

NAVAIR 00-110AP3-1

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Standard Aircraft Characteristics

NAVY MODEL P-3A AIRCRAFT

(P 3V-1)

(TITLE UNCLASSIFIED)

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1 MAY 1955 IN PART AND ALL ADDENDA THERETO

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PUBLISHED BY DIRECTION OF THE
COMMANDER OF THE NAVAL AIR SYSTEMS COMMAND

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1 JULY 1967

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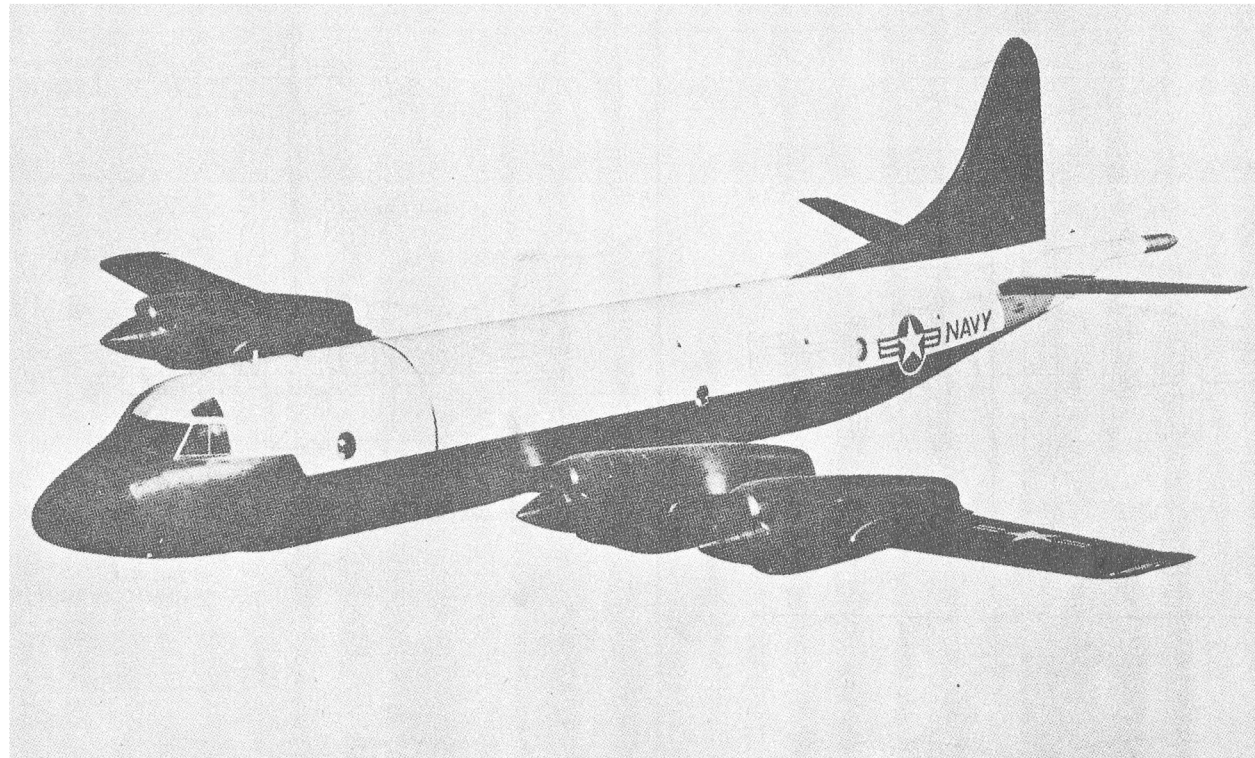
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STANDARD AIRCRAFT CHARACTERISTICS P-3A ORION

