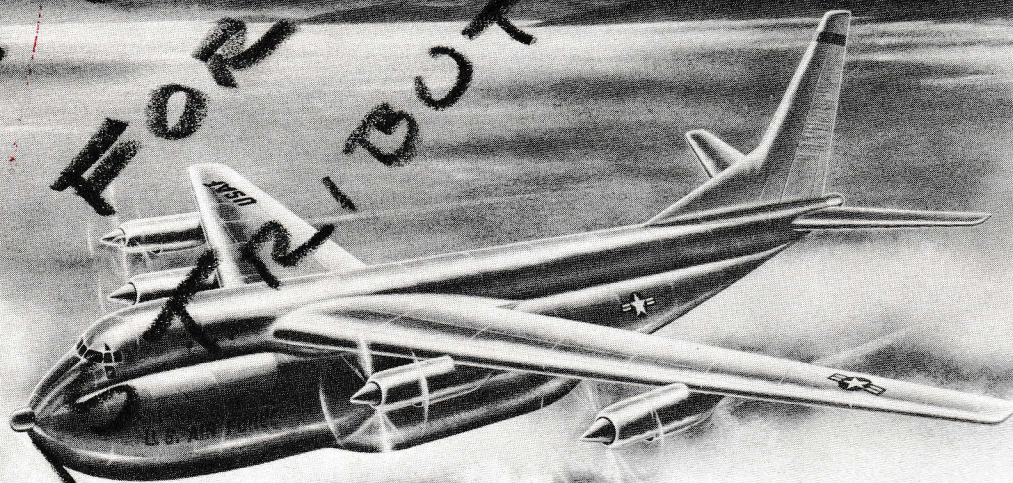


YC-132

LOGISTIC TRANSPORT

PROOF
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D



REPORT NO.
TU-28038

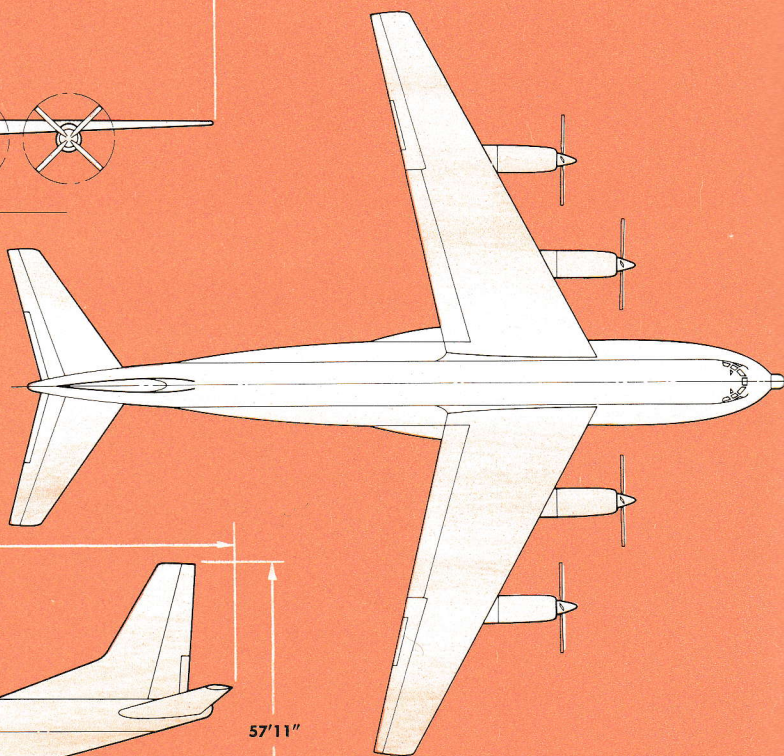
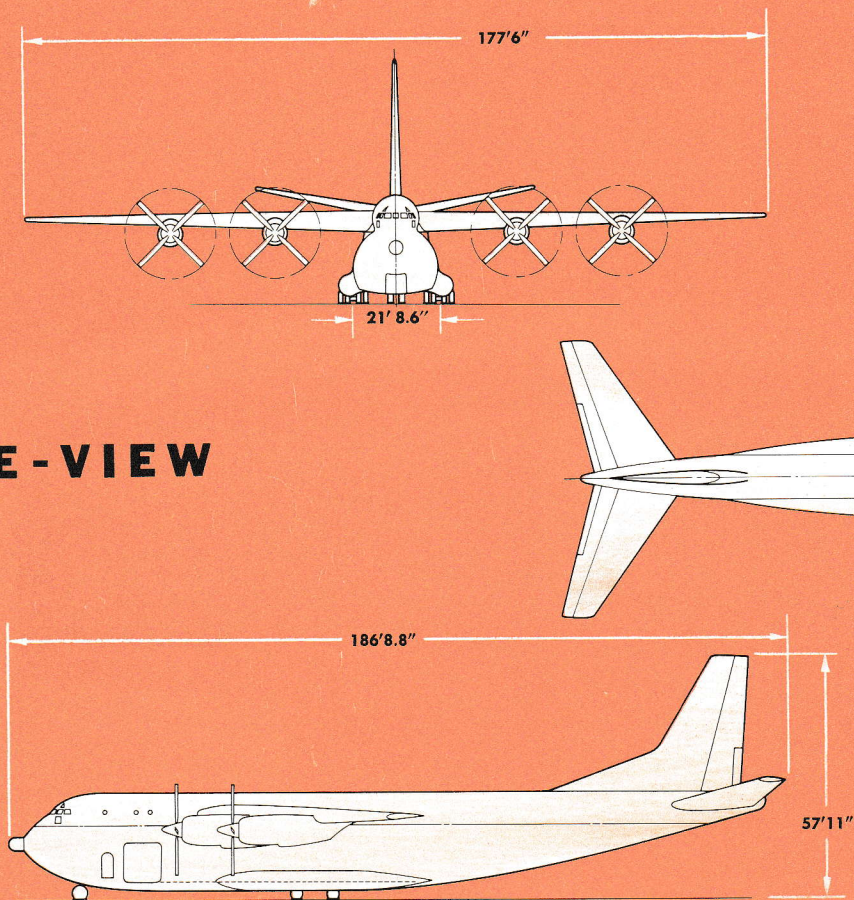
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INTRODUCTION

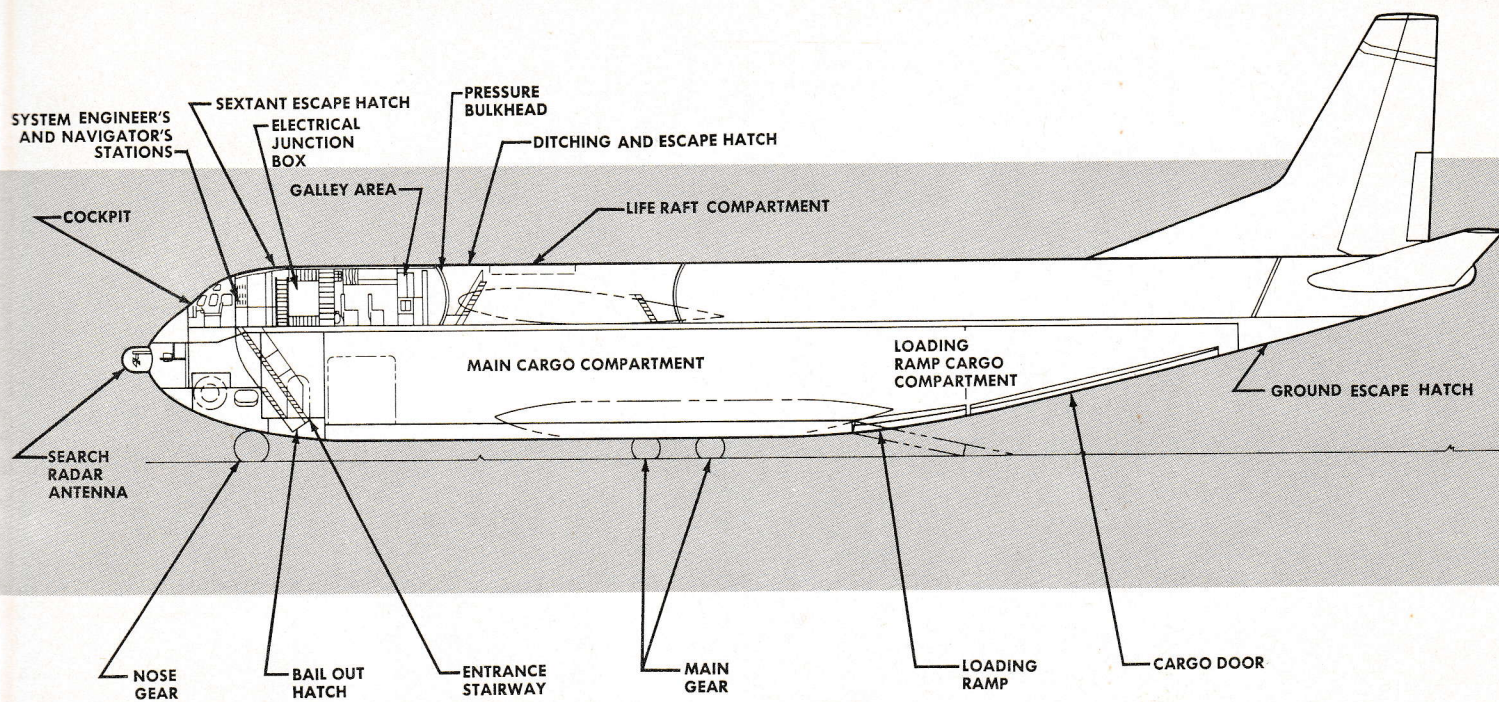
The YC-132 is a logistic transport designed for high speed, long range, and heavy payloads. Turbo-prop power-plants plus a landing gear of exceptional load spreading ability permit operation from runways of conventional length and strength at normal gross weight. At normal landing weight, comparatively short fields can be utilized. A high degree of self-sufficiency is achieved from such features as a built-in loading ramp and a self-contained ground power system. The large fuselage, combined with the required range and speed, permits the airplane to be efficiently utilized for a variety of missions without compromising the basic logistic configuration.

