

THE  
McDONNELL AIRCRAFT  
CORPORATION

*Presents*

MODEL 36H  
PHOTO-RECONNAISSANCE  
VERSION OF THE F-88 AIRPLANE

CONFIDENTIAL REPORT  
NUMBER 1210

SERIAL NO. 9  
22 APRIL 1949

CONFIDENTIAL

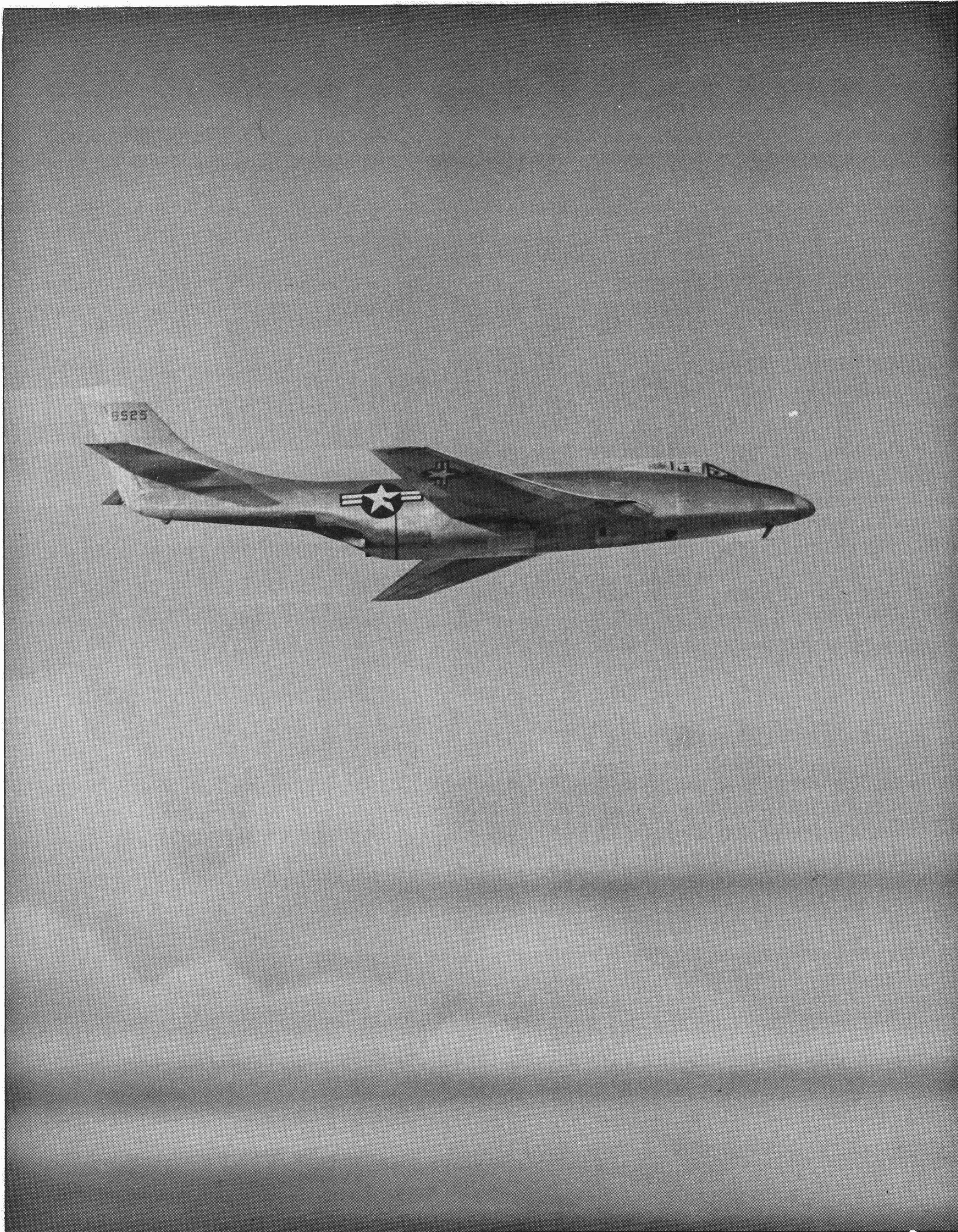


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MAC MODEL 36H  
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## SUMMARY

The F-88 photo-reconnaissance airplane is capable of fulfilling long range missions during daylight or darkness to furnish tactical photo-reconnaissance. This airplane is a version of the F-88 penetration fighter and is equipped with two Westinghouse XJ46-WE-2 engines with short afterburners. Maximum interchangeability has been maintained between the F-88 photo-reconnaissance airplane and the F-88 penetration fighter. The principal features are:

1. Successful flight tests of XF-88 prove basic configuration.
2. Performance:
 

Rate of climb, sea level	24,600 ft./min.
High speed, sea level	640 kts. (737 mph) .96M
High speed, 35,000 ft.	569 kts. (655 mph) .98M
Time to climb, 35,000 ft.	2.36 min.
3. Camera installation provisions for performing the following alternate missions:
 

	Radius of Action
High Altitude Photo-Reconnaissance or Mapping and Charting	1031 miles
Low Altitude - High Speed Photo-Reconnaissance, (Extended Range)	507 miles
Low Altitude High Speed Photo-Reconnaissance	358 miles
Night Photographic	734 miles
4. Complete electronic equipment for day and night operation.
5. Four 20 MM guns with 250 rounds of ammunition each, also A-1B gunsight and APG-30 radar.
6. Ready access provided for all camera, radio, and equipment compartments.
7. Air conditioned and pressurized cockpit with ejection seat.



SUMMARY (Continued)

8. All fuel carried internally and automatically transferred to engines.
9. Modification of penetration fighter to photographic airplane readily accomplished by:
  - a. Replacing fuselage nose section forward of F.S. 311.60.
  - b. Installing tail warning radar in removable tail cone fairing.



**WING**

TOTAL AREA INCLUDING AILERONS AND FUSELAGE AREA OF 773 SQ. FT.	350.00 SQ. FT.
TOTAL AILERON AREA	18.02 SQ. FT.
INCIDENCE	1°
DIHEDRAL	0°

**M.A.C.**

VERTICAL DISTANCE ABOVE LEADING EDGE TO THRUST LINE	7.98 IN.
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**TAIL**

TOTAL HORIZONTAL TAIL AREA	70.92 SQ. FT.
TOTAL ELEVATOR AREA	15.86 SQ. FT.
INCIDENCE	0°
DIHEDRAL	0°
TOTAL VERTICAL TAIL AREA	53.58 SQ. FT.
TOTAL RUDDER AREA	9.52 SQ. FT.

