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CATALOG

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PERFORMANCE AND WEIGHT STUDIES
FOR A CARGO AIRPLANE
AND ELECTRONIC WARFARE TRAINER

CONVAIR 990
JET TRANSPORT

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September 1961

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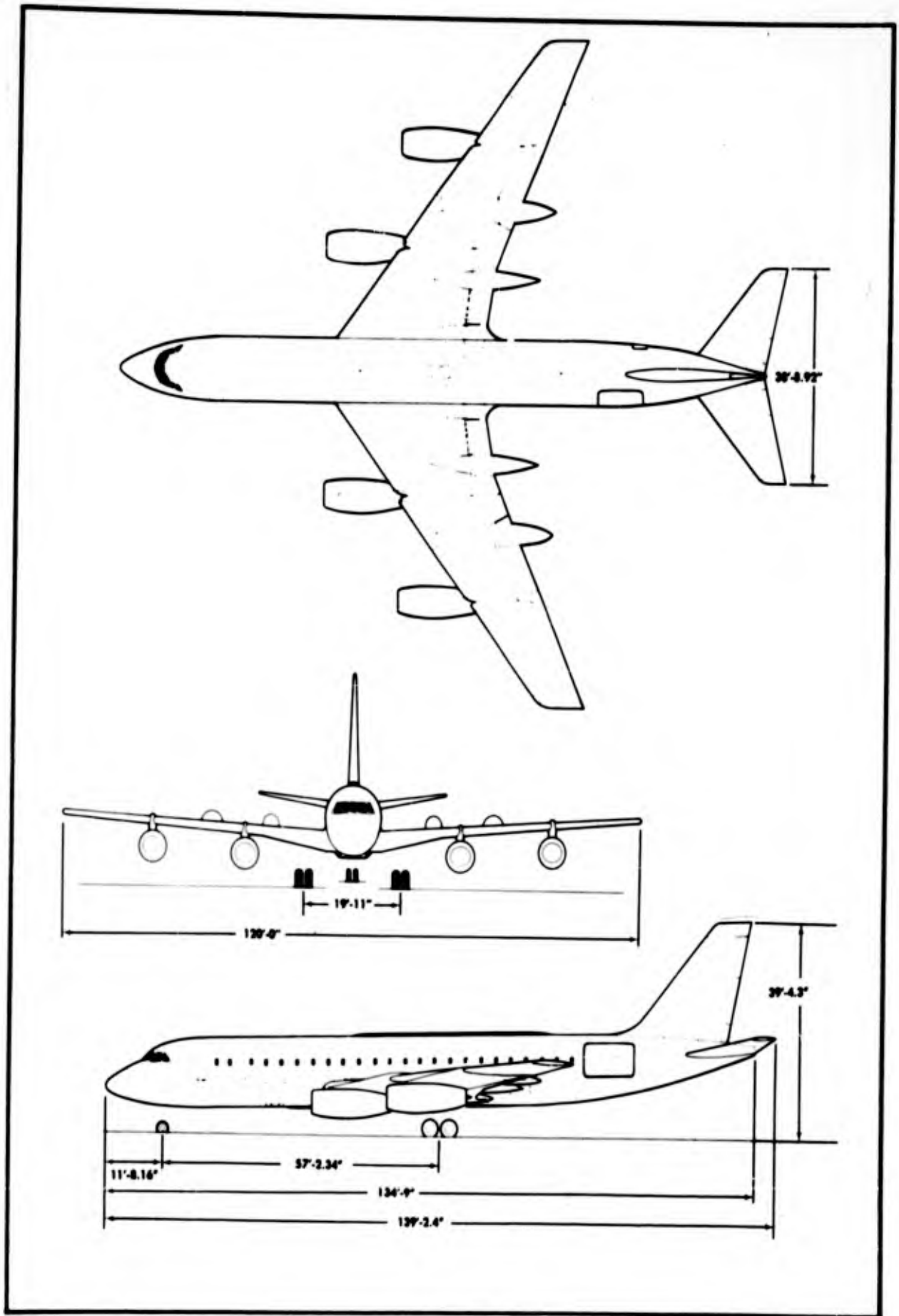
G  **D** GENERAL DYNAMICS | CONVAIR

CONTENTS

	<u>Page</u>
INTRODUCTION	1
THREE-VIEW	2
PERFORMANCE SUMMARY - MILITARY TRANSPORT.	3
ALTITUDE-AIRSPEED GRAPH	4
RANGE-PAYLOAD GRAPH	5
RANGE-RUNWAY LENGTH GRAPH	5
TAKEOFF AND LANDING PERFORMANCE	6
CARGO TRANSPORT - INTERIOR ARRANGEMENT	7
TROOP TRANSPORT - PLAN VIEW	8
AIR EVACUATION - PLAN VIEW	8
WEIGHT SUMMARY - CARGO TRANSPORT	9
WEIGHT SUMMARY - TROOP TRANSPORT	10
WEIGHT SUMMARY - AIR EVACUATION	11
EWT - PLAN VIEW.	12
ENDURANCE VS. ALTITUDE - EWT	13
ENDURANCE VS. RAMP WEIGHT - EWT	14
WEIGHT SUMMARY - EWT	15

INTRODUCTION

The Convair 990 Jet Transport has been proposed, with modifications, as a cargo, troop transport, and air evacuation vehicle. Similarly, it has been proposed as an electronic warfare trainer (EWT). Presented herein is a brief summary of the calculated airplane performance and weights for utilization of the 990 as both a basic cargo and a combination cargo and EWT vehicle. The cargo airplane weights reflect the addition of the cargo door and flooring to the existing airplane. Modifications to the cargo weight required for troop transport and air evacuation utilization are also shown. For the EWT version, weight for the electronic requirements is added to the basic cargo airplane. When the EWT airplane is to be flown in the troop-transport or the air-evacuation configuration, the EWT provisions may be removed from the cargo deck. Certain EWT cabling, generating equipment and antennas outside the cargo deck area remain on board. Performance figures are based on data generated by the current flight-test-airplane configuration and are preliminary.