The airplane was first conceived in 1951 when, at Air Force request, a preliminary design for a heavy duty transport was submitted by the Douglas Aircraft Company. Military evaluation of this proposal resulted in an advanced design study submitted in April, 1952. From this study the present configuration was selected and a mock-up was constructed. During February of 1954 a mock-up inspection was held and cargo loading methods were demonstrated. In January of 1956 the entire project, including the mock-up, was transferred from the Santa Monica Division to the Tulsa Division.

THREE-VIEW



INBOARD PROFILE



GENERAL DATA

GENERAL (Performance and other classified data have been deleted from this report.)

Clearance

Main Cargo Compartment:
 Normal Height 150"
 Maximum Length (95') 1140"
 Maximum Width 200"

Aft Cargo Opening:
 Height 150"
 Maximum Width 154"
 Floor Height Above Ground 50"
 Ramp Angle 10°

Side Loading Door:
 Height 108"
 Width 108"

Capacities

Volume: Total 16,416 cu. ft.
 Main Cargo Compartment 14,292 cu. ft.
 Ramp 2,124 cu. ft.
 Area: Total 1,425 sq. ft.
 Main Cargo Compartment 1,237 sq. ft.
 Ramp 188 sq. ft.

Personnel

Crew: Total 4
 Pilot Co-Pilot
 Navigator Systems Engineer
 Relief Crew: Total 3

LANDING GEAR

Two co-axial quadruple wheel units mounted on individual shock struts in tandem on each side of the fuselage.

Tires- Main Landing Gear Size 15.25 x 16
 Tubeless Type III
 *Inflation Pressure 103 psi
 Tires- Nose Wheel Size 49 x 17
 Tubeless Type VII
 Inflation Pressure 128 psi

HYDRAULIC SYSTEM

Main Hydraulic System 3000 psi
 Auxiliary Hydraulic System 10 H.P. Six g.p.m.
 Electrically Driven Pump
 Oil Reserve 7 gallons

* 35% deflection at 419,900 lbs.

FUEL AND OIL

	Location	Number of
Fuel	Integral Wing	Tanks
(JP-4-MIL-F-5624B-1)	Tanks	9
Oil (Synthetic-MIL-L-7808B-1)	Nacelle Tanks	4

DIMENSIONS

Wing		
Span		177.5'
Incidence (Root)		5°
(Tip)		2°
Dihedral (T. E.)		0°
Sweepback (25% Chord)		25°
Length		186.7'
Height		57.9'
Tread		21.7'
*Propeller Ground Clearance		63"
Fuselage Ground Clearance		24"

ELECTRICAL SYSTEM

Primary electric power is 400 cycle 200/115 volt alternating current utilizing engine driven AC generators. The AC electrical system is a completely integrated Parallel system with an automatic control. A secondary system of 28 volts DC utilizing transformer-rectifiers is also provided.

*Approximate clearance with 1G static load deflection with full wing tanks.

CONTROL SYSTEMS

The primary flight control system utilizes hydraulic power (with automatic reversion to a flying tab system in the event of hydraulic failure) to drive the aileron and rudder. A pure flying tab is used to drive the elevator.

The adjustable stabilizer is driven by a combination hydraulic and electrical dual acme screw mechanism.

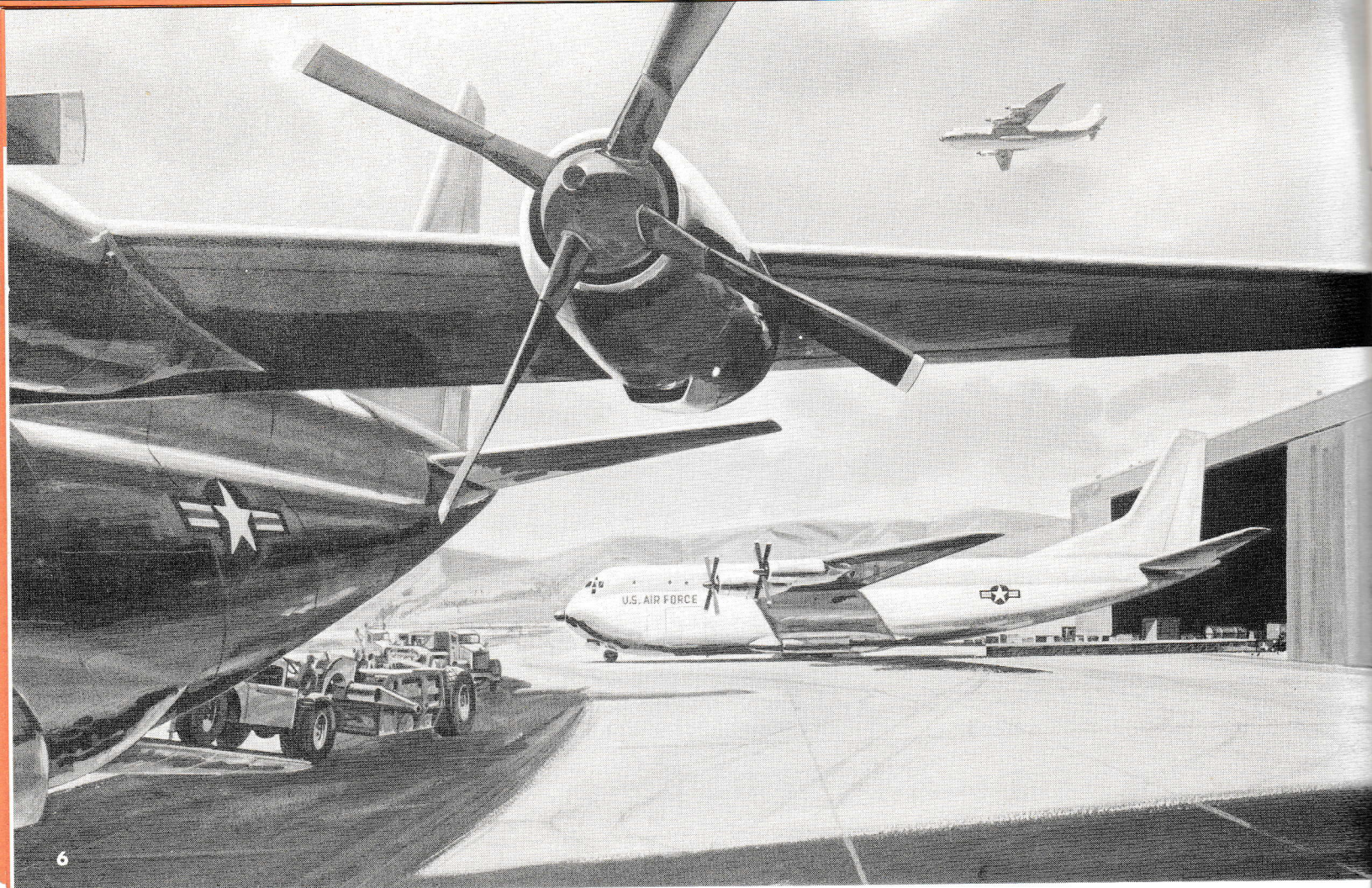
Other primary, accessory, and engine controls are actuated by simple and direct mechanical cable systems.