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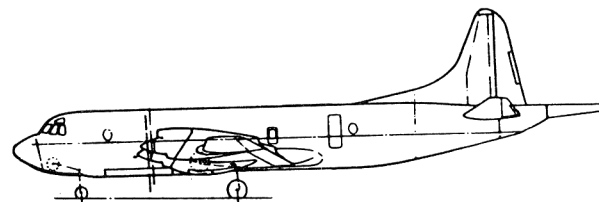
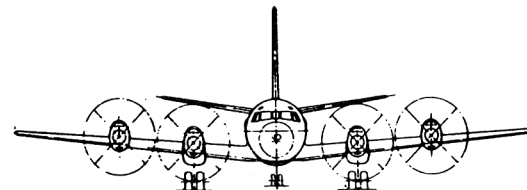
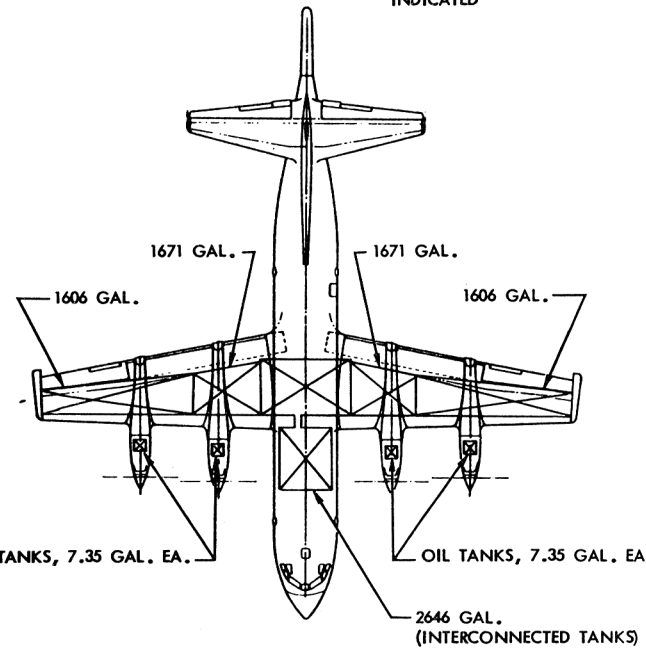
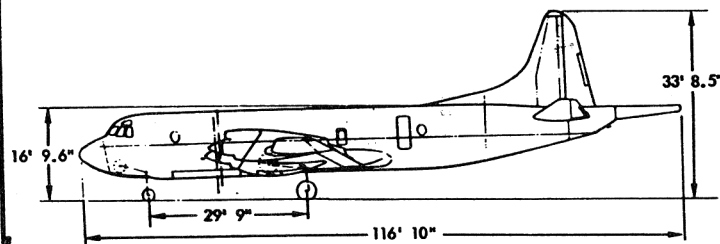
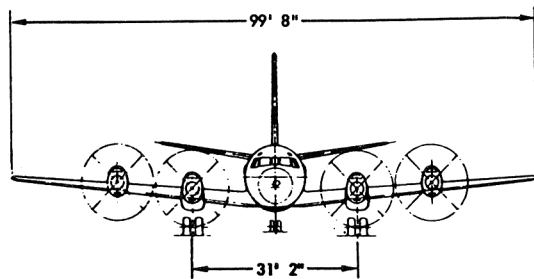
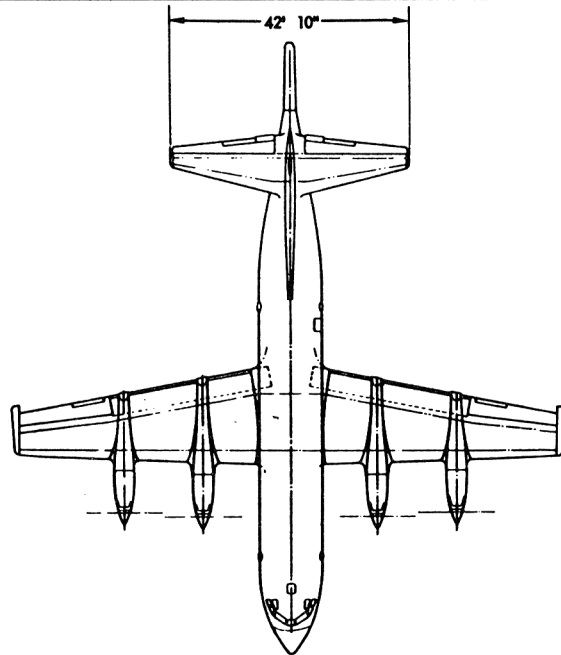
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NOTE: TOTAL USABLE TANK CAPACITIES
INDICATED



