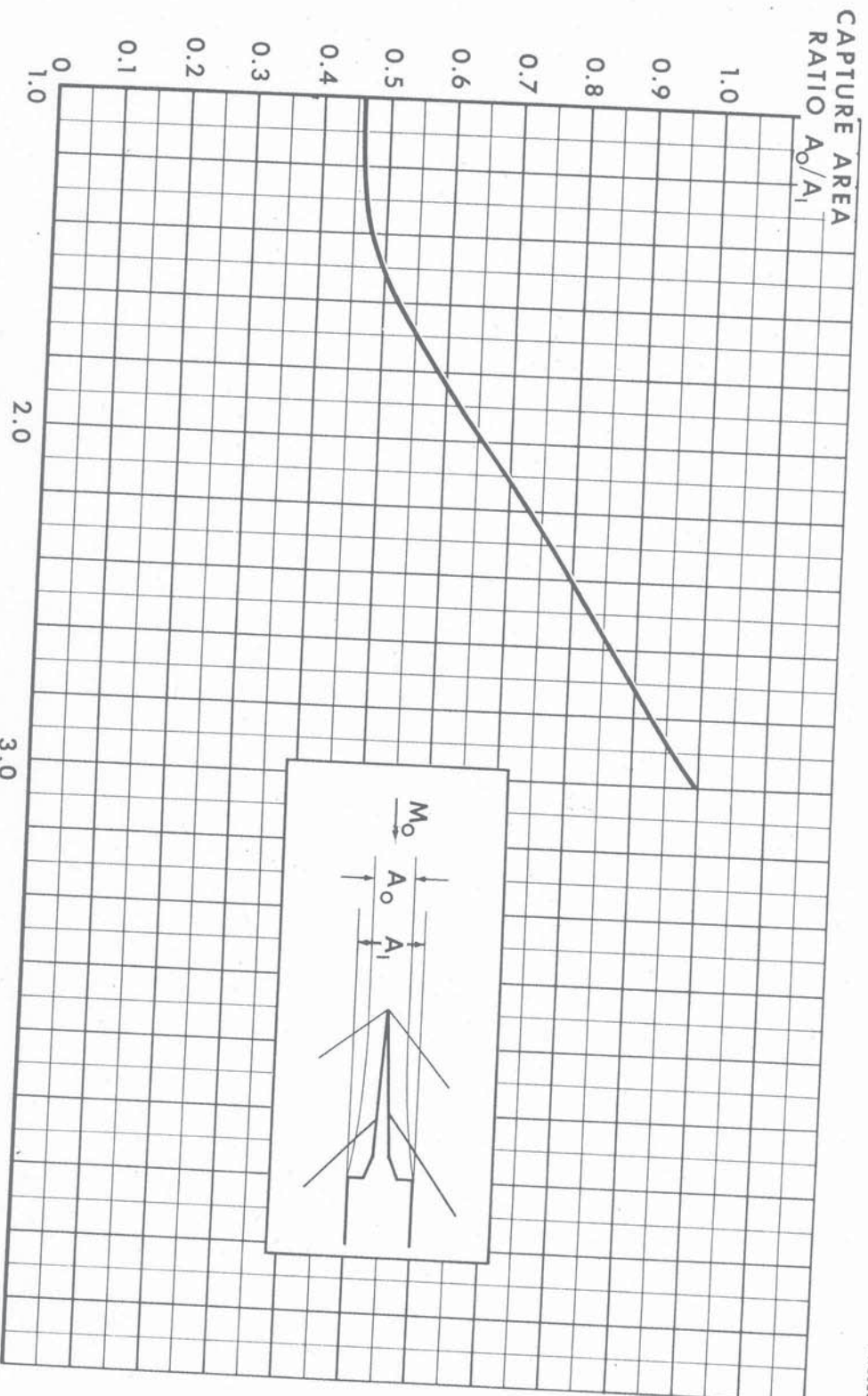
CONTROL EFFECTIVENESS

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**DUCTED FAN RAMJET AIRCRAFT