ELECTRONICS

The YC-132 electronics equipment has been selected to provide a maximum of usefulness to the aircraft mission without burdening the aircraft with excess equipment. The installation of this equipment permits extreme ease of servicing.

AIR CONDITIONING

The crew compartment is pressurized to maintain an 8,000 foot compartment altitude at 40,000 feet. The cargo compartment is ventilated and heated to a minimum of 45°F. Two independent systems using bleed air from the powerplants provide the required pressure and/or heat.



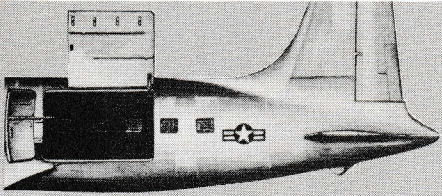
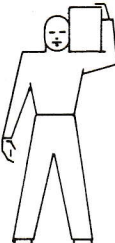
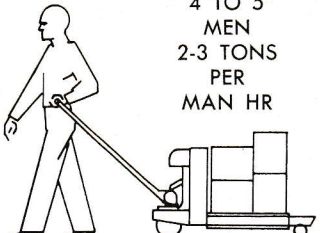
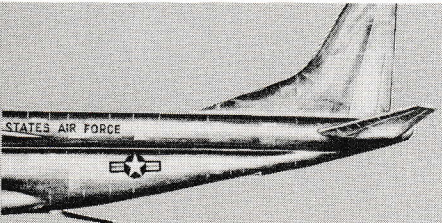
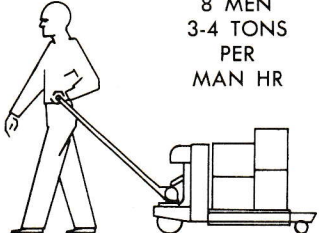
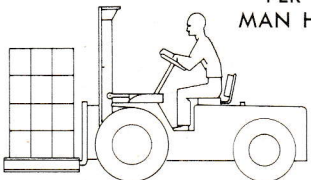
GROUND OPERATIONS

The auxiliary power plant, a gas turbine unit, enables the YC-132 to achieve a high degree of self-sufficiency on the ground. Bleed air from the unit can be used for engine starting, cabin air conditioning, and cargo compartment heating. In addition, the APP drives a standby 40KVA alternator which supplies hydraulic as well as electrical power for ground operations and for emergency use at cruise altitude.

Engine starts at -65° are possible, and with the engines running, all ice removal equipment can be operated.

The four refueling points are easily reached by ground personnel and can be used simultaneously. Fueling for the design range mission can be accomplished in 18 minutes. A public address system and an intercom system which connects ground servicing points provide for maximum coordination of ground operations so that turn around time may be minimized.

LOADING TIME

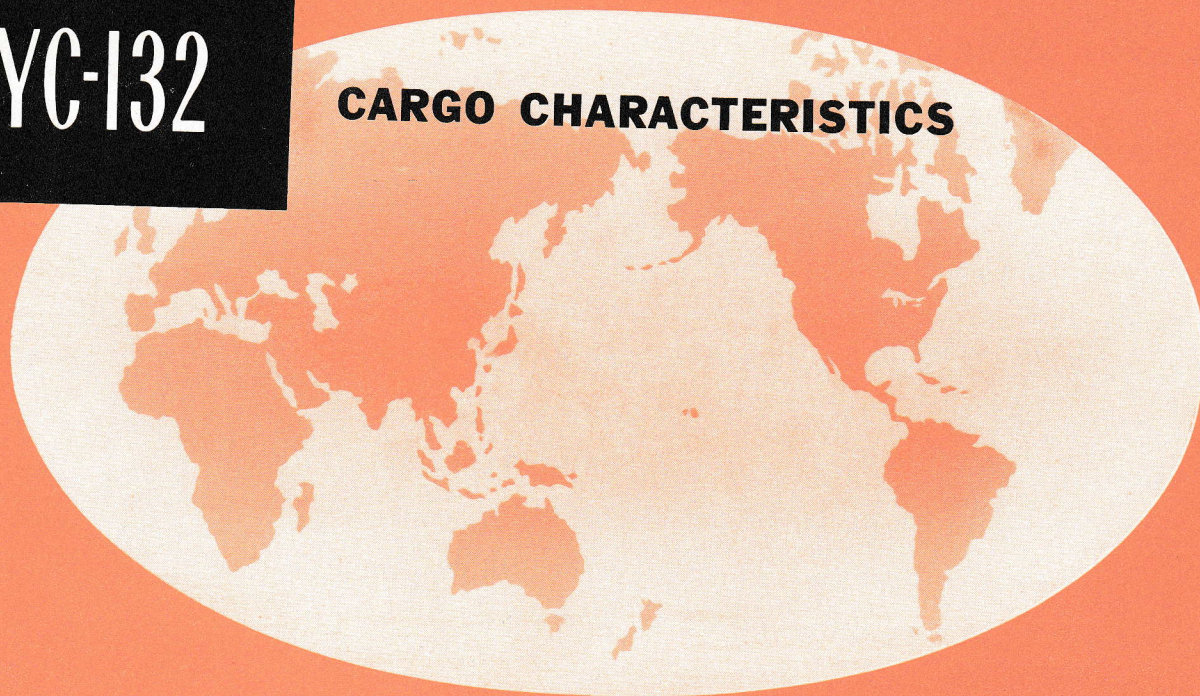
AIRCRAFT CONFIGURATION	BULK LOADING	PALLET LOADING
 <p>HIGH DECK - SIDE DOOR</p>	 <p>4 TO 6 MEN 1 TON PER MAN HR</p>	 <p>4 TO 5 MEN 2-3 TONS PER MAN HR</p>
 <p>LOW DECK - LOADING RAMP</p>	 <p>8 MEN 3-4 TONS PER MAN HR</p>	 <p>5 MEN 12 TONS PER MAN HR</p>

The low deck, ramp-loading type aircraft increases the speed and efficiency of cargo handling personnel and equipment because it is more convenient and accessible. These are approximate data, but they do indicate the

advantages of the low deck, ramp-loading aircraft over the high deck, side door aircraft. In addition, the YC-132 is not limited to the methods shown. Improved methods in cargo handling can show even greater savings.

YC-132

CARGO CHARACTERISTICS



The long range and high cruising speed of the YC-132 reduce flight time from the U. S. to Europe to eight hours, less than half of the present time. This reduction in flight

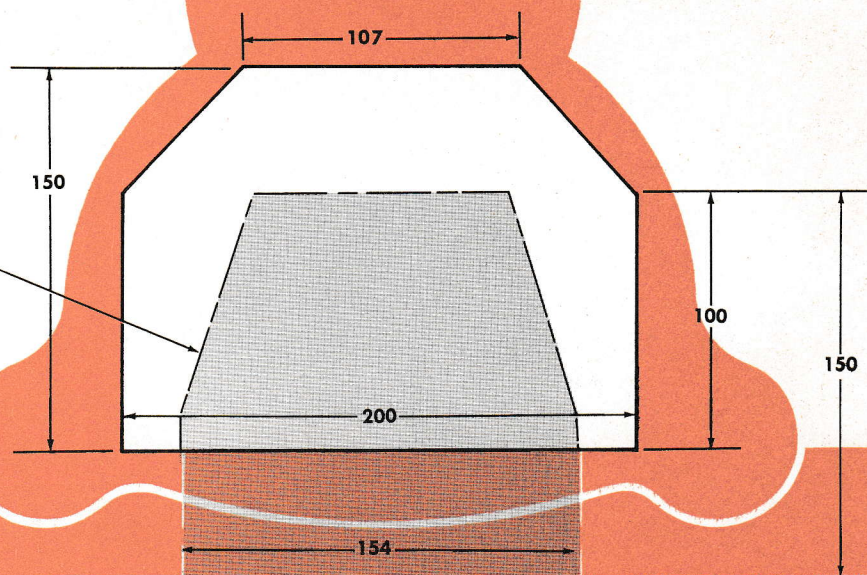
time necessitates reducing ground time. The characteristics that promote rapid cargo handling and decrease ground time are presented in this section.