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POWER PLANT

NO. AND MODEL.....(4) T56-A-10W
MFR.....Allison
SPECIFICATION....No. 479-A, 1 Aug.1960
PROP. MFR.....Ham.Std
NO. BL./DIA.....4/13.5 Ft
PROP. DESIGN.....54E60-77/A7121B-2
PROP. GEAR RATIO 1:13.54
PROP SPEC1845A

RATINGS

	HP	EXHAUST THRUST	RPM
T.O. *	4500	750	13820
Mil.	4050	740	13820
Norm	3730	718	13820

* Augmented — Water-Alcohol
Injection

ORDNANCE

INTERNAL CAPACITY OF BOMB BAY

LOADING	NUMBER	WEAPON	TYPE
A	8	Torpedoes	MK 44
B	2	Bombs	MK-101
	4	Torpedoes	MK 44
C	8	Torpedoes	MK 43
D	4	Bombs	MK 54-1
	4	Torpedoes	MK 43
E	4	Bombs	MK 54-1
	4	Torpedoes	MK 44
F	2	Bombs	MK-101
	4	Torpedoes	MK 43
G	8	Bombs	MK-54-1
H	6	Torpedoes	MK 43
	2	Torpedoes	MK 44
I	2	Torpedoes	MK 44
	6	Torpedoes	MK 43

EXTERNAL CAPACITY OF ROCKET RACKS

NUMBER	SIZE (Dia., Ins.)	WEAPON	TYPE
4	5.00	Rockets	HVAR
16	5.00	Rockets	FFAR
4	2.25	Rockets	SCAR
8	-	Torpedoes	MK 43
8	-	Torpedoes	MK 44

MISSION AND DESCRIPTION

The Lockheed P3V-1 is designed to detect, locate and destroy enemy submarines. Additional mission capabilities include the following: barrier patrol, convoy escort, hold down, hunter/killer operations, area search, and in flight area coordinator at a scene of action.

The external configuration is similar to that of the commercial Electra, except for modifications required to accomplish the ASW mission. External changes to the airframe include an 88-inch reduction in fuselage length, the addition of a bomb bay, MAD tail cone extension, and a modified flight station enclosure for increased visibility during ASW operations.

DEVELOPMENT

FIRST FLIGHT MAR. 1961

DIMENSIONS

Wing:
Area 1300 Sq.Ft.
Span 99 Ft. 8 In.
M.A.C. 168.7 In.
Length.....116 Ft. 10 In.
Height..... 93 Ft. 8.5 In.
Tread..... 31 Ft. 2 In.
Prop.Gr'd.Clearance 21.75 In.

WEIGHTS

LOADINGS	LES.	L.F.
Empty	59,201	--
Design	127,200	3.0,-1.0
Combat	103,280	3.0,-1.0
Max. T.O.	127,500	--
Max. Ldg.:		
Design.....	91,320	2.0,- 0
Emergency	127,500	--

All weights are estimated.

FUEL AND OIL

NO. TANKS	GALS. *	LOCATION
2	3212	Wing (Outboard)
2	3342	Wing (Inboard)
1	2646	Center and Fuselage Aux.
Total	9200	

FUEL GRADE.....JP-4
FUEL SPEC.....MIL-F-5624C

* Total Usable Capacity

OIL

Total Usable Capacity (Gals)... 29.40
Spec. MIL-L-7808C

ELECTRONICS

TACAN AN/ARN-21A
Direction Finder (UHF).... AN/ARA-25A
Communication....(UHF).(2) AN/ARC-52
Communication....(HF).(2)AN/ARC-94
Coupler.....(2) CU-351
Communication Rec....(HF).. AN/ARR-41
Teletypewriter..... TT-264 /AC
Loran Set..... AN/APW-70
Marker Beacon..... AN/ARN-32
Radar Altimeter..... AN/APW-117
Radar Identification..... AN/APX-6
Radar Recognition..... AN/APX-7
Coder..... AN/APA-89
Radio Rec. AN/ARR-52
OMNI(2) "BENDIX"
RVA-22