**LIFT AND DRAG DEVICE ANGULAR MOVEMENT**

LEADING EDGE FLAP	30°
TRAILING EDGE FLAP	55°
SPEED BRAKE	65°

**AIRFOIL SECTION DESIGNATION**

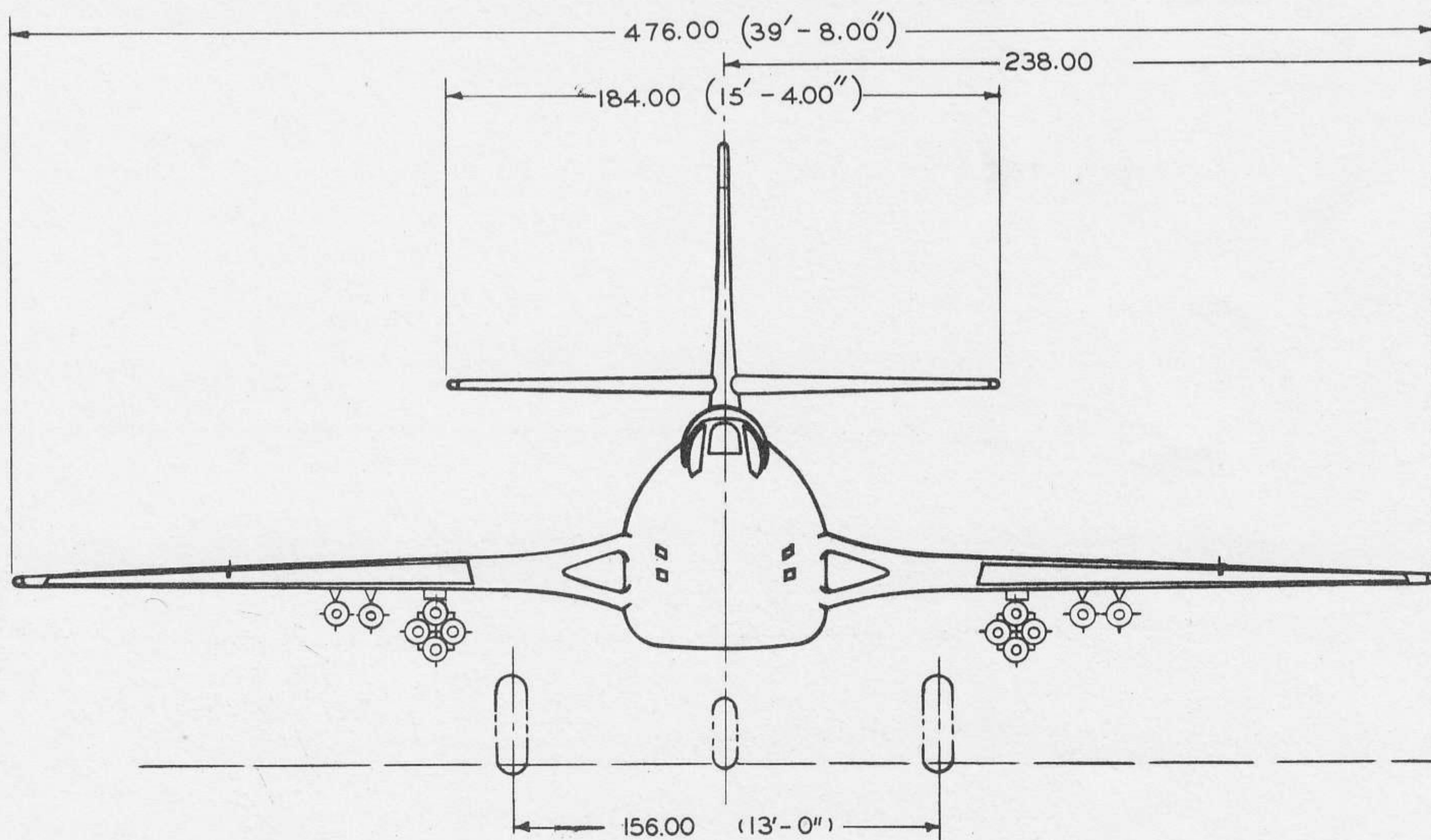
WING AIRFOIL, NORMAL TO 25% CHORD, NACA 65-009 (MODIFIED.)  
MODIFIED AT ROOT FOR LANDING GEAR & ENGINE AIR INLET DUCT.  
HORIZONTAL TAIL AIRFOIL, NORMAL TO 25% CHORD,  
NACA 65-009 (MODIFIED.)  
VERTICAL TAIL AIRFOIL, NORMAL TO 25% CHORD,  
NACA 65-009 (MODIFIED.)  
MODIFIED AT ROOT FOR DORSAL FIN.