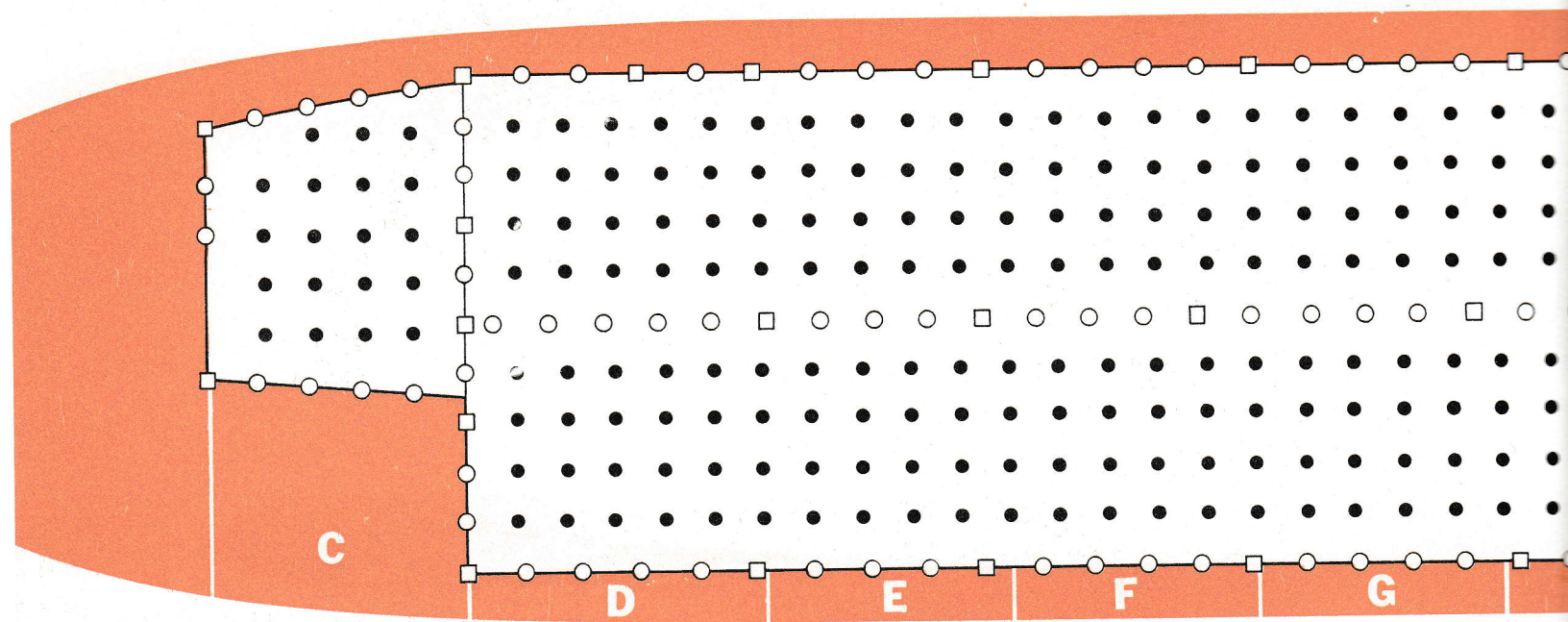
CARGO LOADING AND STOWAGE

1/75 SCALE

APPROXIMATE
CLEARANCE ENVELOPE
FOR TAIL LOADING

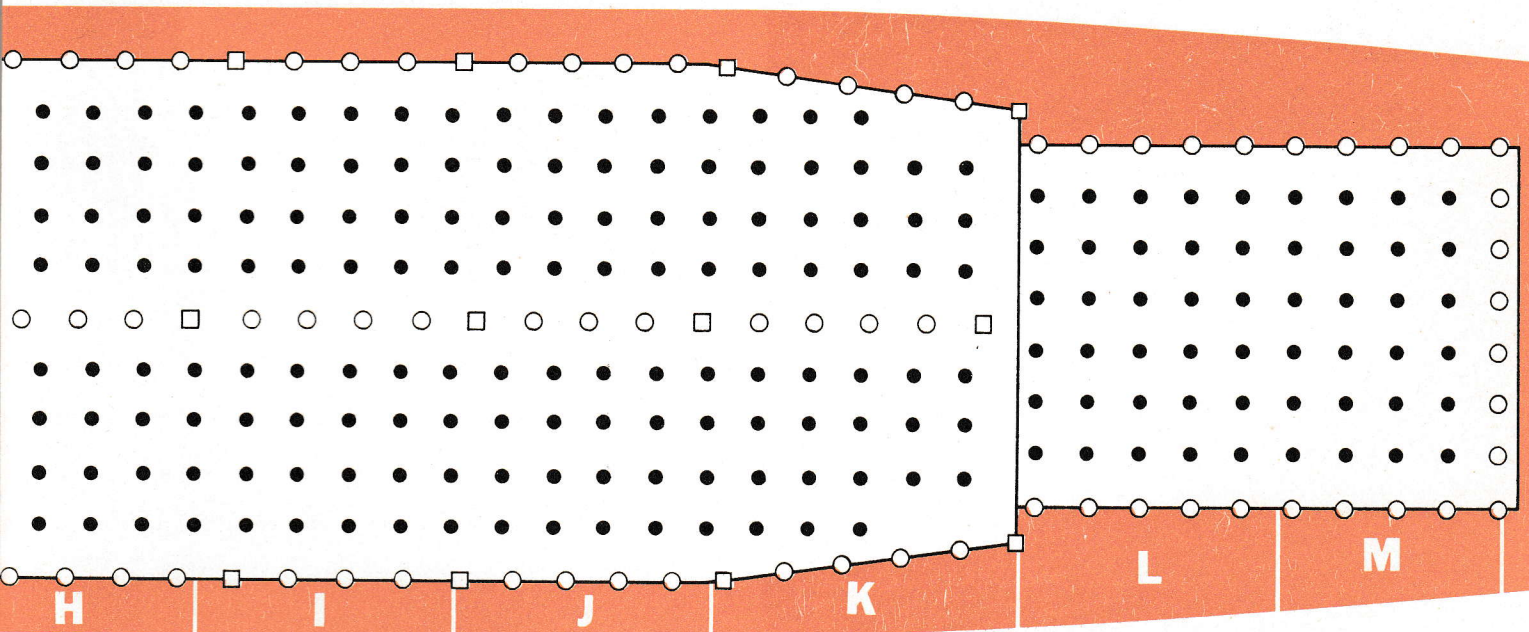
GROUND LINE





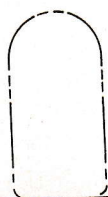
TOTAL FLOOR AREA

1/75 SCALE



LEGEND

- 10,000 LB FITTING
- 25,000 LB FITTING
- 35,000 LB FITTING



C

D

E

F

G

The cargo compartment walls are lined with a high-strength abrasion resistant material so that cargo may be stacked directly against them. The 12½ foot ceiling provides sufficient head room for nearly all Air Force vehicles, equipment, and special weapons. The floor is sufficiently wide to accommodate most vehicles side by side, and will

COMPARTMENT**FLOOR AREA: SQ. FT.****VOLUME: CU. FT.**

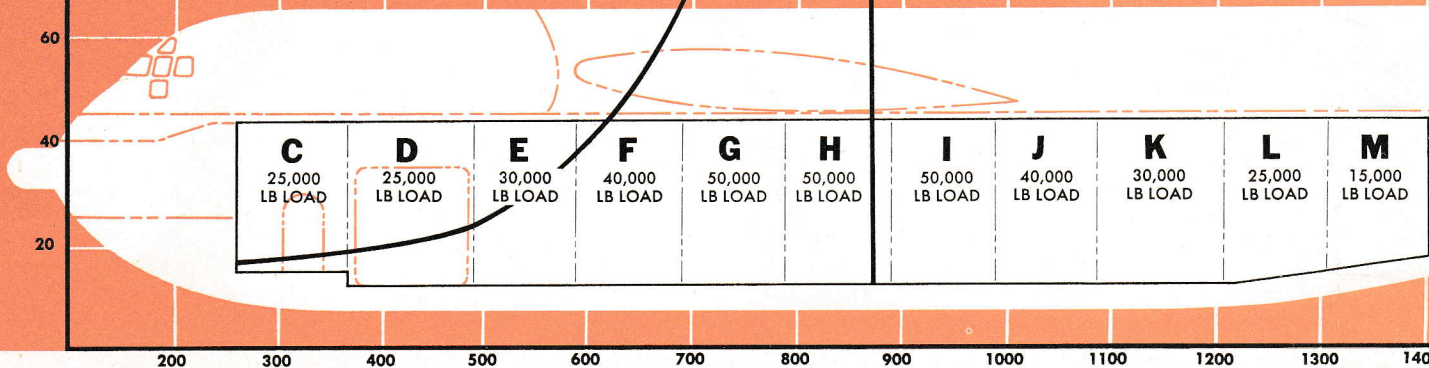
C	82	985
D	167	1922
E thru J	139	1600
K	154	1785
L plus M	188	2124
Total	1425	16416

support any component which can be loaded into the compartment. All types of materials handling devices may be used without risk of damage to the floor. High strength tie down rings are located on the center line, around the floor perimeter, and every twenty inches in a grid pattern. The compartment is heated and ventilated, but is not pressurized.