CAPTURE AREA RATIO VS M.**

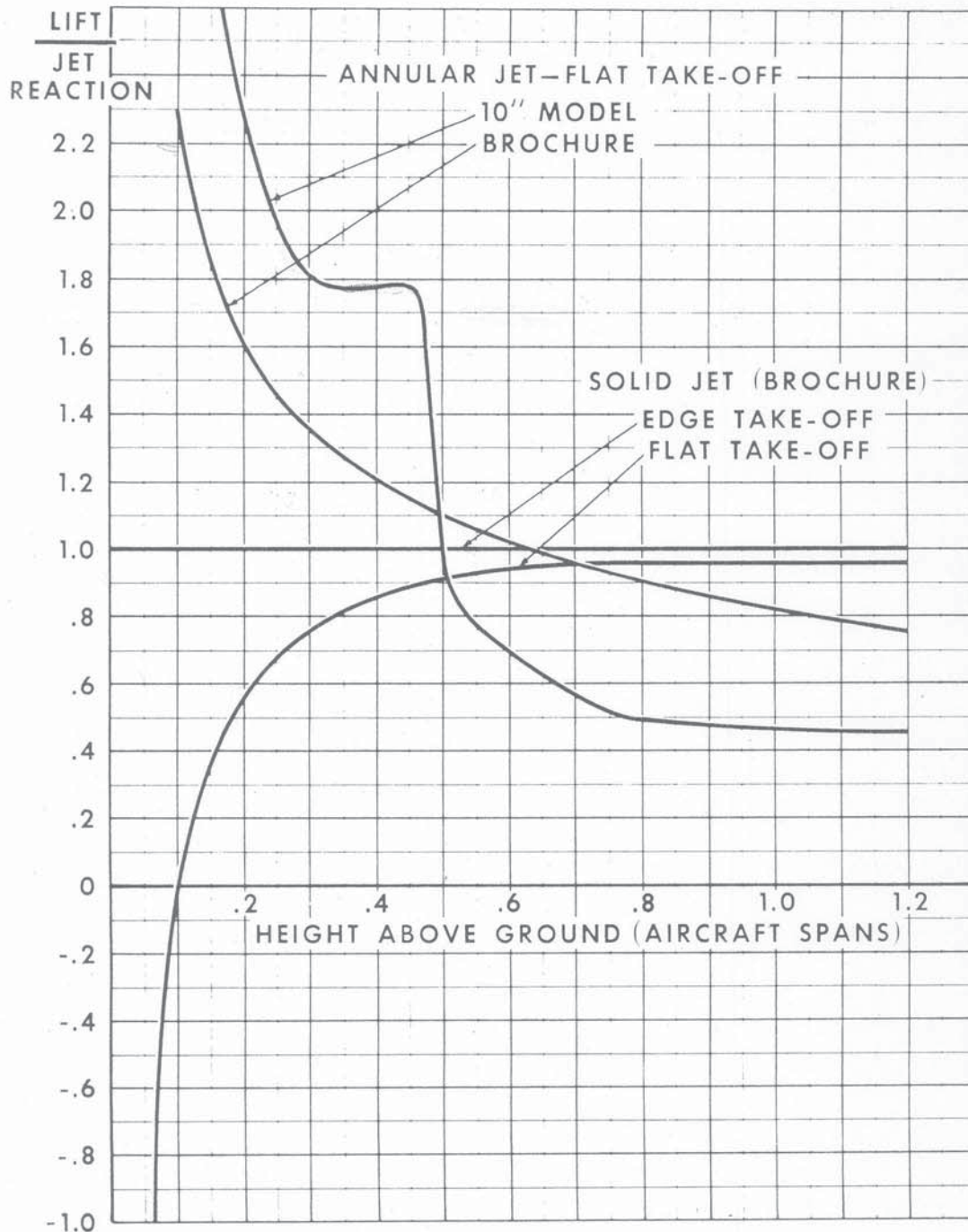
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COMPARISON OF GROUND EFFECT CURVES