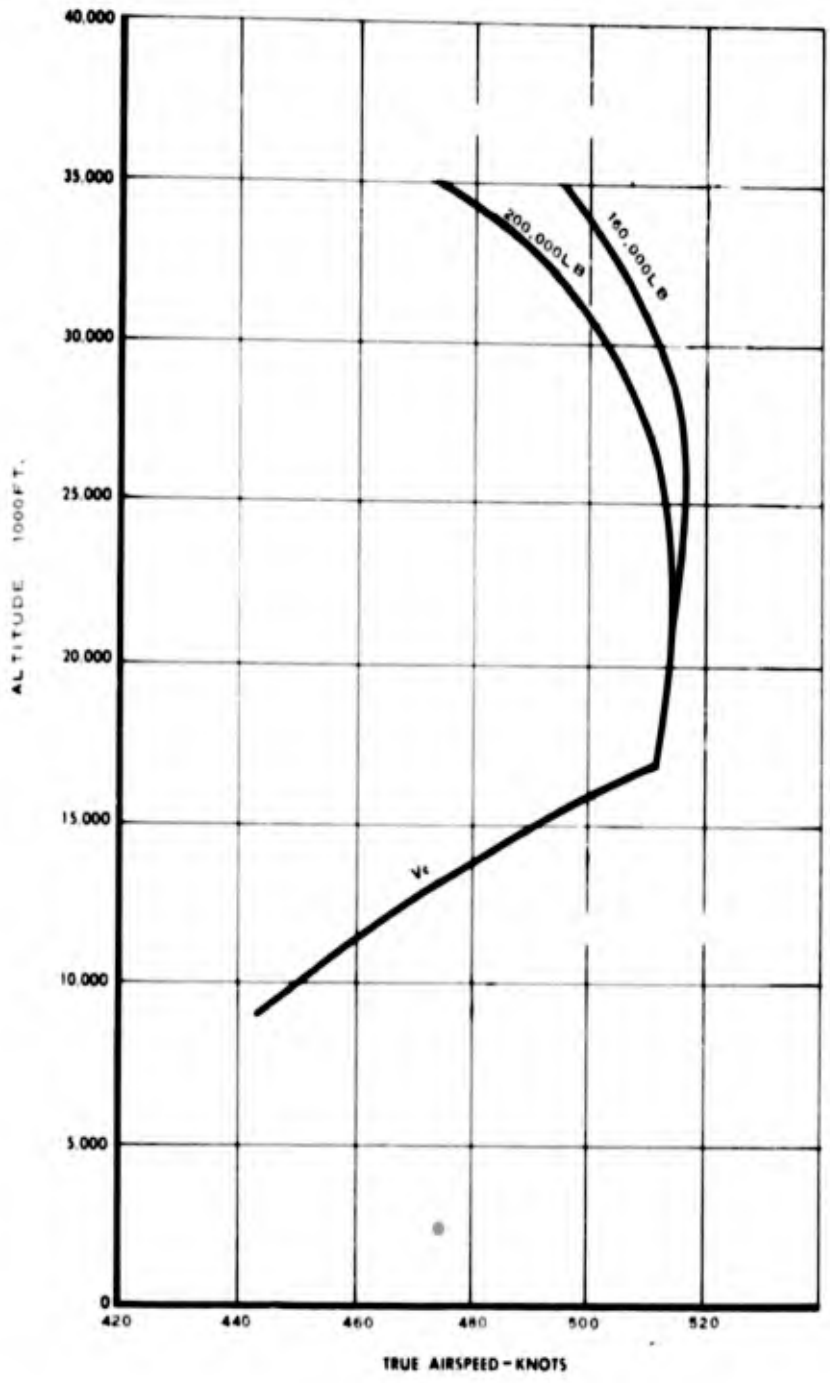
Three-View

**PERFORMANCE SUMMARY
MILITARY TRANSPORT**

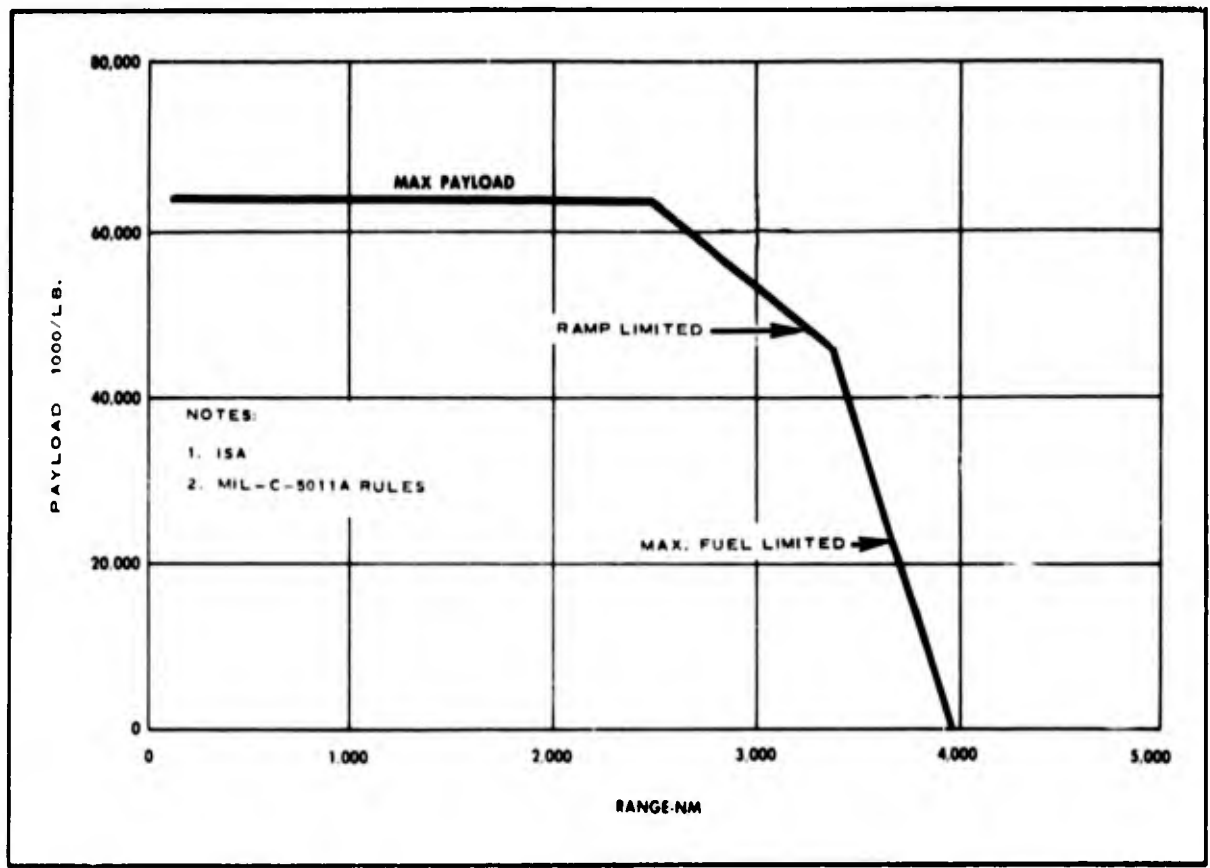
Engines (4)		C J805-23B
Maximum Payload Range ¹	nmi	2,440
Basic Operating Weight ²	lb	110,575
Military Load	lb	64,425
Total Fuel	lb	85,000
Ramp Weight	lb	260,000
Takeoff Field Length ^{3,4}		
Sea Level, Standard Day	ft	11,300
Sea Level, 90° F Day	ft	13,500
Landing Weight	lb	185,200
Landing Distance ⁴	ft	5,710
50,000-lb Payload Range ¹	nmi	3,040
Basic Operating Weight ²	lb	110,575
Military Load	lb	50,000
Total Fuel	lb	99,425
Ramp Weight	lb	260,000
Takeoff Field Length ^{3,4}		
Sea Level, Standard Day	ft	11,300
Sea Level, 90° F Day	ft	13,500
Landing Weight	lb	171,200
Landing Distance ⁴	ft	5,360
Maximum Fuel Range ¹	nmi	3,260
Basic Operating Weight ²	lb	110,575
Military Load	lb	44,425
Maximum Fuel	lb	105,000
Ramp Weight	lb	260,000
Takeoff Field Length ^{3,4}		
Sea Level, Standard Day	ft	11,300
Sea Level, 90° F Day	ft	13,500
Landing Weight	lb	165,700
Landing Distance ⁴	ft	5,200
Typical Average Long-Range Cruise Speed	kt	465
Maximum Airspeed at 21,500 ft, at 175,000 lb	kt	515

Notes:

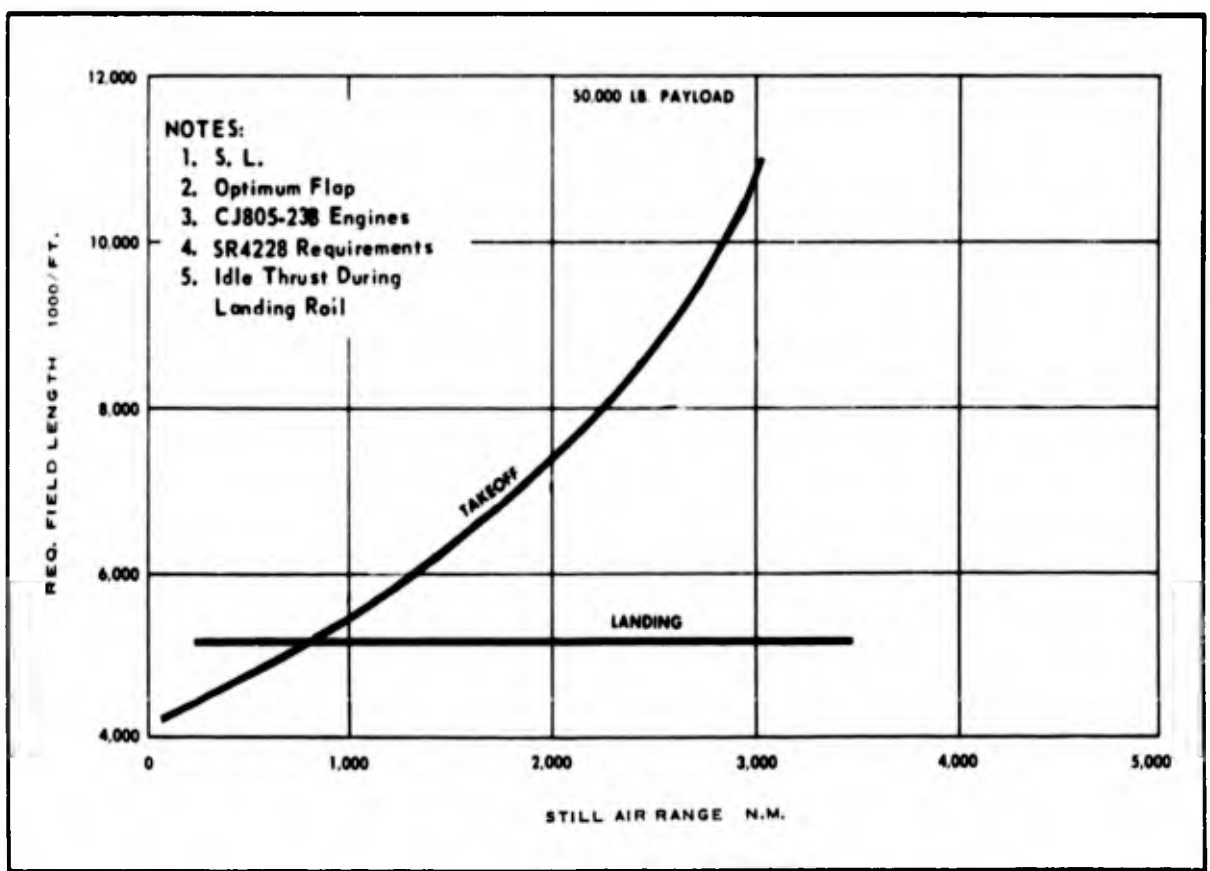
- (1) Fuel requirements based on MIL-C-5011A.
- (2) See weight summaries for details.
- (3) C. A. R. SR422B takeoff and landing.
- (4) Stop distances in both takeoff and landing do not include the effect of reverse thrust.