**POWER PLANT**

2 WESTINGHOUSE XJ46-WE-2 ENGINES

**ANGULAR MOVEMENT OF CONTROL SURFACES**

AILERON	±20°
ELEVATOR	+25° TO -15°
RUDDER	±20°



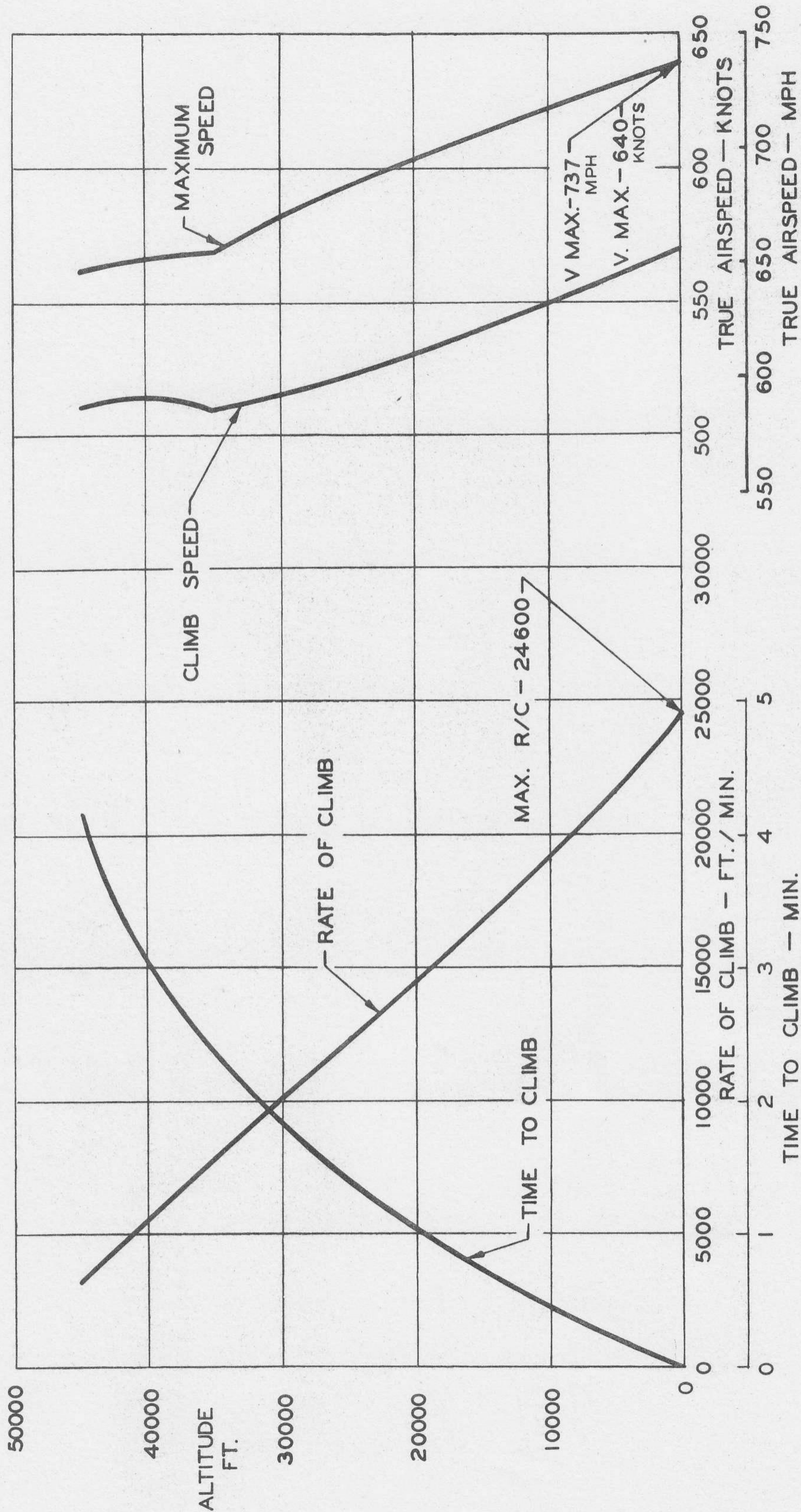






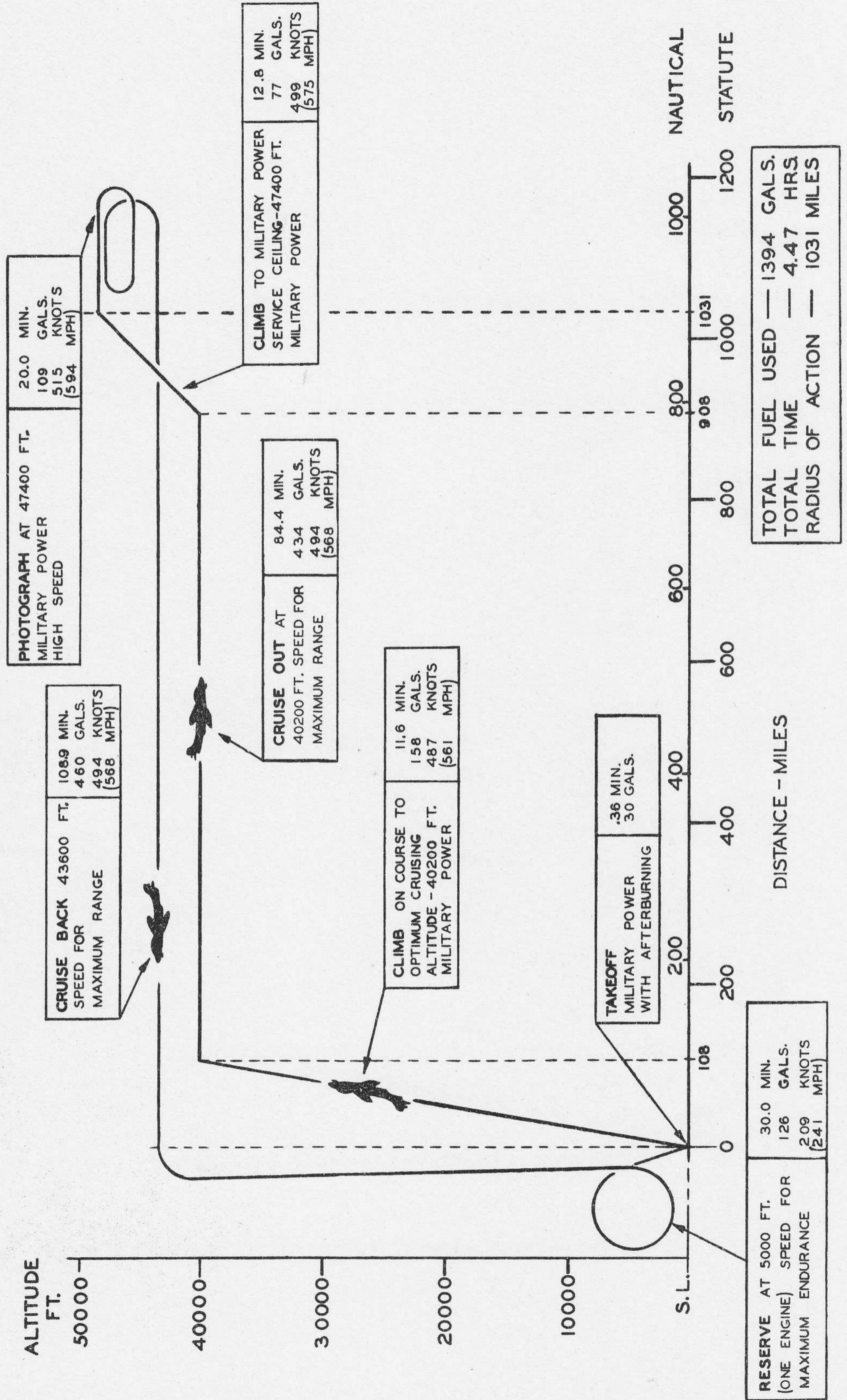
ESTIMATED  
PERFORMANCE CHART  
FOR PHOTO-RECONNAISSANCE AIRPLANE

MILITARY THRUST WITH AFTERBURNING  
COMBAT GROSS WEIGHT - 22855 LBS.