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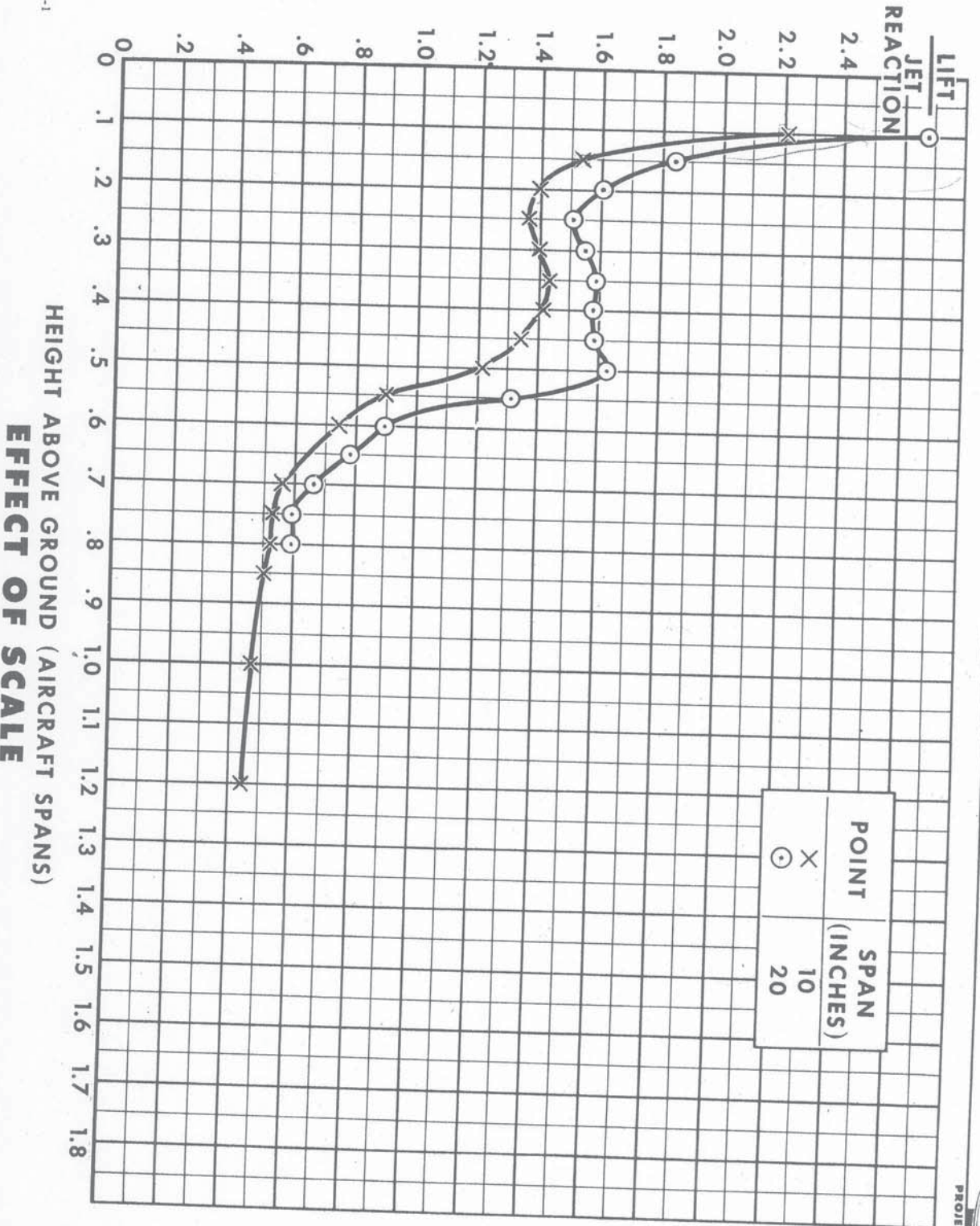
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