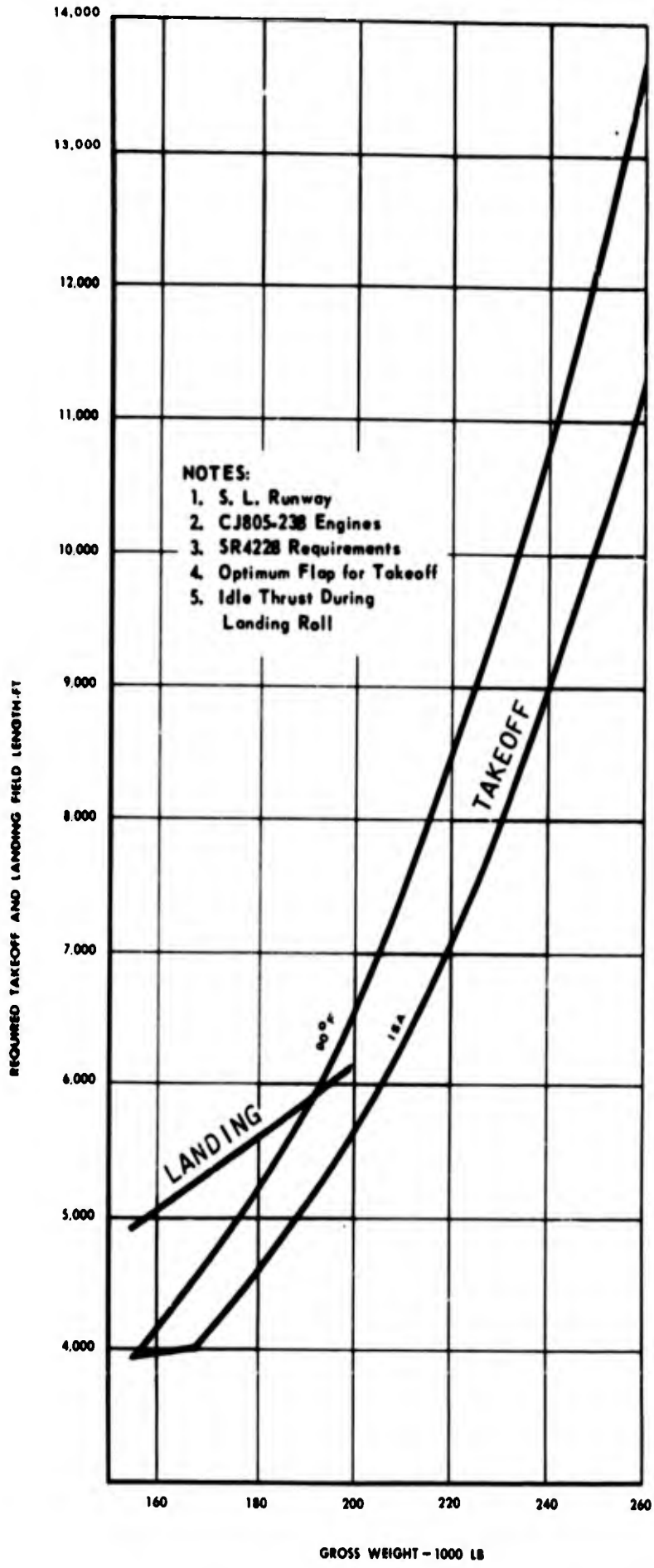
Altitude-Airspeed



Range-Payload



Range-Runway Length



Takeoff and Landing Performance

CARGO TRANSPORT

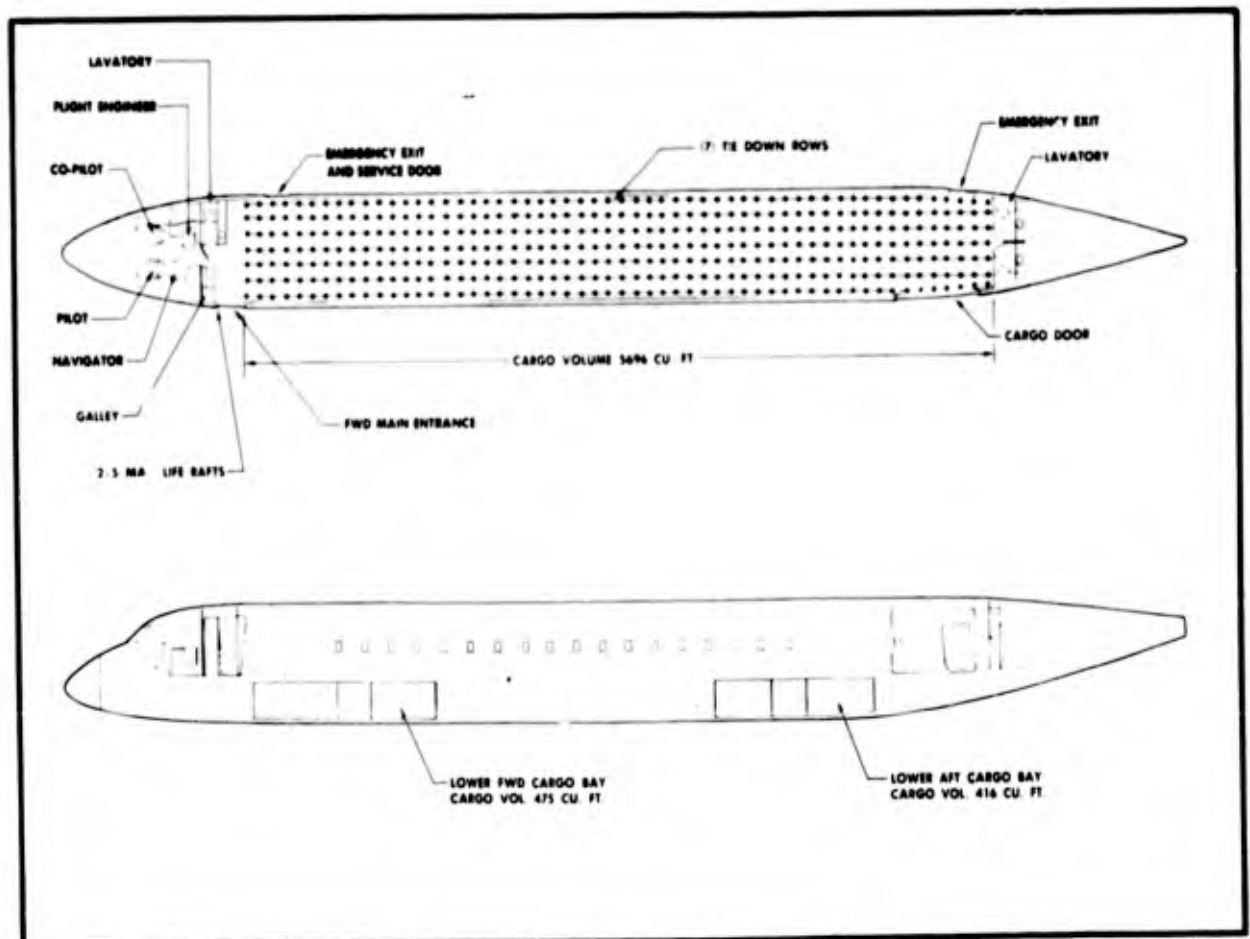
Flight crew accommodations consist of four stations on the flight deck. The normal flight crew consists of two pilots, a flight engineer, and a navigator. Crew area accommodations include a galley and a lavatory. The flight crew is provided with diluter-demand masks.

The aircraft has one main cargo compartment above the floor and two lower cargo compartments, one forward of the wing and one aft of the wing. Main cargo compartment capacity, based on a smooth scuff-resistant interior, is 5696 cubic feet; and the capacity of the lower cargo compartment is 891 cubic feet — a total clear volume of 6587 cubic feet. Access to the cargo compartment is through a 125-inch by 80-inch cargo door, which hinges at the top.