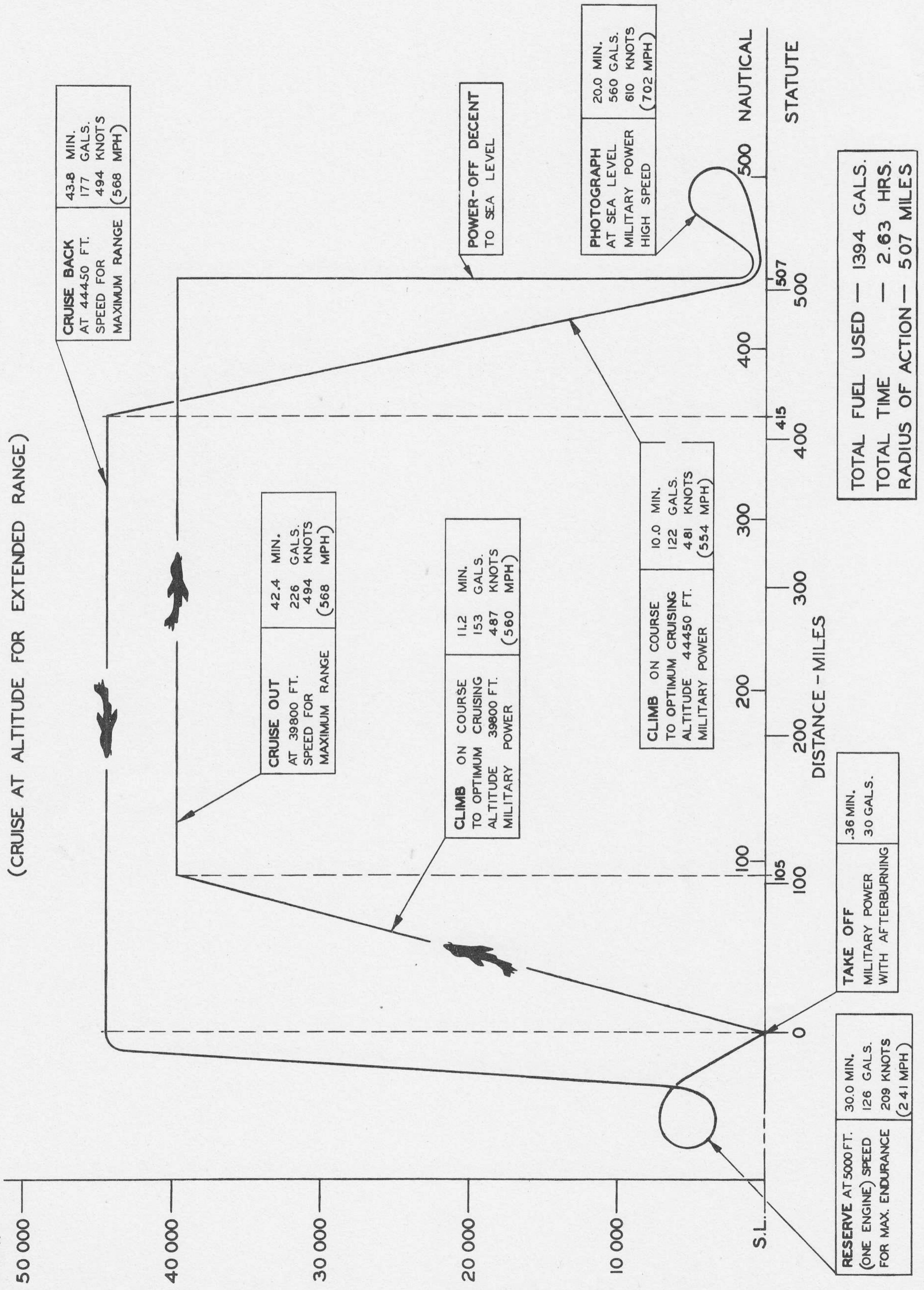


HIGH ALTITUDE PHOTO-RECONNAISSANCE  
AND  
MAPPING AND CHARTING MISSIONS



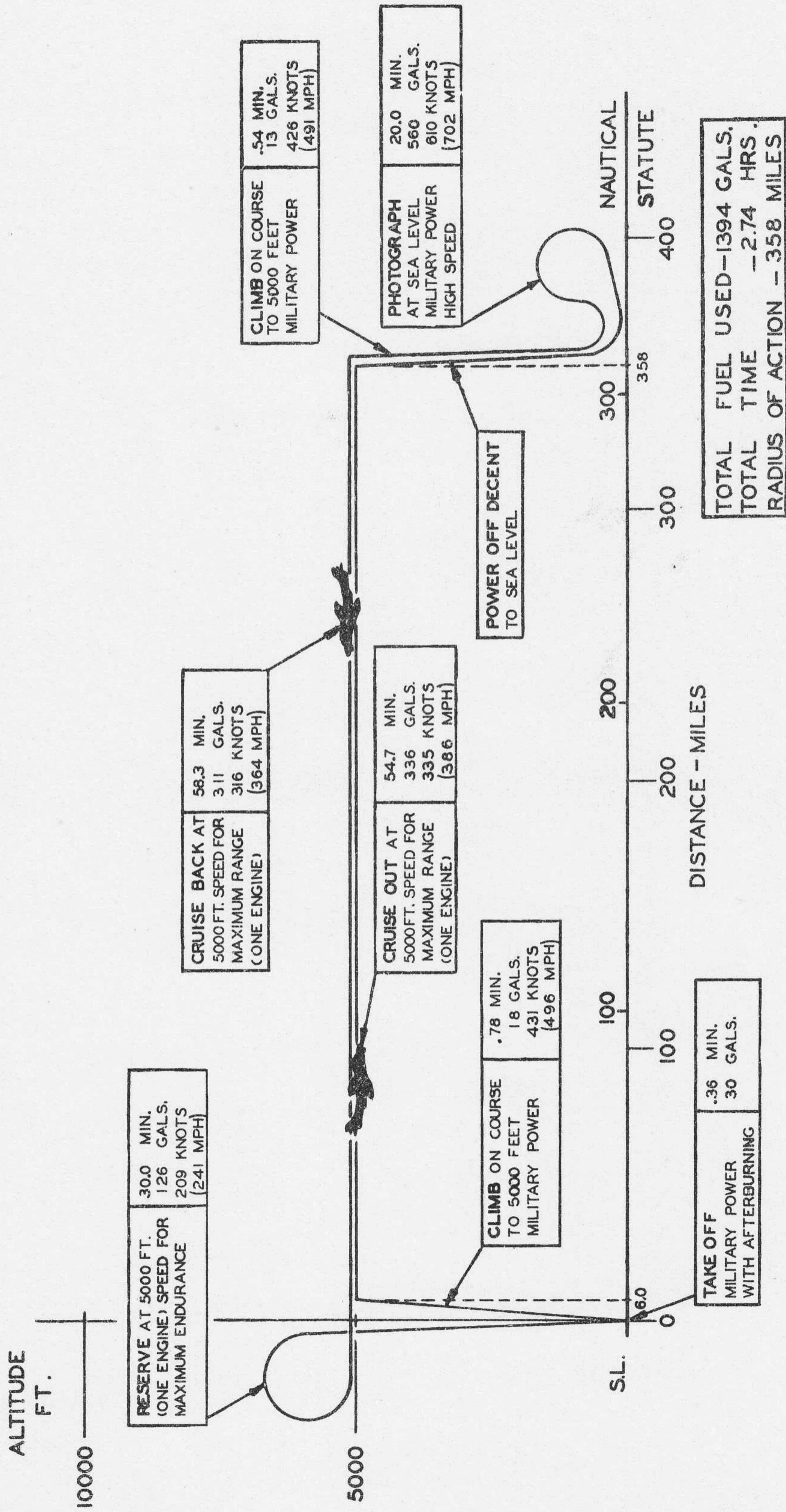


LOW ALTITUDE HIGH SPEED PHOTO-RECONNAISSANCE MISSION



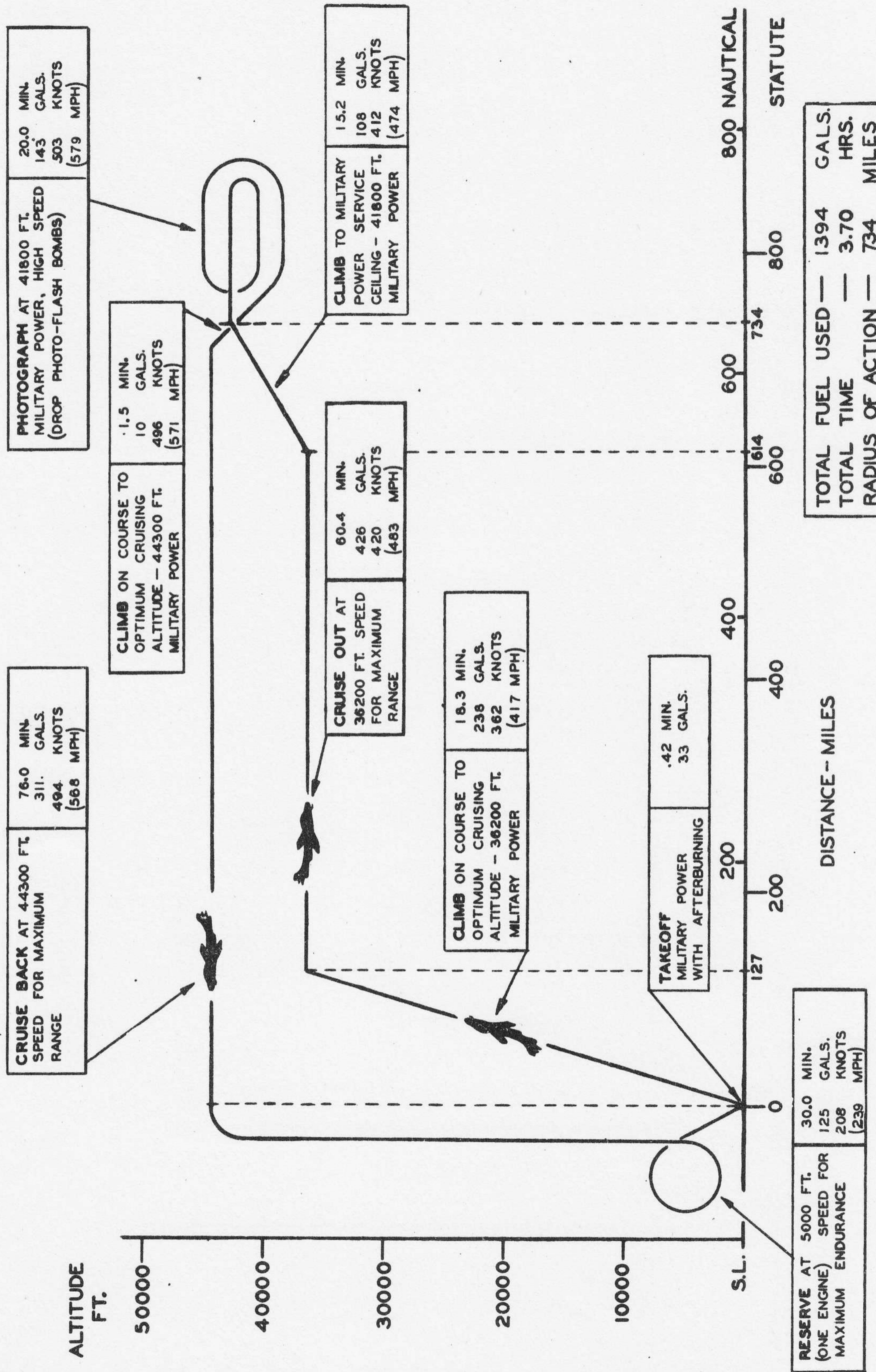


LOW ALTITUDE HIGH SPEED PHOTO-RECONNAISSANCE MISSION





NIGHT PHOTOGRAPHIC MISSION





## ESTIMATED PERFORMANCE

The performance given below is for the airplane with equipment for the mapping and charting mission. The performance data are substantially the same for all the missions as the fuel capacities are identical and the gross weights differences are small except when the flash bombs are attached for the night photographic mission. The estimated performance is based on the use of AN-F-58 fuel.

	<u>Design Gross Weight</u>	<u>Alternate Gross Weight</u>
Gross Weight (lbs.)	22,855	27,316
Fuel (gals.)	697	1,394
High Speed at sea level (knots) (mph)	640(.968M) 737	
High Speed at 35,000 ft. (knots) (mph)	569(.988M) 655	
High Speed at 45,000 ft. (knots) (mph)	562(.977M) 647	
Rate of Climb at: sea level (ft./min.)	24,600	
35,000 ft. (ft./min.)	7,730	
45,000 ft. (ft./min.)	3,200	
Time to Climb to: 35,000 ft. (min.)	2.36	
45,000 ft. (min.)	4.17	
Combat Ceiling, normal power (ft.)	42,530	
Combat Ceiling, maximum power (ft.)	49,830	
Take-Off Distance over 50 ft. obstacle, sea level standard day, maximum power (ft.)		3,235



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## ESTIMATED PERFORMANCE (Continued)

	<u>Design Gross Weight</u>	<u>Alternate Gross Weight</u>
Take-Off Ground Run, 3,000 ft. Army hot day, maximum power (ft.)		3,035
Maximum Obtainable Load Factor (M = 1.00 at 35,000 ft.)	5.45	
Maximum Obtainable Load Factor (M = 1.00 at 45,000 ft.)	3.45	