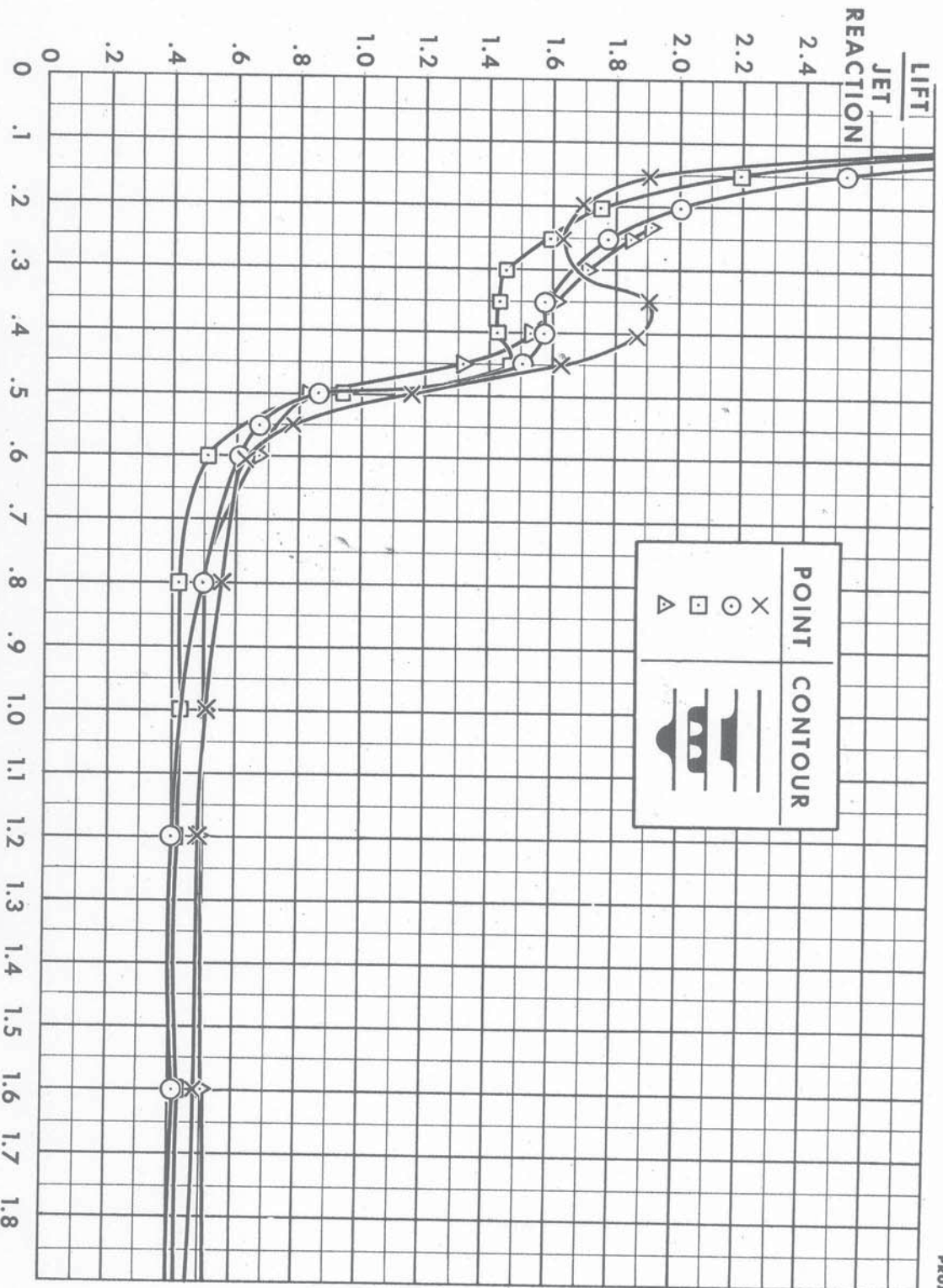
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EFFECT OF LOWER SURFACE CONTOUR