CARGO WEIGHT (1000 LB)

120
100
80
60
40
20

The curves indicate the cargo center of gravity location within the airplane (fuselage station) against the total cargo weight.



200 300 400 500 600 700 800 900 1000 1100 1200 1300 1400

FUSELAGE STATIONS

COMPARTMENT Maximum Wheel Loads

	C	D THRU K	L AND M*
Steel Wheels	-----	3000 lb.	3000 lb.
Min. Width	-----	2½ inches	2½ inches
Solid Rubber Wheels	-----	8250 lb.	8250 lb.
Pneumatic Tires	-----	Not Critical	Not Critical

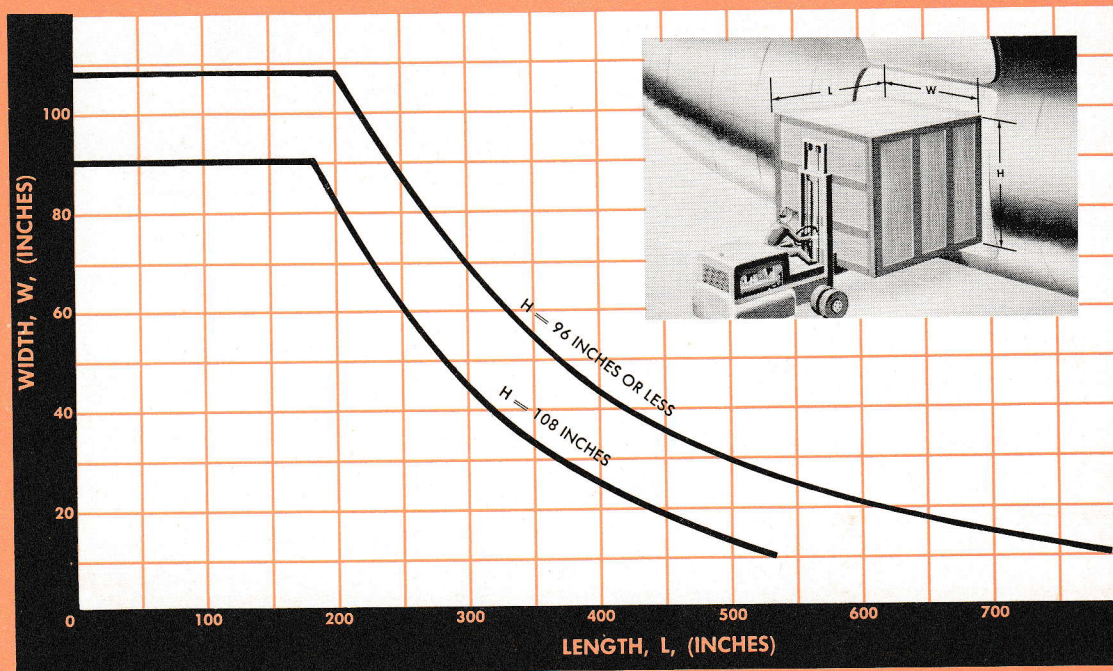
COMPARTMENT Maximum Axle Loads

	C	D THRU K	L AND M*
Single	-----	33000 lb.	33000 lb.
Tandem, per axle	-----	22000 lb.	22000 lb.
Maximum Uniformly Distributed Load	300 lb/ft²	400 lb/ft²	

* The ramp actuating mechanism will lift 25000 lb. located approximately at the center of the ramp.