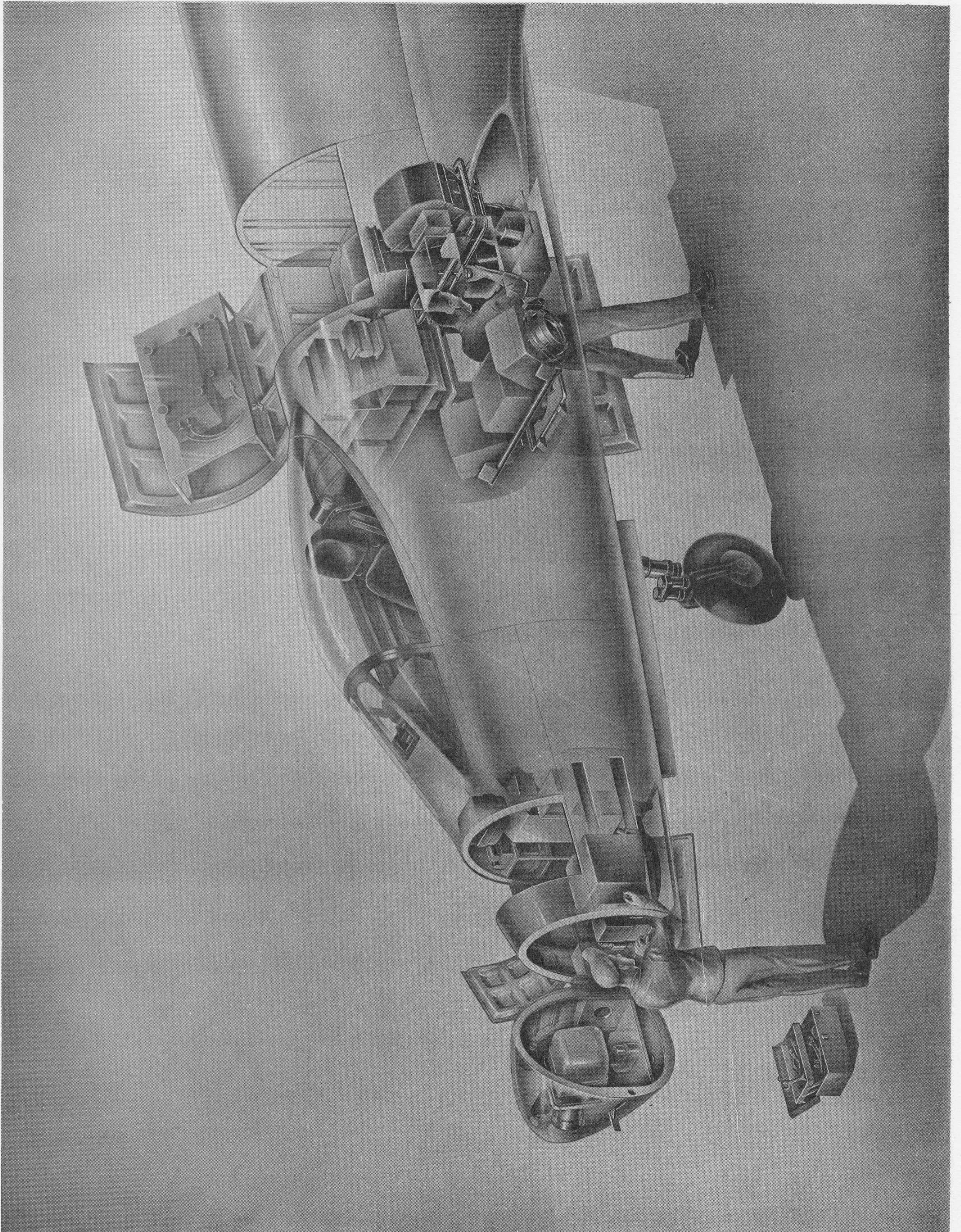
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## WEIGHT SUMMARY

Alternate Gross Weight		27,316
Useful Load		11,171
Crew	230	
Fuel (1394 gallons)	8922	
Oil	30	
Trapped fuel and oil	54	
Armament	1150	
Equipment	785	
Design Gross Weight		22,855
Useful Load		6,710
Crew	230	
Fuel (697 gallons)	4461	
Oil	30	
Trapped fuel and oil	54	
Armament	1150	
Equipment	785	
Weight Empty		16,145
Wing group	2219	
Tail group	523	
Fuselage	3957	
Landing gear	1232	
Engine section	30	
Power plant	4981	
Fixed equipment	3203	
Instruments	72	
Surface controls	576	
Hydraulic system	296	
Electrical system	734	
Communicating	713	
Armament provisions	408	
Furnishings	404	