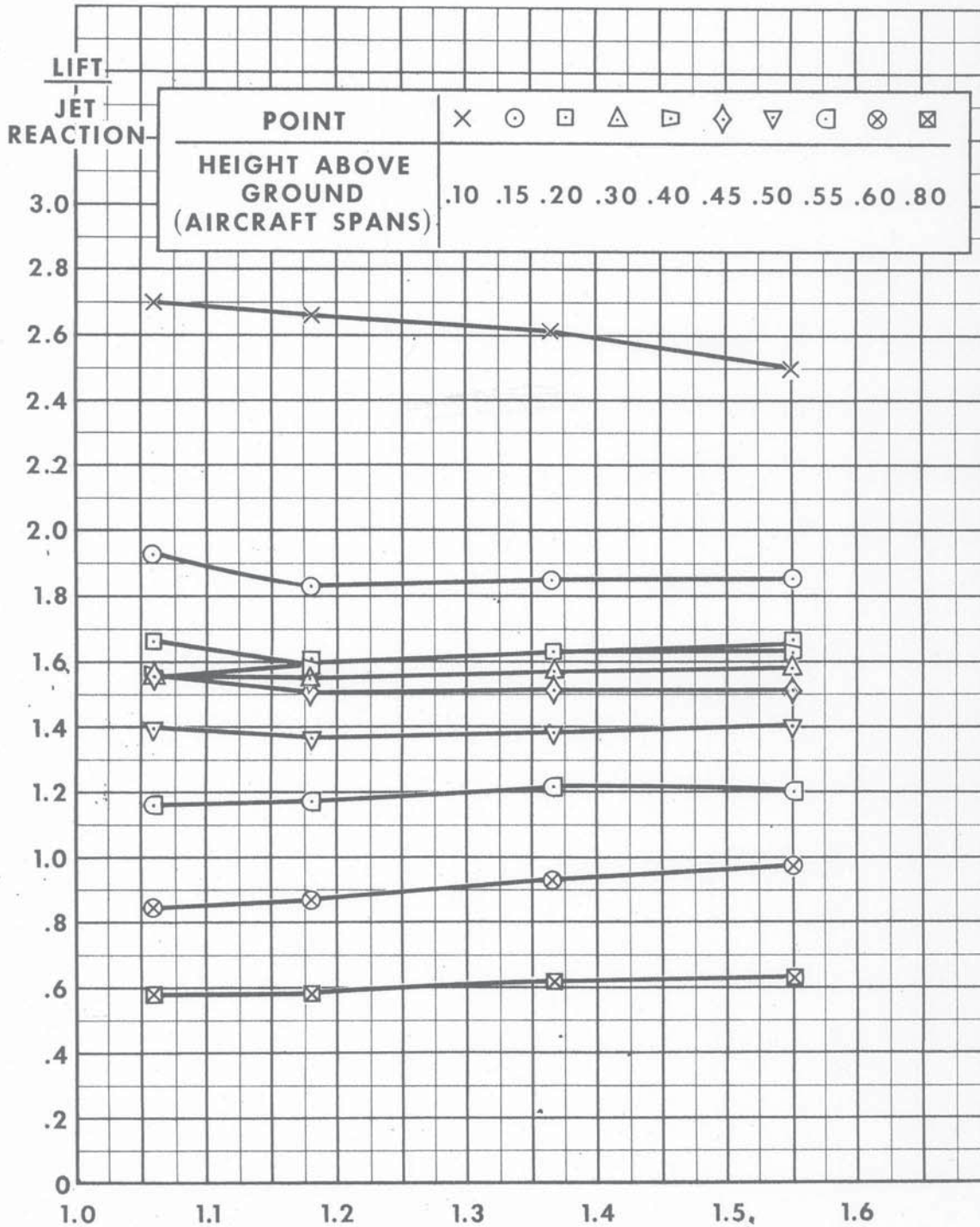
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EFFECT OF NOZZLE PRESSURE RATIO