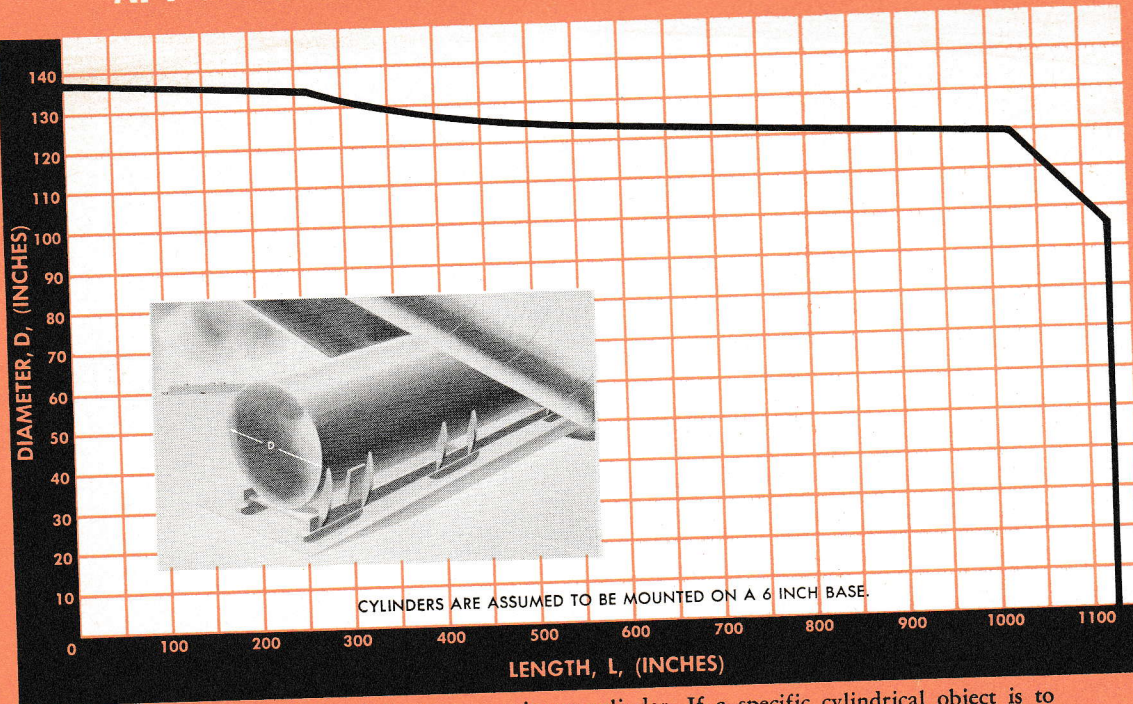
PACKAGE SIZES

FWD DOOR — RECTANGULAR OBJECTS



1. MAXIMUM PACKAGE HEIGHT IS 108 INCHES.
2. PACKAGES OVER 90 INCHES WIDE MUST NOT EXCEED A HEIGHT OF 96 INCHES.

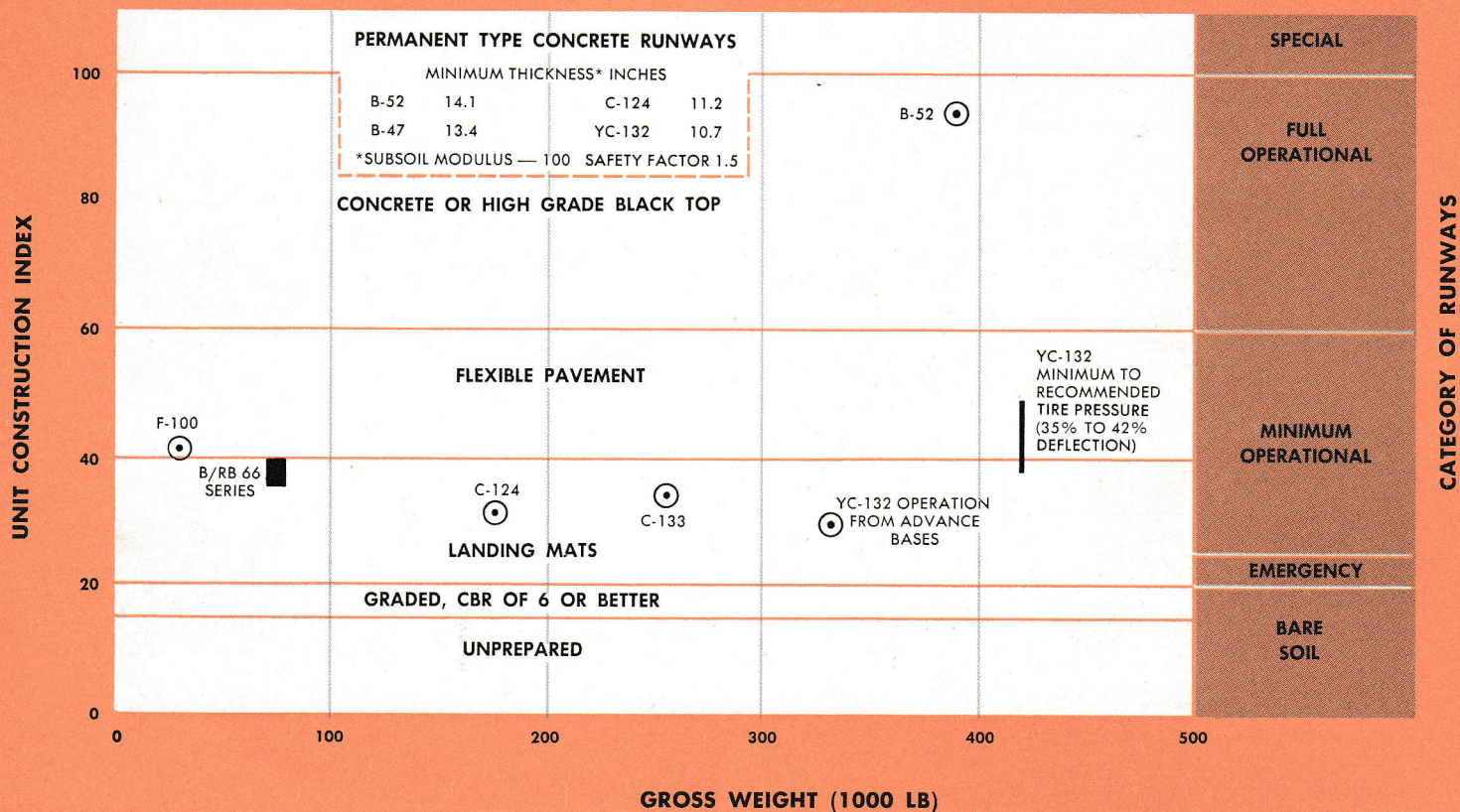
AFT DOOR — CYLINDRICAL OBJECTS



The chart is useful for designing an optimum cylinder. If a specific cylindrical object is to be loaded, the chart can be used for an approximate determination. Where greater accuracy is required, loading studies should be requested through the AMC YC-132 Weapon System Project Office.

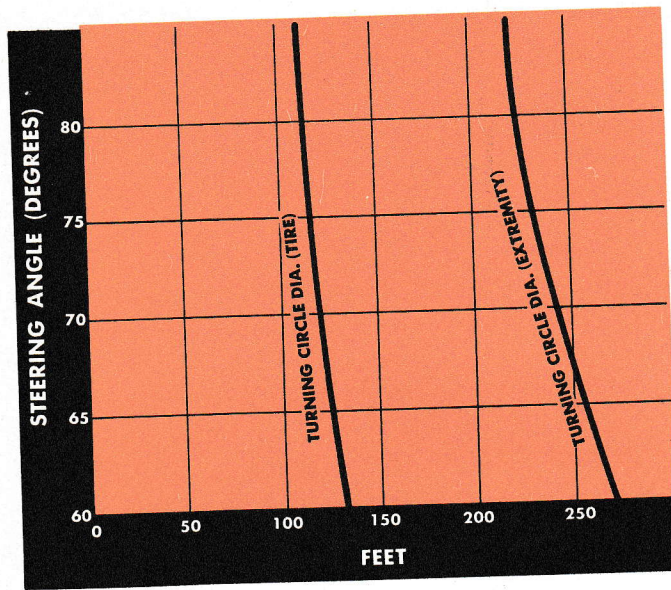
The UCI represents the effort required to construct a given section of runway of adequate strength to support the aircraft under continuous operation. (Ref ARDCM 80-1 p.3-5)

RUNWAY STRENGTH CHARACTERISTICS



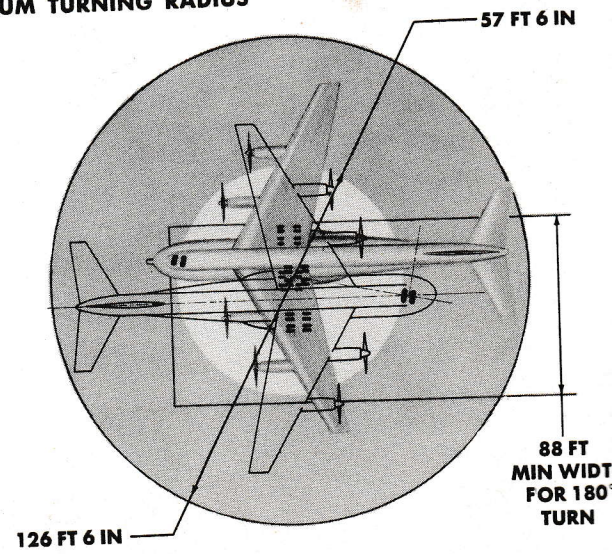
TURNING RADIUS

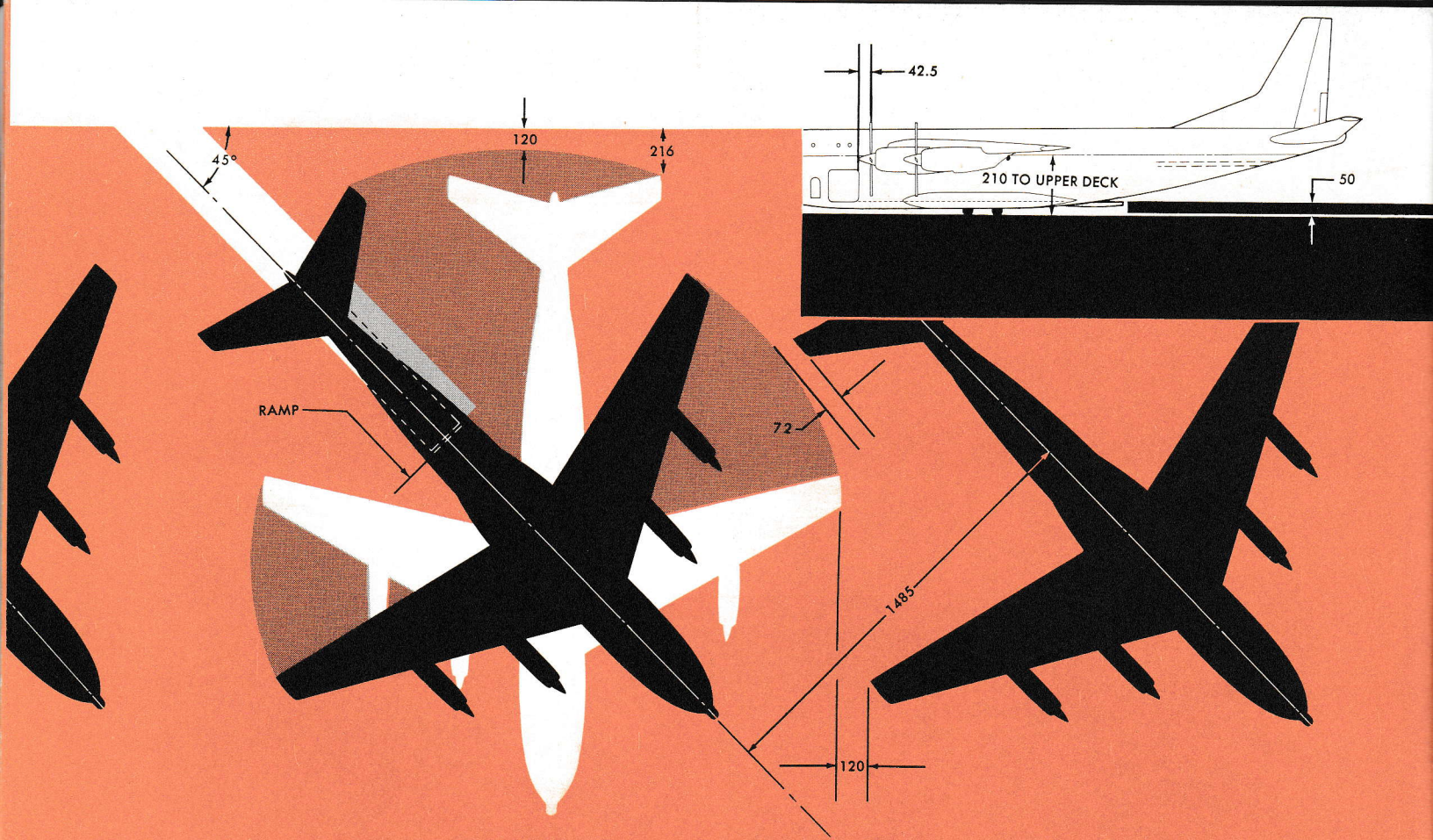
Turning radius data are for taxiing conditions. The airplane can be towed through shorter radius turns by disconnecting the nose gear steering mechanism.