- Cont'd on NOTES page -

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SERVICE

PERFORMANCE SUMMARY

TAKE-OFF LOADING CONDITION	(1) ASW BASIC MISSION 4 MK-44 Torp + 1 Lulu	(3) ASW LOW ALTITUDE PATROL 4 MK-44 Torp + 1 Lulu	(5) ASW HIGH ALTITUDE PATROL 4 MK-44 Torp + 1 Lulu	(7) ASW BASIC MISSION 8 MK-44 Torp + 2 Lulus	(9) FERRY RANGE MISSION	(10) ASW CONTACT INVESTIGATION 4 MK-44 Torp + 1 Lulu
TAKE-OFF WEIGHT Lb.	127,500	127,500	127,500	127,500	123,254	127,500
Fuel, internal/external (JP-4) Lb/Lb.	59,800/ -	59,800/ -	59,800/ -	56,744/ -	59,800/ -	59,800/ -
Payload Lb.	4746	4746	4746	7802 (C)	500	4746
Wing Loading Lb/Sq.Ft.	98.1	98.1	98.1	98.1	94.9	98.1
Stall Speed - Power Off - Take-Off Flaps Kn.	118	118	118	118	116	118
Take-Off Run at S.L. - Calm (A) Ft.	4150	4150	4150	4150	3870	4150
Take-Off to Clear 50 Ft. - Calm (A) Ft.	4610	4610	4610	4610	4240	4610
Max. Speed/Altitude (B) Kn/Ft.	376/13,000	376/13,000	376/13,000	366/13,000	377/13,200	376/13,000
Rate of Climb at S.L. (B) Ft/Min.	1850	1850	1850	1810	2000	1850
Time: S.L. to 10,000 Feet (B) Min.	6.8	6.8	6.8	7.5	6.1	6.8
Time: S.L. to 20,000 Feet (B) Min.	20.0	20.0	20.0	22.5	18.6	20.0
Service Ceiling (100 FPM) (B) Ft.	24,600	24,600	24,600	24,100	25,800	24,600
Combat Range NMi	3700	2700	4370	3420	4840	-
Average Cruising Speed Kn.	310	284	338	316 (C)	347	-
Cruising Altitude(s) Ft.	15,000	1,500	22,800/25,000	15,000	24,200/30,000	15,000/25,000
Combat Radius/Mission Time NMi/Hr.	1400/12.15	1250/9.82	1630/12.86	1255/11.07	-	695/12.36
Average Cruising Speed Kn.	308	284	336	314 (C)	-	326
Search Time/Altitude Hr/Ft.	3.0/1500	1.0/1500	3.0/1500	3.0/1500	-	8.0/1500
Search Speed Kn.	194	195	193	192	-	196
	(2) STORES RETAINED	(4) STORES RETAINED	(6) STORES EXPENDED	(8) INTERNAL STORES RETAINED		(11) STORES RETAINED
COMBAT WEIGHT Lb.	103,280	103,280	98,655	102,802		103,280
Engine power	Military	Normal	Military	Military		Military
Fuel Lb.	35,880	35,880	35,880	34,046		35,880
Combat speed/Combat altitude Kn/Ft.	371/1500	360/1500	372/1500	371/1500		371/1500
Rate of climb/Combat altitude Ft/Min/Ft.	2770/1500	2500/1500	2970/1500	2780/1500		2770/1500
Combat ceiling (500 fpm) Ft.	27,700	26,000	29,500	27,800		27,700
Rate of climb at S.L. Ft./Min.	2890	2620	3090	2900		2890
Max. speed at S.L. Kn.	366	354	367	366		366
Max. speed/altitude Kn/Ft.	395/14,000	384/14,000	397/16,000	393/15,000		395/14,000
LANDING WEIGHT Lb.	71,630	71,630	66,980	72,840	67,377	71,630
Fuel Lb.	4230	4230	4205	4085	4223	4230
Stall speed- power-off/appr.power Kn/Kn.	82/75	82/75	80/73	83/76	80/73	82/75
Distance - ground roll/50 ft.obst. Ft/Ft.	1450/2090	1450/2090	1350/1930	1470/2130	1370/1940	1450/2090