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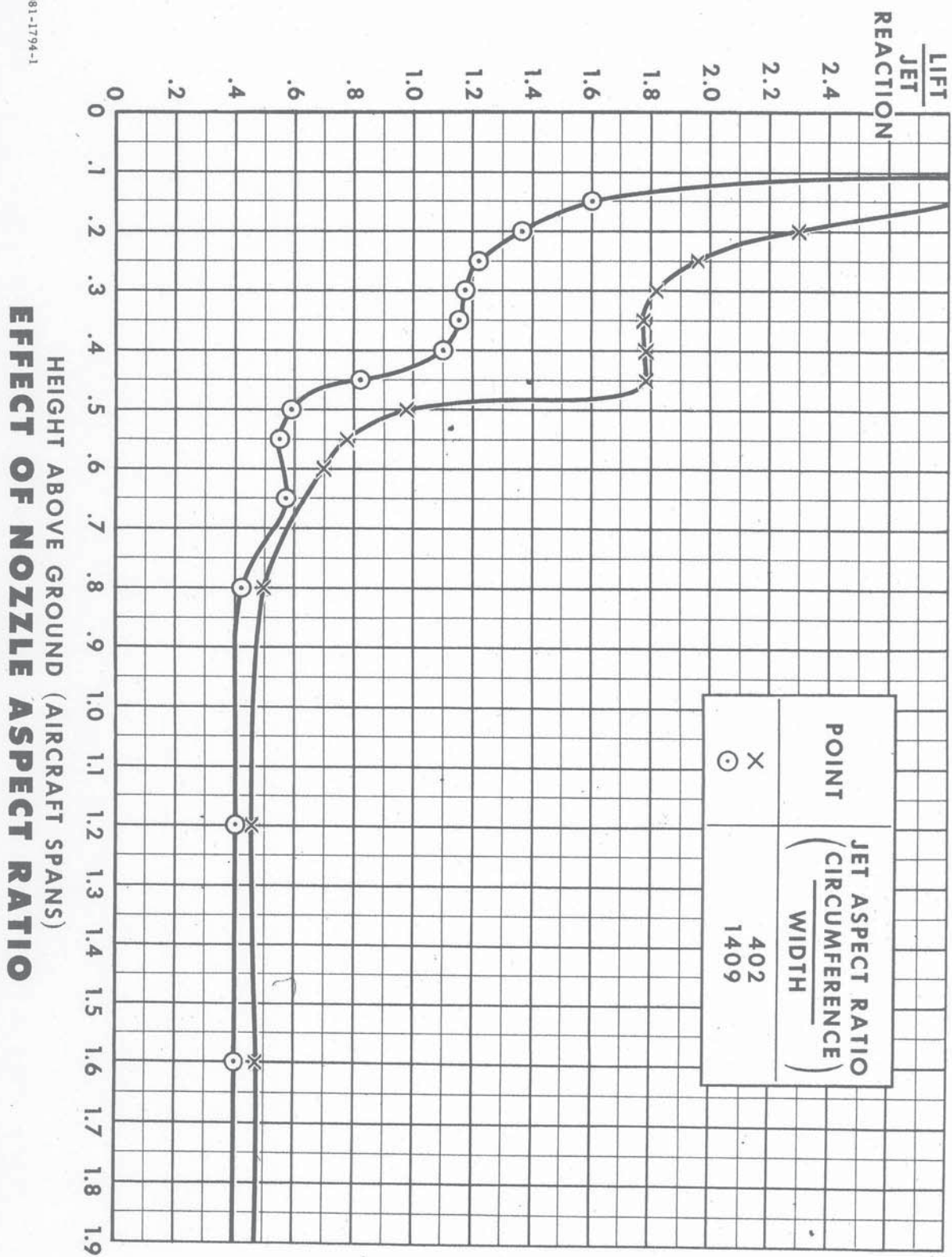
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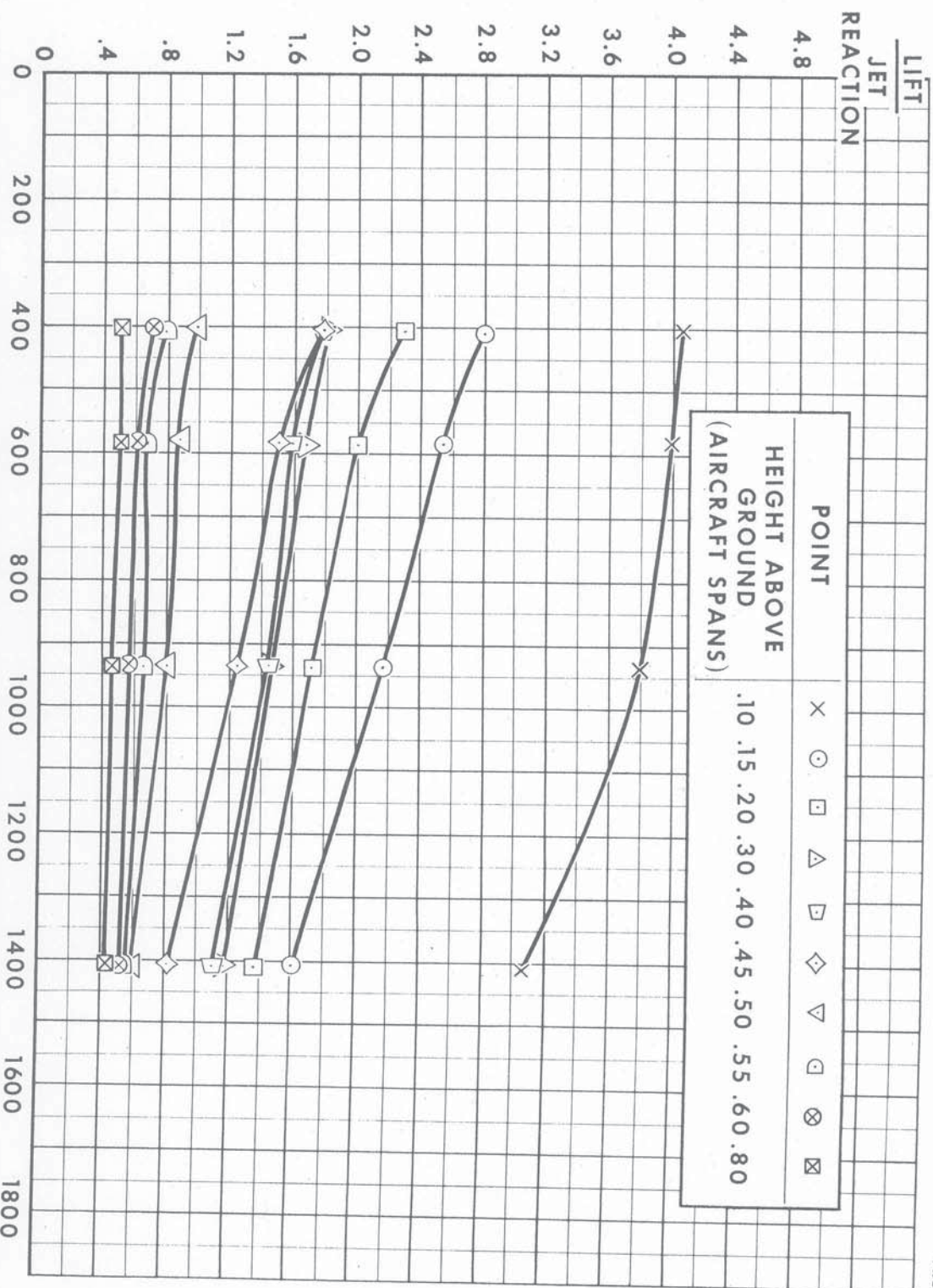