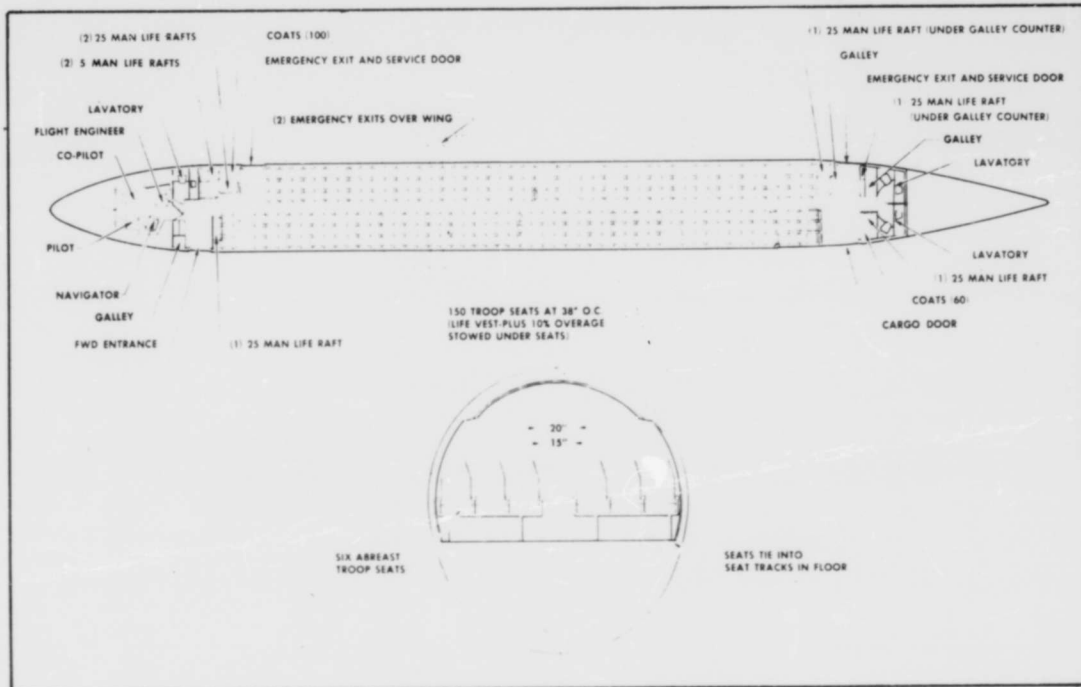
The cargo floor is designed for a distributed load of 200 pounds per square foot. It has a running load in the main cargo compartments of 1200 pounds per running foot, except over the wing, where the load is 1500 pounds per running foot. No load spreaders are required.

The tie-down fittings are installed in the floor on a 20-inch by 20-inch grid pattern. The fittings have a capacity of 5000 pounds each, except the outside row of fittings on each side of the floor, which have a capacity of 10,000 pounds each.

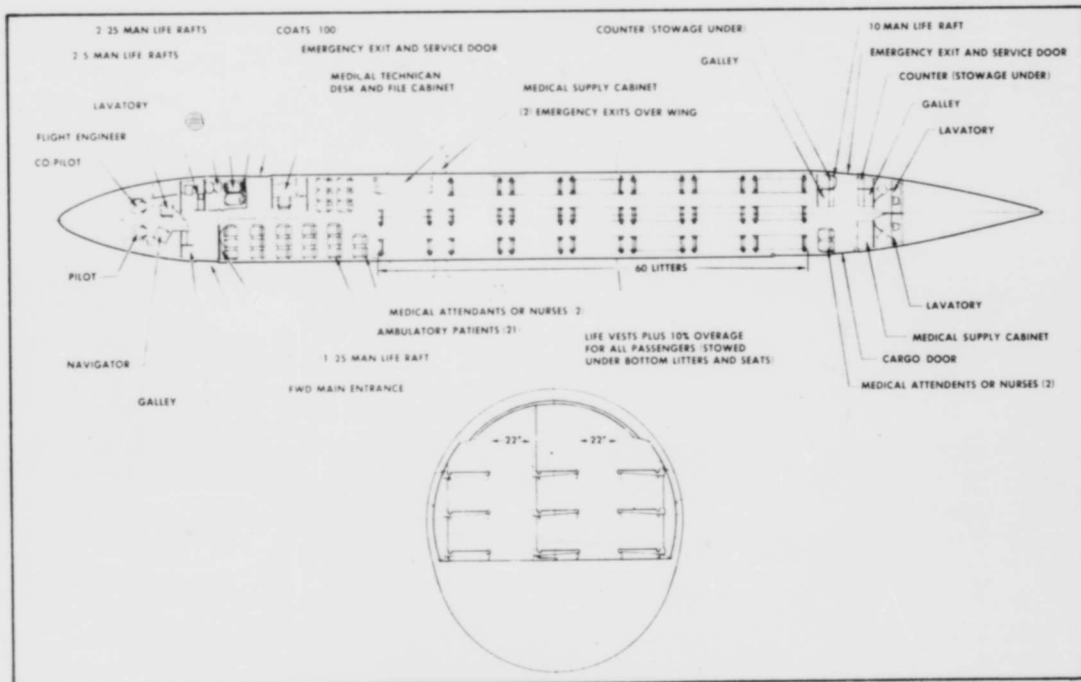
A track system is provided for installation of troop seats or litter stanchions at one-inch increments.



Cargo Transport — Interior Arrangement



Troop Transport - Plan View



Air Evacuation - Plan View

WEIGHT SUMMARY

CARGO TRANSPORT (Maximum Fuel)

WEIGHT EMPTY	109,389
Useful Load	2,582
Crew (4)	960
Baggage - Crew	60
Flight Deck Equipment	50
Unusable Fuel and Oil	780
Oil - Engine	170
Water - 5 gallons	42
Oxygen	90
Food and Service	54
Life Rafts - Crew	94
Life Vests - Crew	7
Emergency Radio Transmitter	40
Lavatory Chemicals	48
Emergency Equipment	187
 BASIC WEIGHT	 111,971
 MILITARY LOAD	 48,029
 ZERO FUEL	 160,000
 FUEL	 100,000
 GROSS WEIGHT	 260,000

WEIGHT SUMMARY (LB)