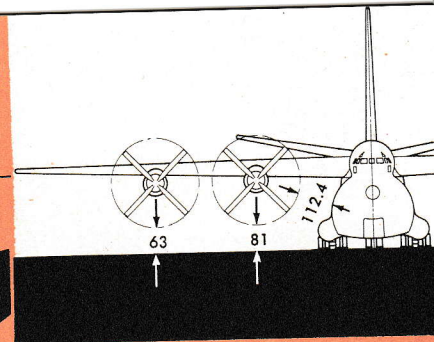
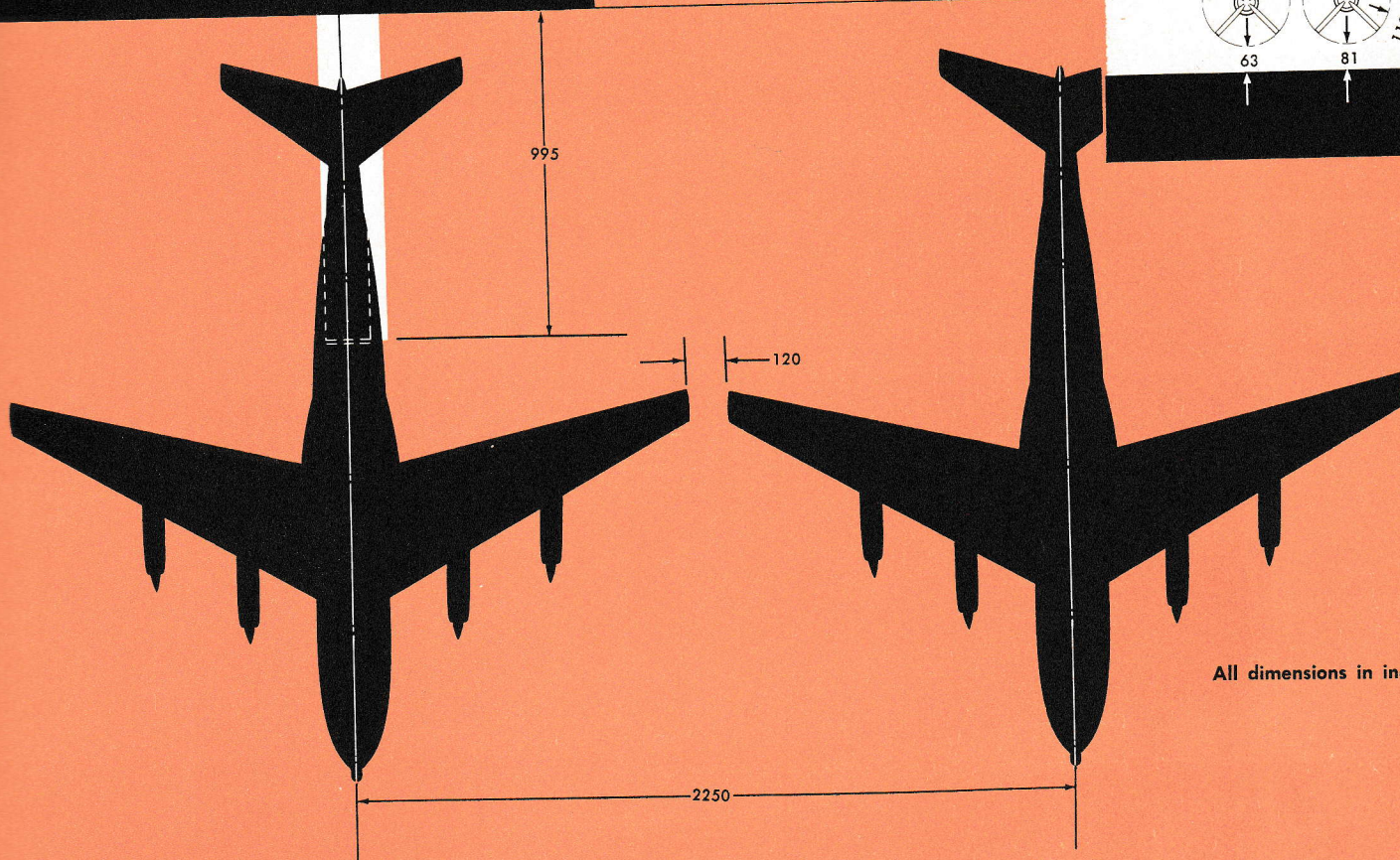
STEERING ANGLE VS
TURNING DISTANCE REQUIRED