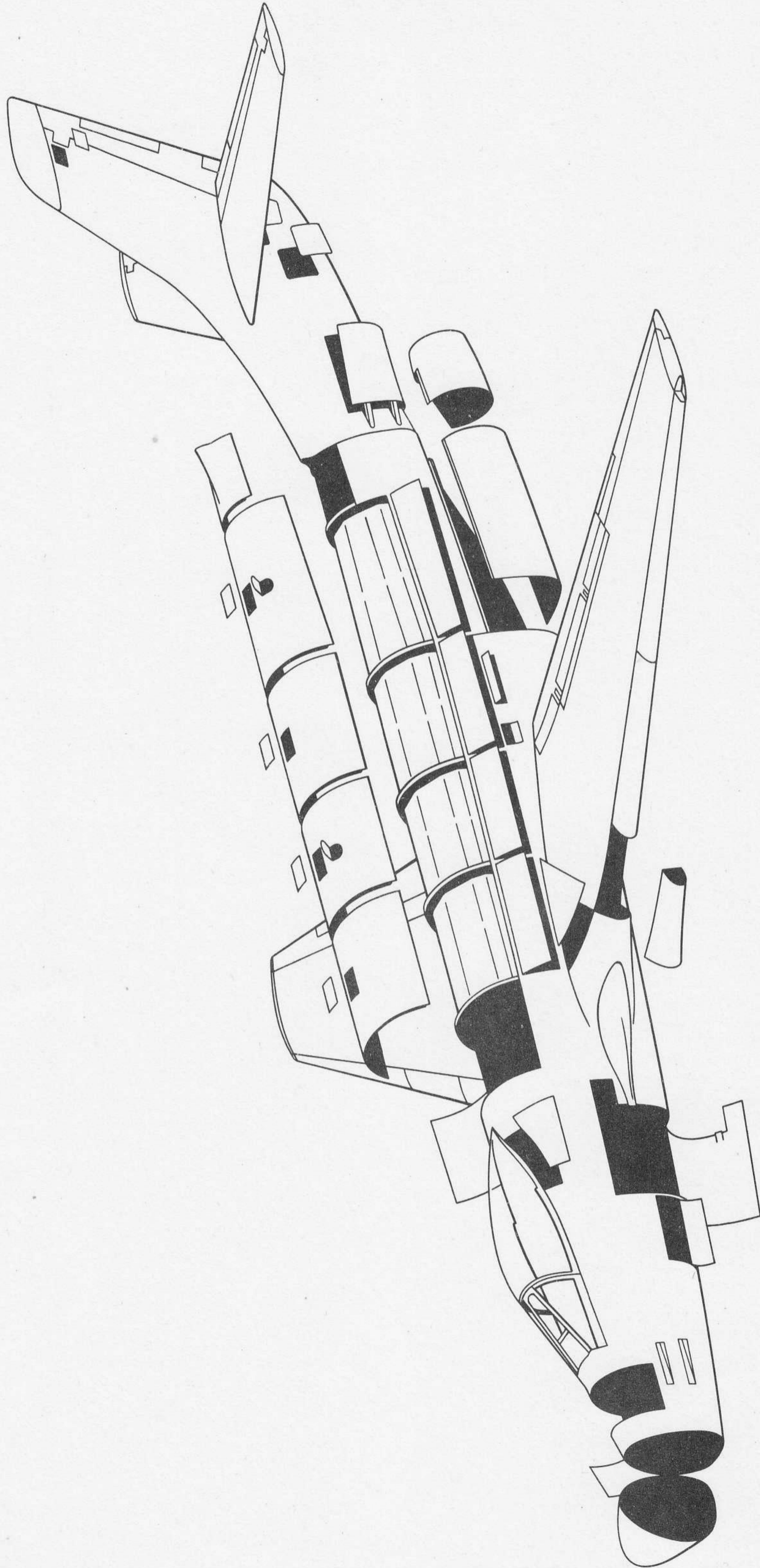
CAMERA ACCESS PERSPECTIVE



CAMERA INSTALLATIONS CHART

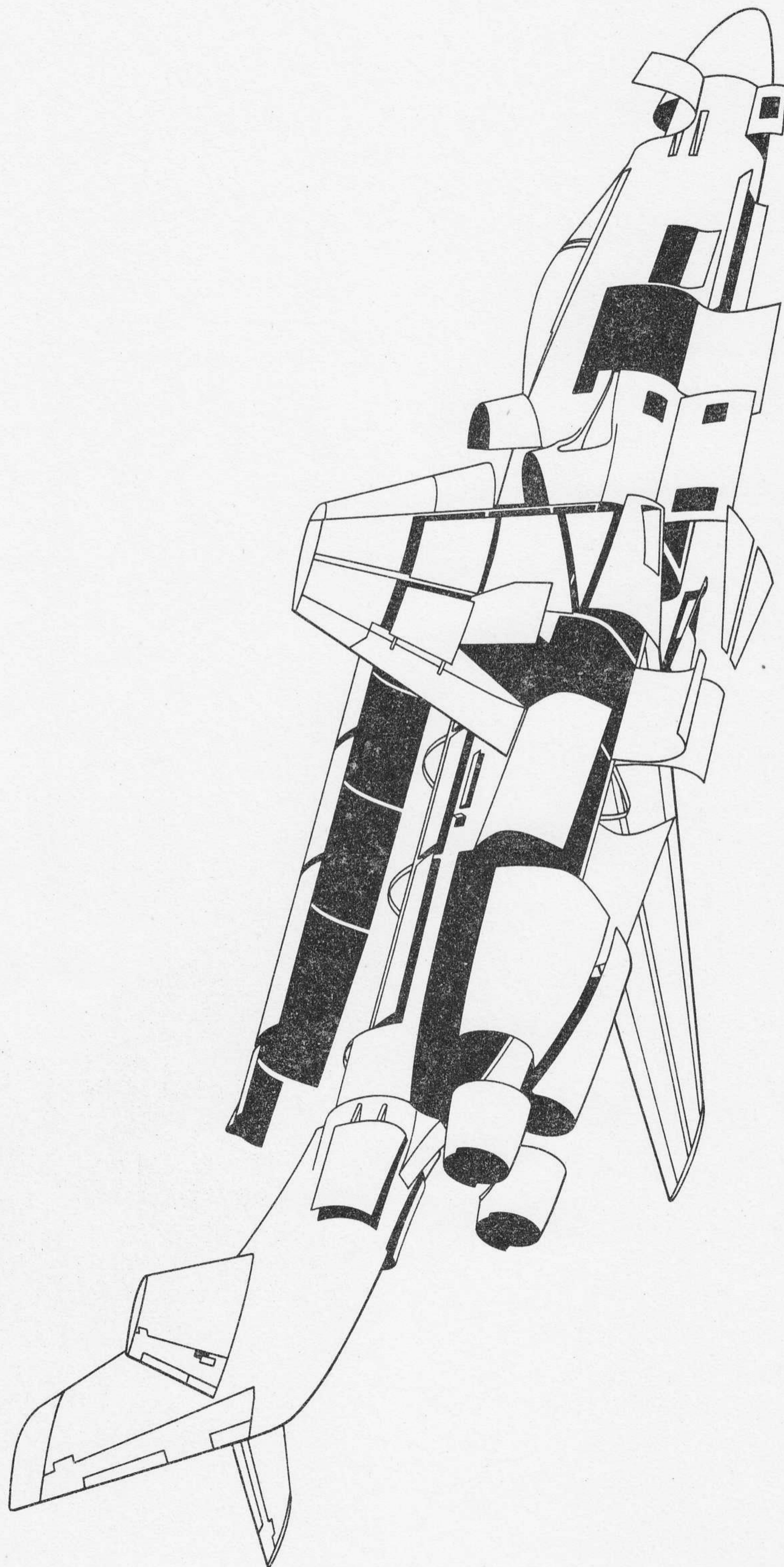
MISSION	STATION				
	FORWARD OBLIQUE	VERTICAL	SPLIT VERTICAL	LEFT AND/OR RIGHT OBLIQUE	TRI-METROGON
MAPPING AND CHARTING MISSION	K-22A CAMERA WITH 24 INCH-LENS & A-14 MAGAZINE	T-11 MAPPING CAMERA WITH A-28 MOUNT	(2) K-38 CAMERAS, 24 OR 36-INCH LENS & A-8B MAGAZINES		(3) K-17C CAMERAS, 6-INCH METROGON LENS & A-9A MAGAZINES
HIGH ALTITUDE RECONNAISSANCE MISSION	K-38 CAMERA, 24 OR 36-INCH LENS & A-8B MAGAZINE	K-38 CAMERA, 36- INCH LENS & A-8B MAGAZINE	(2) K-38 CAMERAS, 36-INCH LENS & A-8B MAGAZINES	K-22A CAMERA, 12 OR 24-INCH LENS & A-14 MAGAZINE OR K-38 CAMERA, 24 OR 36-INCH LENS & A-8B MAGAZINE	
LOW ALTITUDE - HIGH SPEED RECONNAISSANCE MISSION	A-10 MOTION PICTURE CAMERA, 1000 FT. MAGAZINE OR K-22A CAMERA, 6- LENS & A-9A MAGAZINE	S-7A CAMERA, 6- INCH SINGLE, 88 MM, 7 INCH OR 20 INCH STEREO LENS CONE ASSEMBLY & A-28 MOUNT		S-7A CAMERA, 6- INCH SINGLE, 88 MM, 7 INCH OR 20 INCH STEREO LENS CONE ASSEMBLY	
NIGHT PHOTOGRAPHIC MISSION (INCLUDES 12 T-86 PHOTO- FLASH BOMBS)		K-37 CAMERA, A- 14 MAGAZINE & OR A-28 MOUNT	(2) K-37 CAMERAS & & A-14 MAGAZINES	K-37 CAMERA & A-14 MAGAZINE	