TROOP TRANSPORT

WEIGHT EMPTY	109,389
Useful Load	(6,185)
Crew (4)	960
Baggage Crew	60
Flight Deck Equipment	50
Unusable Fuel and Oil	780
Oil - Engine	170
Water	417
Oxygen	270
Food and Service	2,080
Life Rafts	853
Life Vests	270
Emergency Radio Transmitter	40
Lavatory Chemicals	48
Emergency Equipment	187
BASIC WEIGHT	115,574
MILITARY LOAD (150 TROOPS)	(40,250)
Troops	36,000
Convenience Pods	370
Extra Buffets	280
Seats/Tables	3,600
ZERO FUEL	155,824
FUEL	104,176
GROSS WEIGHT	260,000

WEIGHT SUMMARY (LB)

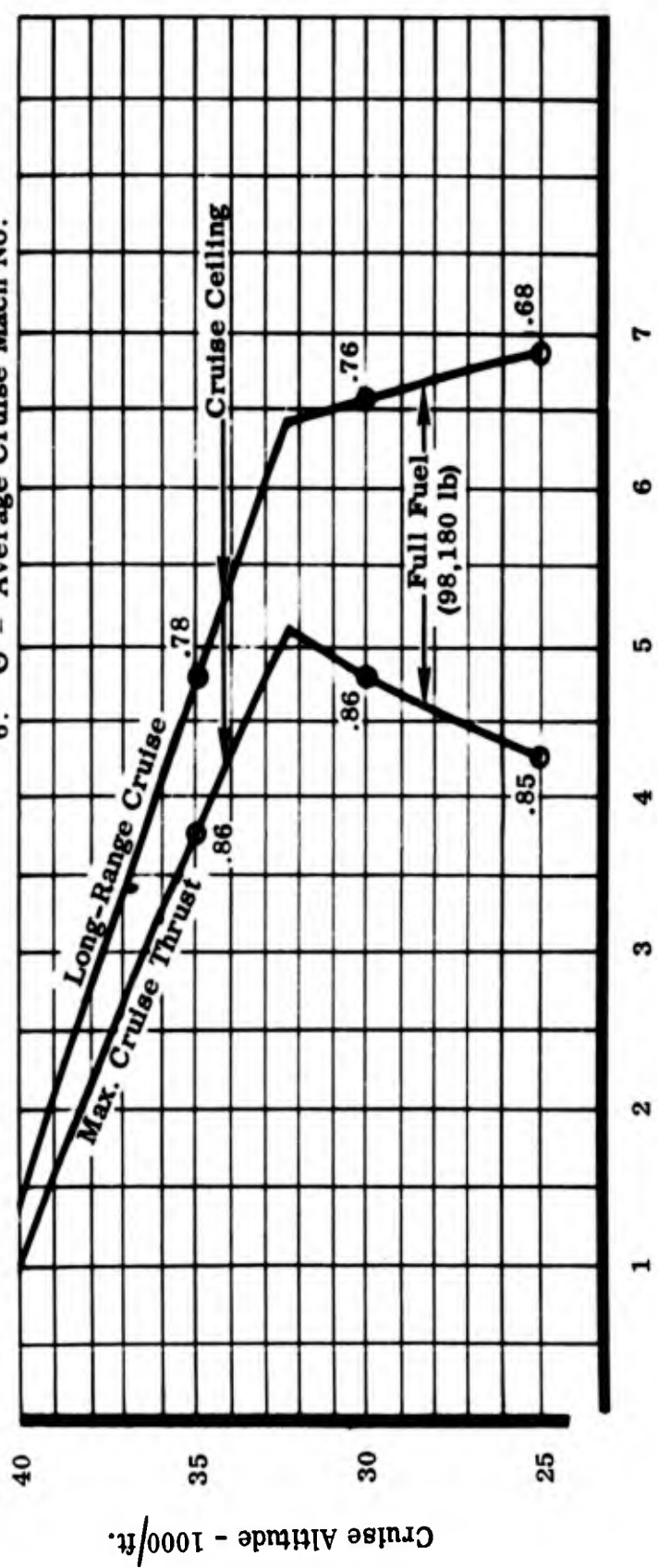
AIR EVACUATION

WEIGHT EMPTY	120,318
Useful Load	(4,882)
Crew (4)	960
Baggage - Crew	60
Flight Deck Equipment	50
Unusable Fuel and Oil	780
Oil - Engine	170
Water	417
Oxygen	270
Food and Service	1,200
Life Rafts	543
Life Vests	157
Emergency Radio Transmitter	40
Lavatory Chemicals	48
Emergency Equipment	187
BASIC WEIGHT	125,200
MILITARY LOAD	(22,160)
Seats/Tables	604
Convenience Pods	370
Extra Buffets	280
Litter Stanchions	805
Medical Supplies/Cabinets	525
Furnishings	176
Litter Patients (60)	15,000
Ambulatory Patients (21)	3,780
Medical Attendants (4)	620
ZERO FUEL	147,360
FUEL	105,000
GROSS WEIGHT	252,360

ENDURANCE VS. ALTITUDE - EWT (ISA)

NOTES:

- 1. Basic Operating Weight = 111,771 lb;
Payload = 25,929 lb.
- 2. CJ805-23B Engines.
- 3. Constant Cruise Altitude.
- 4. Mil. C-5011A Rules.
- 5. Cruise Initiated at Cruise Ceiling
(300 ft/min) above 32,000 ft.
- 6. \odot = Average Cruise Mach No.