PERFORMANCE BASIS: Flight tests and calculations
 RANGE AND/OR RADIUS: Based on engine specification fuel consumption data increased by 5%.

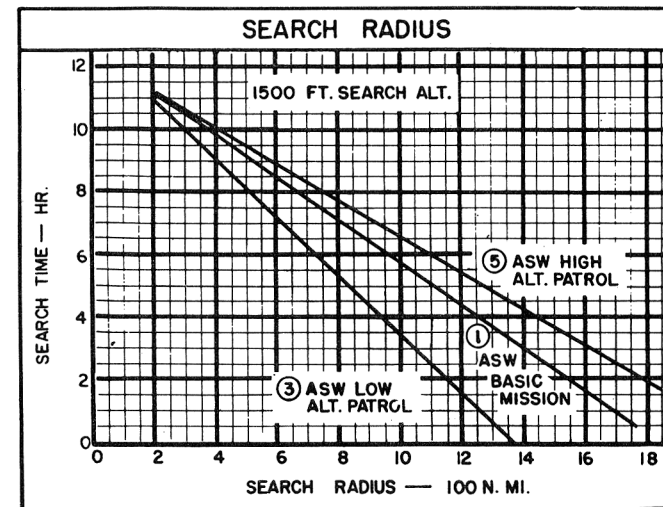
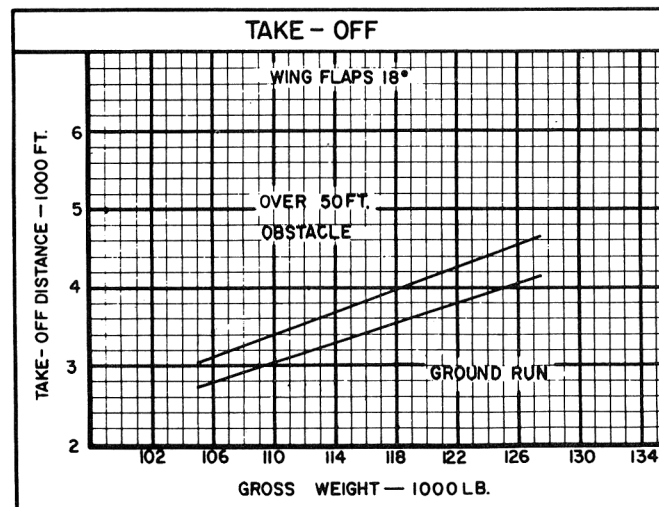
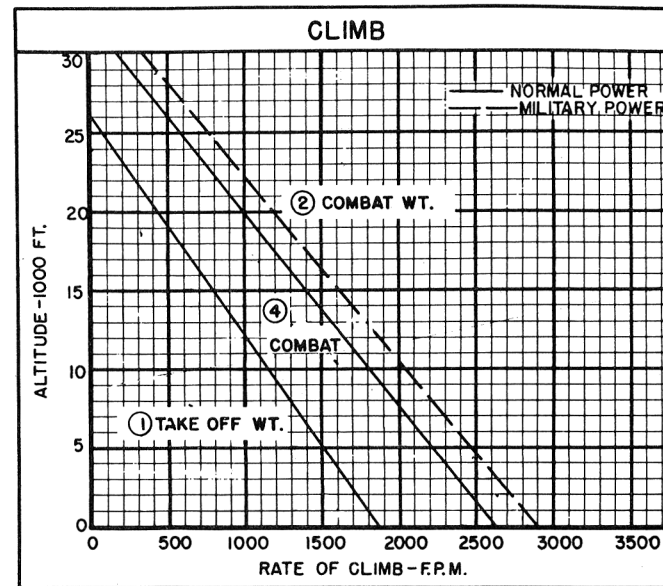
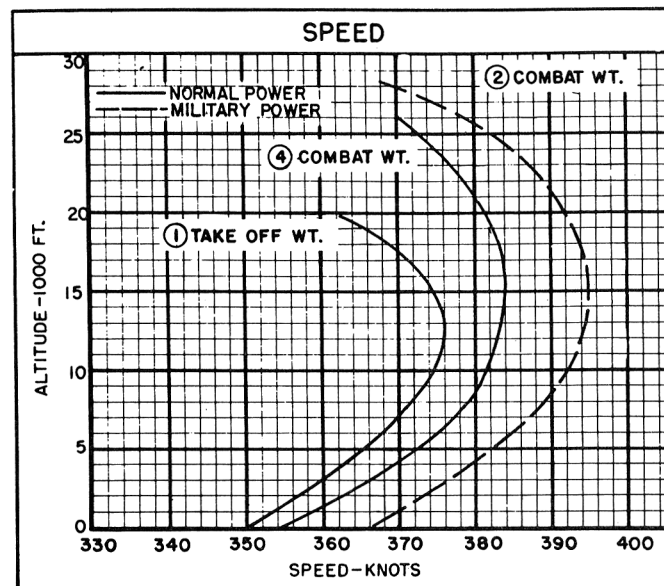
NOTES: (A) TAKE-OFF RATED POWER
 (B) NORMAL RATED POWER
 (C) 4 MK-44 TORPEDOES MOUNTED EXTERNALLY