MINIMUM TURNING RADIUS

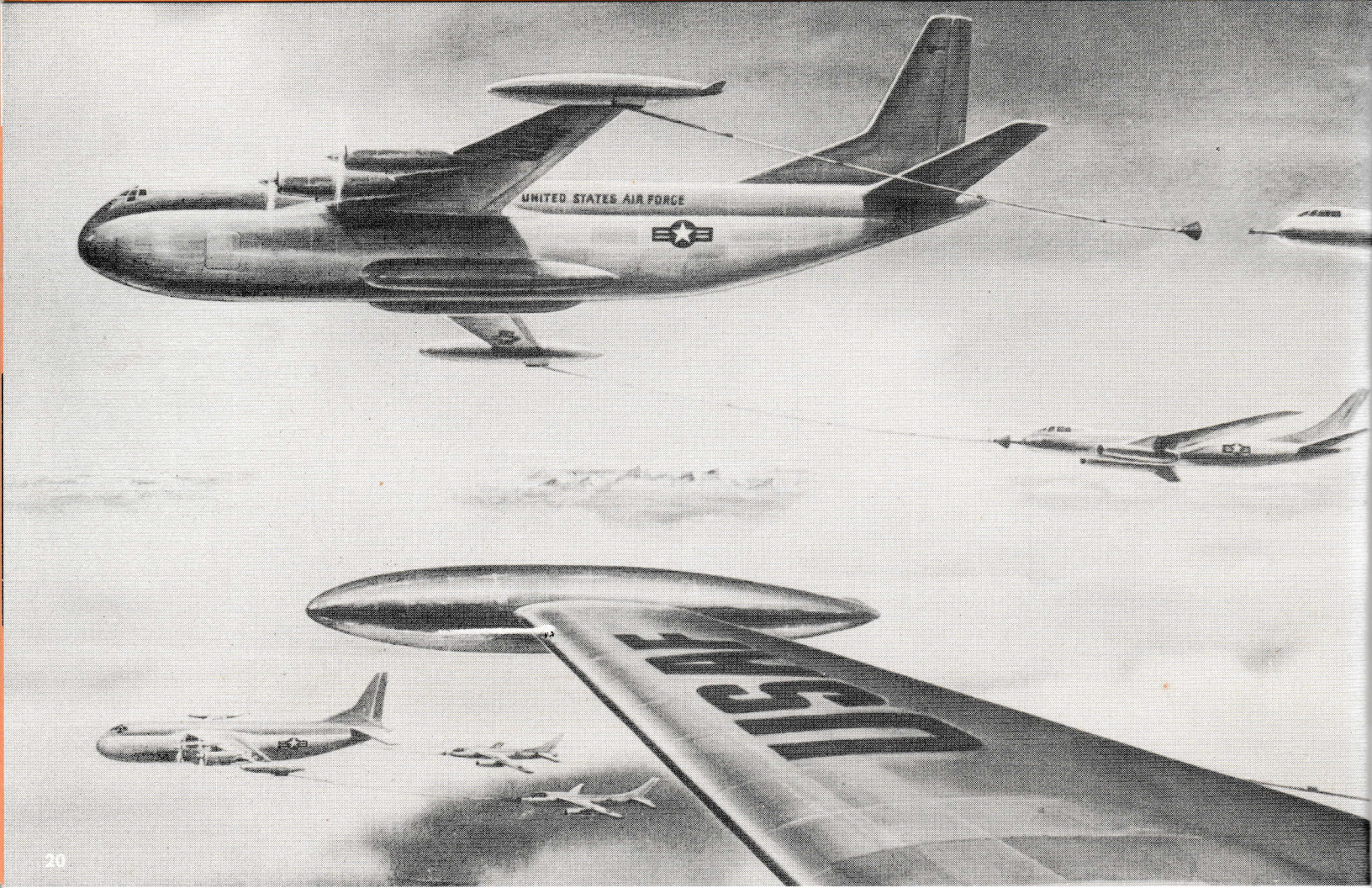




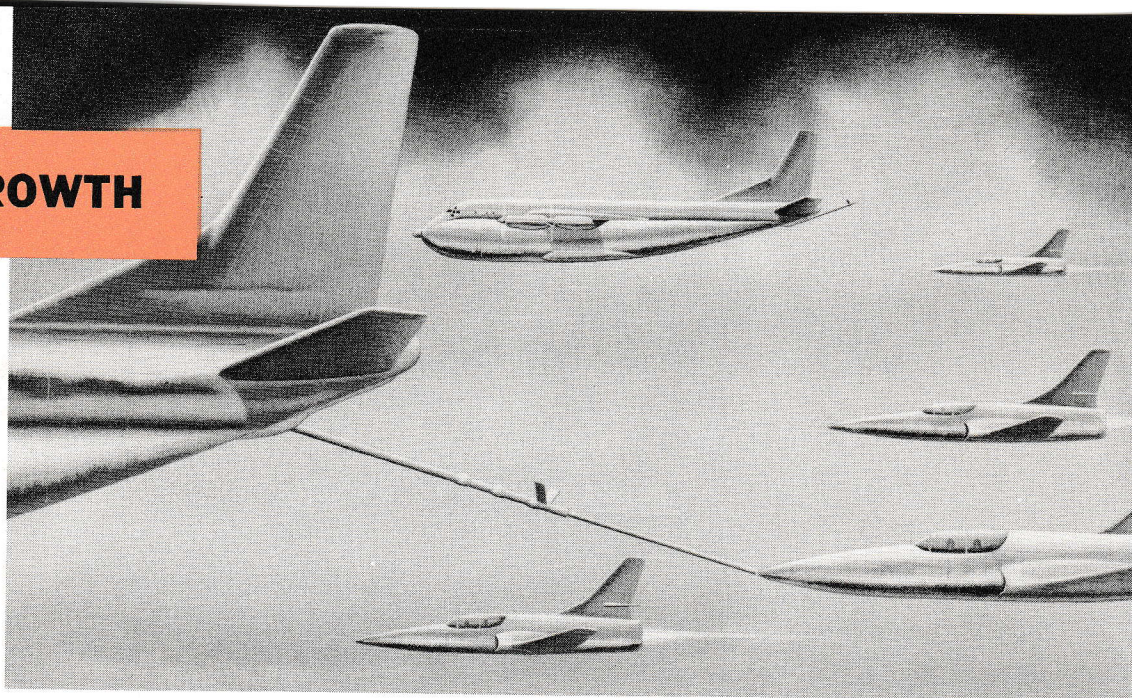
AIRFIELD REQUIREMENTS



All dimensions in inches.

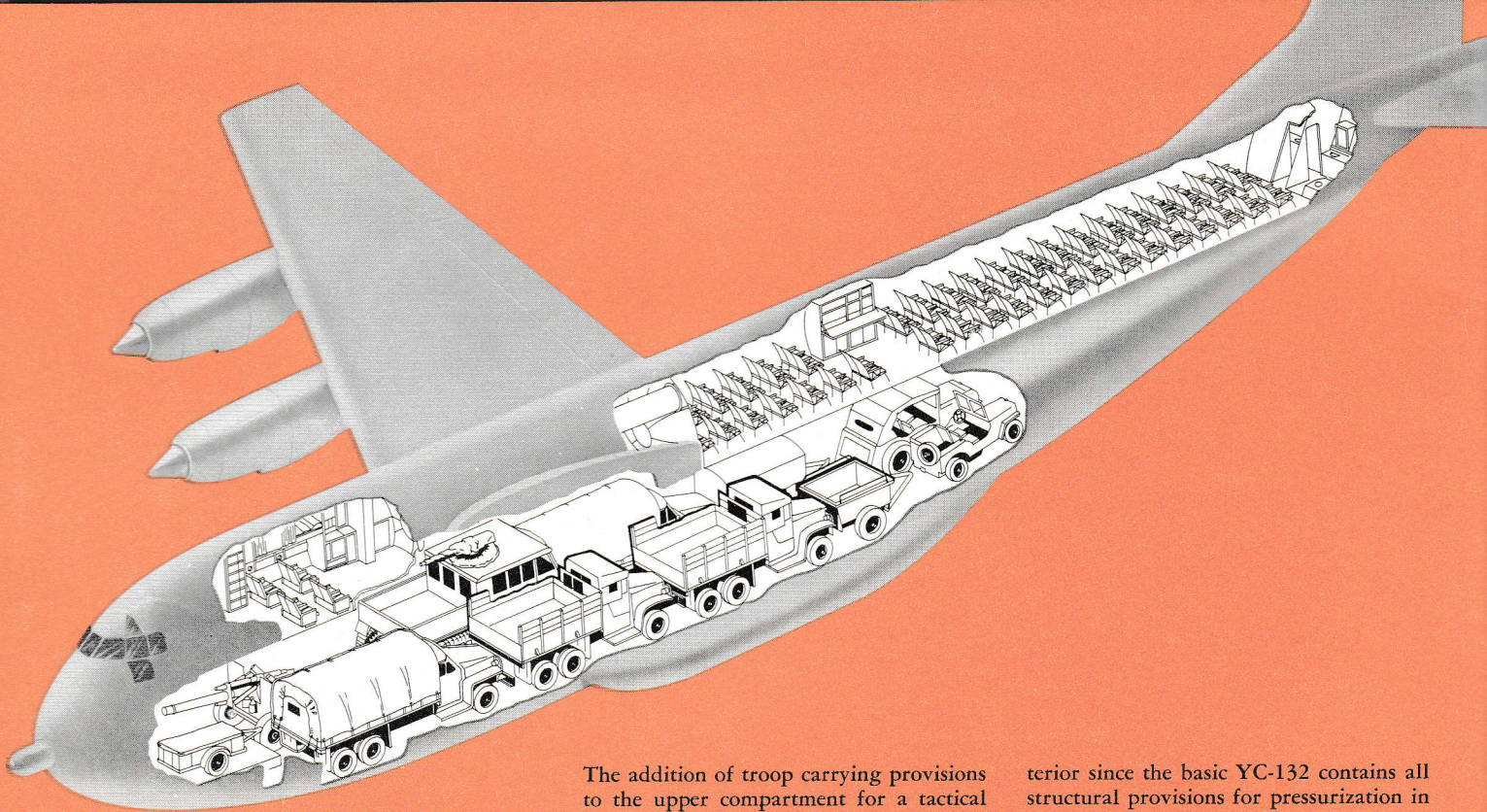


FUTURE GROWTH



Although the present configuration of the YC-132 is that of a logistic carrier, with minor modifications it can be adapted to other missions such as in-flight refueling or tactical support. The

refueling capabilities are basically of two different types, a two point system with wing tip pods (probe and drouge), or a single point system (either probe and drouge or flying boom).



The addition of troop carrying provisions to the upper compartment for a tactical version is primarily a rework of the in-

terior since the basic YC-132 contains all structural provisions for pressurization in this area.

The tactical version of the YC-132 incorporates these advantages:

- Troops can be transported with their assigned vehicles.
- The rear cargo ramp can be used for aerial delivery.

10



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