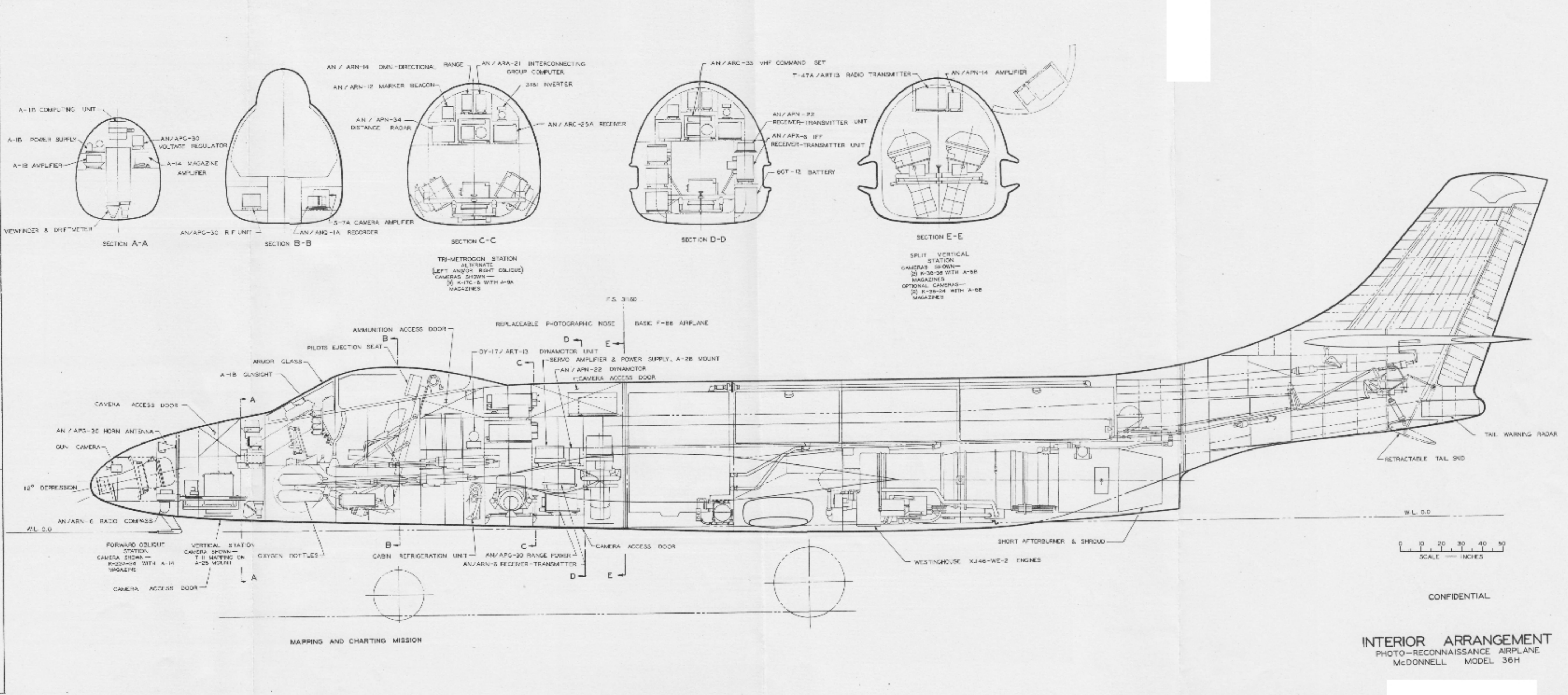
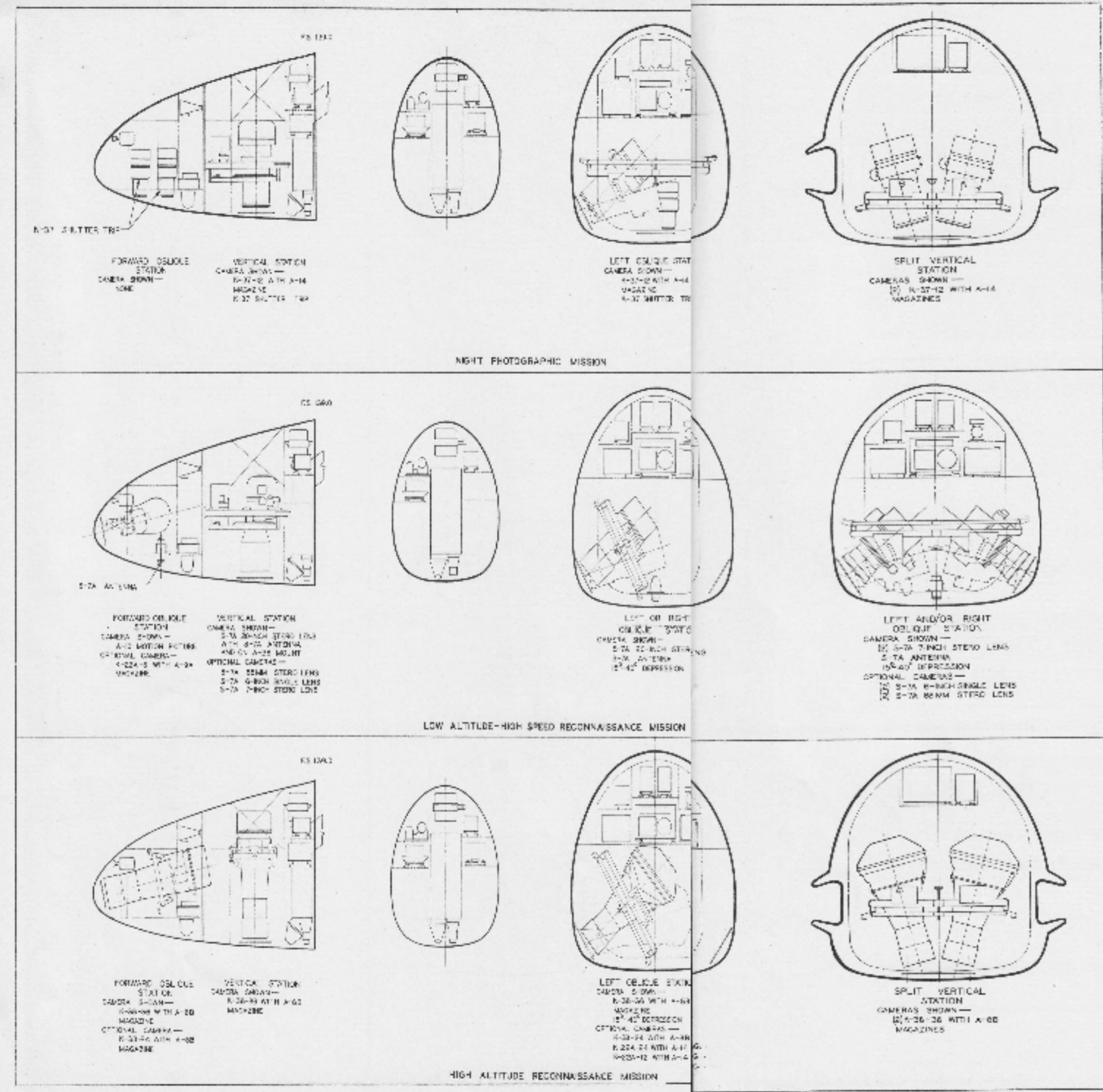
MAINTENANCE ACCESS DIAGRAM





MAINTENANCE ACCESS DIAGRAM





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INTERIOR ARRANGEMENT  
PHOTO-RECONNAISSANCE AIRPLANE  
McDONNELL MODEL 36B