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○ LOADING CONDITION COLUMN NUMBER

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NOTES

ASW PROBLEM (Basic Mission)

WARM-UP, TAXI, TAKE-OFF: 5 minutes
with normal power at sea level.

CLIMB: With normal power to
15,000 feet.

CRUISE-OUT: At 15,000 feet at the
higher of the speeds corresponding
to 0.99 max. n.mi/lb. (TAS = 325 Knots)

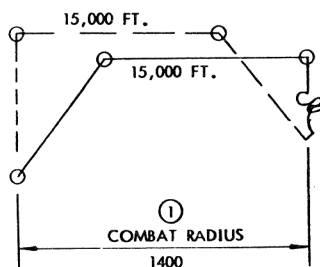
DESCEND: To 1500 feet - No fuel is used;
no distance is gained.

SEARCH: At 1500 feet for 3 hours at the
speed corresponding to $(L/D)_{max}$.
(TAS = 194 knots).

CLIMB: With normal power to 15,000 feet.

CRUISE-IN: At 15,000 feet at the higher
of the speeds corresponding to 0.99 max.
n.mi/lb. (TAS = 294 Knots)

RESERVE: 5% of the initial fuel load plus
an amount corresponding to 20 minutes
of flight at $(L/D)_{max}$ at sea level.



ASW PROBLEM (Low Altitude Patrol)

WARM-UP, TAXI, TAKE-OFF: 5 minutes
with normal power at sea level.

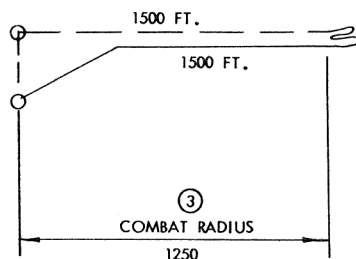
CLIMB: With normal power to
1,500 feet.

CRUISE-OUT: At 1,500 feet at the higher
of the speeds corresponding to 0.99 max.
n.mi/lb. (TAS = 290 Knots)

SEARCH: At 1,500 feet for 1 hour at the
speed corresponding to $(L/D)_{max}$
(TAS = 195 Knots)

CRUISE-IN: At 1,500 feet at the higher of
the speeds corresponding to 0.99 max.
n.mi/lb. (TAS = 277 Knots)

RESERVE: 5% of the initial fuel load plus
an amount corresponding to 20 minutes of
flight at $(L/D)_{max}$ at sea level.