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JET ASPECT RATIO (CIRCUMFERENCE / WIDTH)
EFFECT OF NOZZLE ASPECT RATIO

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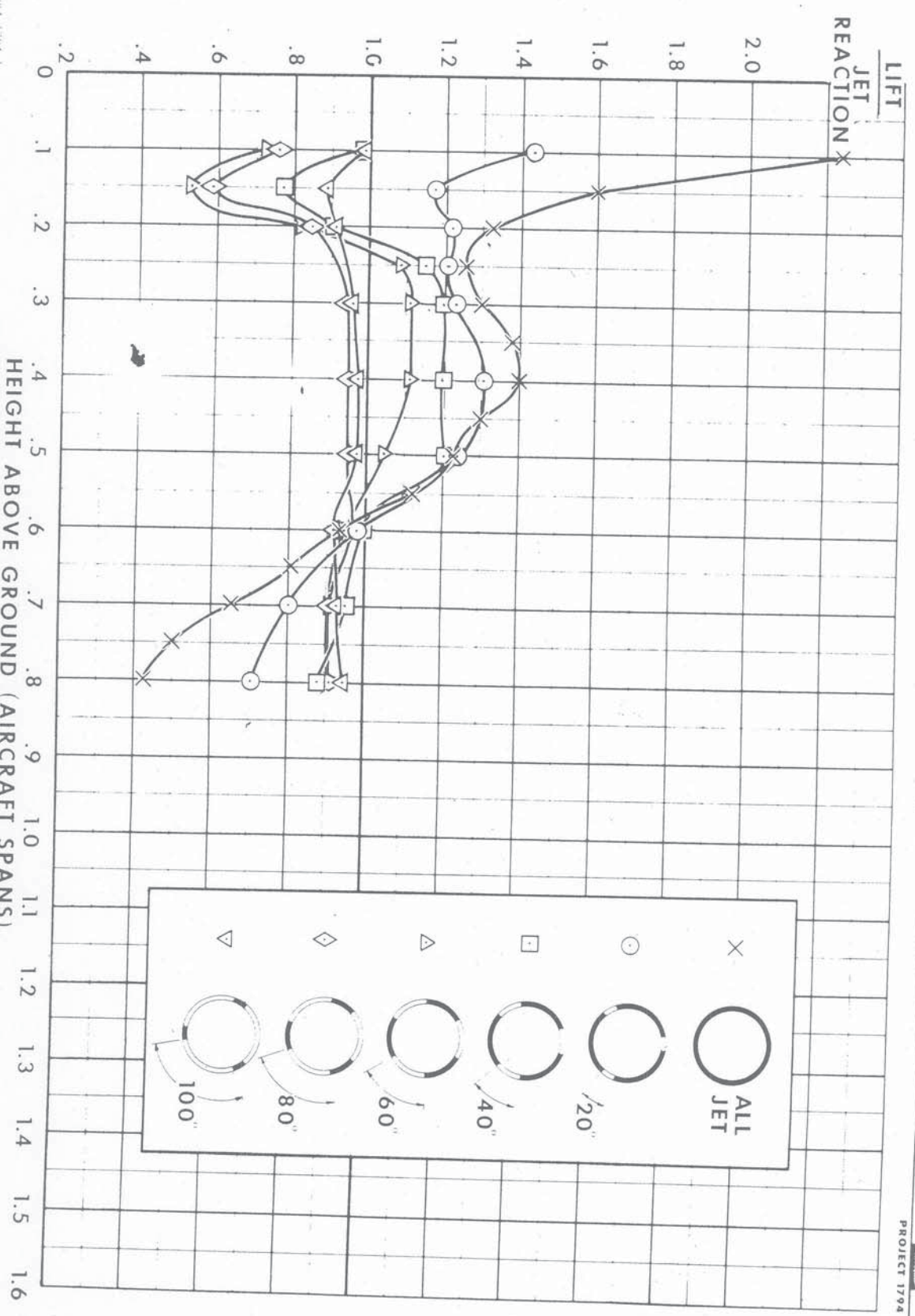
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