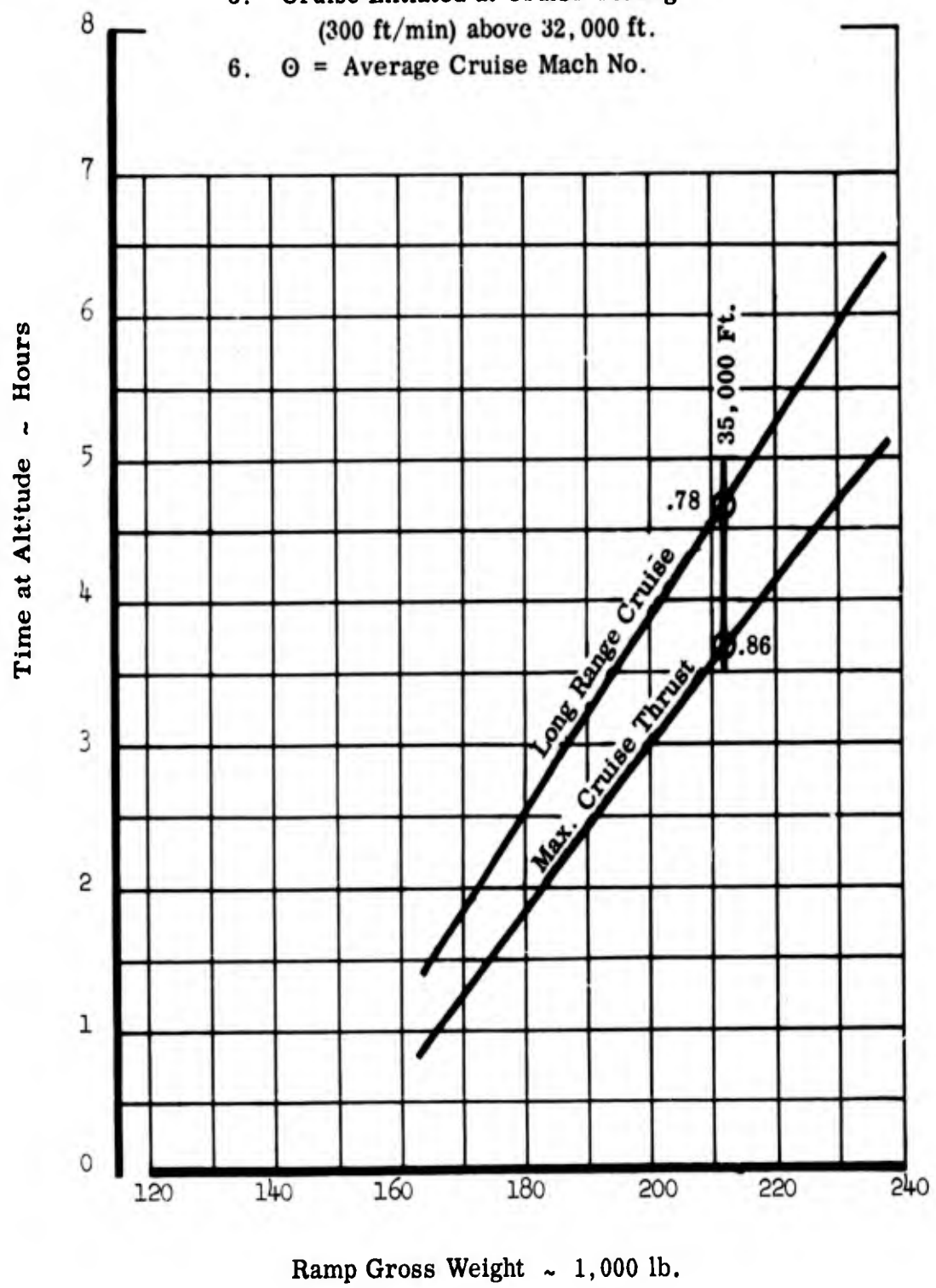
Time at Altitude - Hours

Cruise Altitude - 1000/ft.

ENDURANCE VS. RAMP WEIGHT - EWT (ISA)

NOTES:

- 1. Basic Operating Weight = 111,771 lb.
Payload = 25,929 lb.
- 2. CJ805-23B Engines.
- 3. Constant Cruise Altitude.
- 4. Mil. C-5011A Rules.
- 5. Cruise Initiated at Cruise Ceiling
(300 ft/min) above 32,000 ft.
- 6. Θ = Average Cruise Mach No.



WEIGHT SUMMARY (LB) - EWT

WEIGHT EMPTY	120,318
Fixed Useful Load	(3307)
Pilot & Co-Pilot	480
Flight Engineer & Navigator	480
Crew Baggage @ 15# each	60
Flight Deck Equipment	50
Emergency Equipment	187
Unusable Fuel	280
Engine Oil	170
Oxygen	175
Emergency Transmitter	40
Toilet Chemicals	48
Water (20 gallons)	167
Food - Crew @ 13.5# each	338
Life Vest - Crew @ 1.75# each	44
Life Raft - (2-5 Man) @ 47# each	288
BASIC OPERATING WEIGHT	123,625
Military Load	(18,420)
Seats/Tables	1,800
Convenience Pods	370
Electronics Equipment Not Included in Weight Empty	9,700
Chaff	525
Student Equipment	600
Technician Supplies	385
Students, Instructors and Technicians	5,040
ZERO FUEL WEIGHT	142,095
Fuel @ 6.5 lb./gallon	(105,000)
RAMP WEIGHT	247,045

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