ASW PROBLEM (High Altitude Patrol)

WARM-UP, TAXI, TAKE-OFF: 5 minutes
with normal power at sea level.

CLIMB: With normal power to
22,800 feet.

CRUISE-OUT: Cruise-climb with normal power
from 22,800 feet to 25,000 feet. Then,
cruise at 25,000 feet at the higher of the
speeds corresponding to 0.99 max. n.mi/lb.
(TAS = 352 Knots)

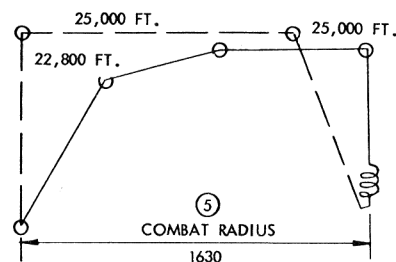
DESCEND: To 1,500 feet - No fuel is used;
no distance is gained.

SEARCH: At 1,500 feet for 3 hours at the
speed corresponding to $(L/D)_{max}$
(TAS = 193 Knots)

CLIMB: With normal power to 25,000 feet.

CRUISE-IN: At 25,000 feet at the higher of
the speeds corresponding to 0.99 max.
n.mi/lb. (TAS = 324 Knots)

RESERVE: 5% of the initial fuel load plus an
amount corresponding to 20 minutes of
flight at $(L/D)_{max}$ at sea level.



Maximum rate-of-climb, at sea level, military power, one engine inoperative (propeller feathered), flaps and gear up.

GROSS WEIGHT - LB.

128,000
126,000
124,000
122,000
120,000

RATE-OF-CLIMB - FT/MIN.

1220
1260
1300
1340
1380

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NOTES

ELECTRONICS (Cont'd.)

Magnetic Detector (MAD)	AN/ASQ-10
Interphone System	AK/AIC-15(V)
Maneuver Monitor	MX-2230
Direction Finder (UHF/SHF, ECM)	AN/ALD-2
Transmitter (VHF)	(1) BENDIX TA-21A
Receiver (VHF)	(2) BENDIX RA-21A
Display Indicator	AN/ASA-16
Pulse Analyzer	AN/ULA-2
Indicator	AN/AQA-3A, or -4(V)
Ground Track Plotter	PT-336
General Purpose Indicator	AN/APA-125A
Submarine Detector	AN/ASR-3
Radar	AN/APB-80
Plotting Board	OA-1768/ASA-13
Recorder	AN/ASA-20
Indicator	AN/AQA-3A
Tape Recorder	(2) AN/UMS-6
AHRS	AN/ASN-37
Searchlight	AN/AVQ-2C
Auto Pilot	FB-20
Sono. Homing Rec.	R-1047/A
Nav. Computer	Doppler/Air Mass Comp.
Navigation System	LITTON LM/2C with AN/APN-122

ORDNANCE

The MK-101 depth bomb is also called a "Lulu" in this document.

PERFORMANCE SUMMARY (Cont'd.)

MISSION	LOADING	TAKE-OFF WT. (LBS)	TAKE-OFF FUEL (LBS)	COMBAT RADIUS MISSION				COMBAT RANGE MISSION	
				RADIUS (N.MI.)	MISSION TIME (HR.)	SEARCH TIME (HR.)	SEARCH ALTITUDE (FT)	RANGE (N.MI.)	AVG. CRUISE SPEED (KN)
ASW BASIC	(4) MK-44 & (2) Lulus	127,500	58,568	1345	11.87	3.0	1500	3600	310
ASW LOW ALTITUDE PATROL	(4) MK-44 & (2) Lulus	127,500	58,568	1210	9.54	1.0	1500	2640	285
ASW HIGH ALTITUDE PATROL	(4) MK-44 & (2) Lulus	127,500	58,568	1560	12.44	3.0	1500	4260	338

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