

By now most VP personnel in fleet squadrons hardly remember that there were ever anything but P-3s in Navy VP squadrons. However, for many years their predecessors never knew that there were any land-based patrol planes other than P2V/P-2 *Neptunes*. And the P-2s have carried on in reserve squadrons and special service so that they are not forgotten among today's Naval Aviation personnel — and certainly not among more senior types from the VP aviation community.

The *Neptune* enjoys the distinction of being the only designed-for-the-purpose, land-based patrol plane to see wide, general Navy service. All others to see general Navy service, including today's P-3s, were derived from other types designed for other purposes; both the P2V's predecessors, the PVs (*NA News*, August 1974) and successors, today's P-3s, being derived from commercial transport designs.

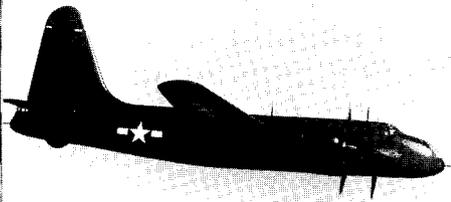
The *Neptune* traces its origins to Lockheed/Vega design studies starting in 1941 when the Navy first acquired land-based patrol aircraft. While types modified from other models served WW II needs, in 1944, two XP2V-1s were ordered, along with 15 production -1 models. These were designed to overcome the many problems of the redesigned types, providing ample space for crew and equipment, and

adequate range in a straight-forward twin-engine design. First flight of the initial XP2V-1 took place on May 12, 1945; for the following 17 years, Lockheed's flight line was never without new P2V/P-2 aircraft.

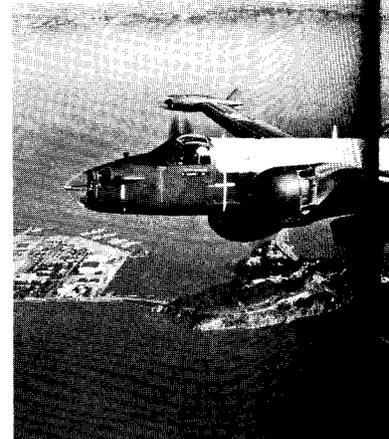
Powered by two 2,300-hp Wright R-3350 engines, and featuring nose, dorsal and tail turrets, the XP2V-1 featured clean lines that were to continue throughout the P2V series — though the aircraft was to grow all manner of electronic and other bumps, and the armament changed regularly.

The most famous *Neptune* was the *Truculent Turtle*, the third P2V-1, which set a world's distance record flying 11,236 miles from Perth, Australia, to Columbus, Ohio, September 29-October 1, 1947 (*NA News*, June 1977). Following initial trials, the first P2Vs went into service with VP-ML-2 in 1947. The -1s were followed by -2s with longer noses and no nose turrets, and subsequent -3s with improved engines. Both these models had variants, initiating a practice that continued throughout the P2V/P-2 series, and which continues in the P-3s today. A special ASW (-2S) and ski-equipped (-2N) P2V-2s were followed by carrier, command transport and radar search (-3C, -3Z and -3W) versions of the P2V-3. While takeoffs from carriers were performed, using JATO assist, the *Neptune* never landed aboard a carrier.

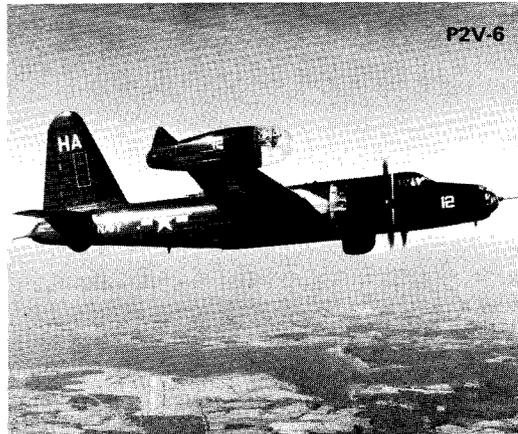
XP2V-1



P2V-7



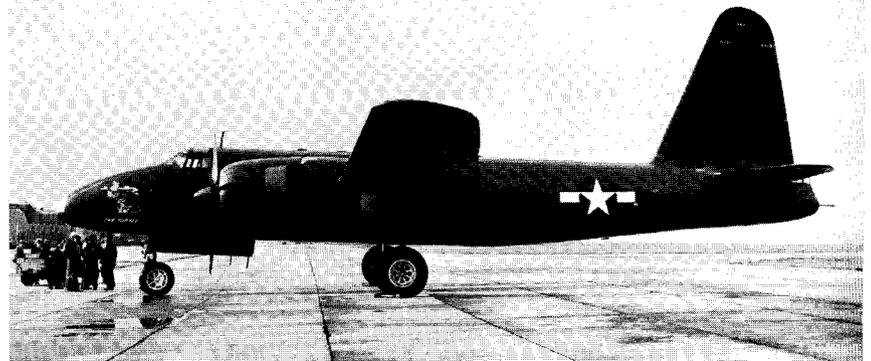
P2V-6



P2V-5F



Truculent Turtle



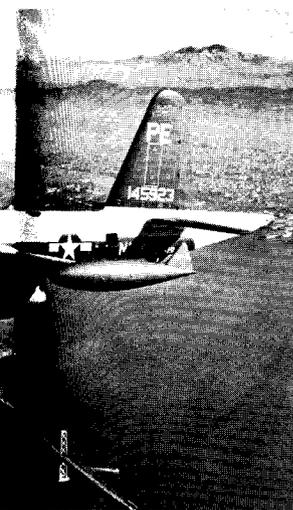
P2V-7LP



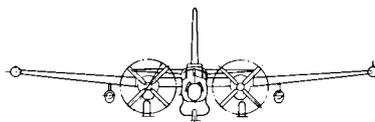
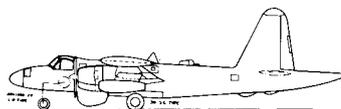
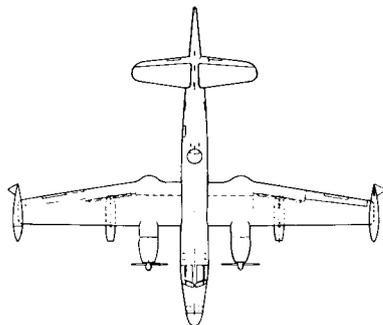
After the initial aircraft, the -4s introduced the turbo-compound R-3350 engine, had APS-20 radar as a standard feature and were fitted with tip tanks. The Korean War accelerated production of the -5, newly fitted with a nose turret and with larger tip tanks. P2V-5s were the first *Neptunes* to serve with foreign countries, to be followed by later models. P2V-6s featured more flexible armament provisions and reduced-capability radar.

With the -7 the P2V reached its ultimate design. Westinghouse J-34s in wing pods added needed power, a MAD boom replaced the tail turret, nose armament was eliminated and the pilot's cabin redesigned. Many of these features were retrofitted on earlier -5 and -6 aircraft as the *Neptunes* underwent successive modifications for fleet use and for special duties, including some used by the Air Force as RB-69As.

By the time the last of 1,036 *Neptunes* were delivered in 1962, the designation of the P2V-7Ss had changed to SP-2H, and all guns were deleted. Subsequent special versions for Southeast Asia added OP-2E and AP-2H to the list of P-2 modifications. As the P-3s filled out the fleet squadrons, the P-2s continued to fill reserve and support mission roles. By the mid-Seventies, they were being rapidly phased out, and only a few remain in service today.



P2V-4



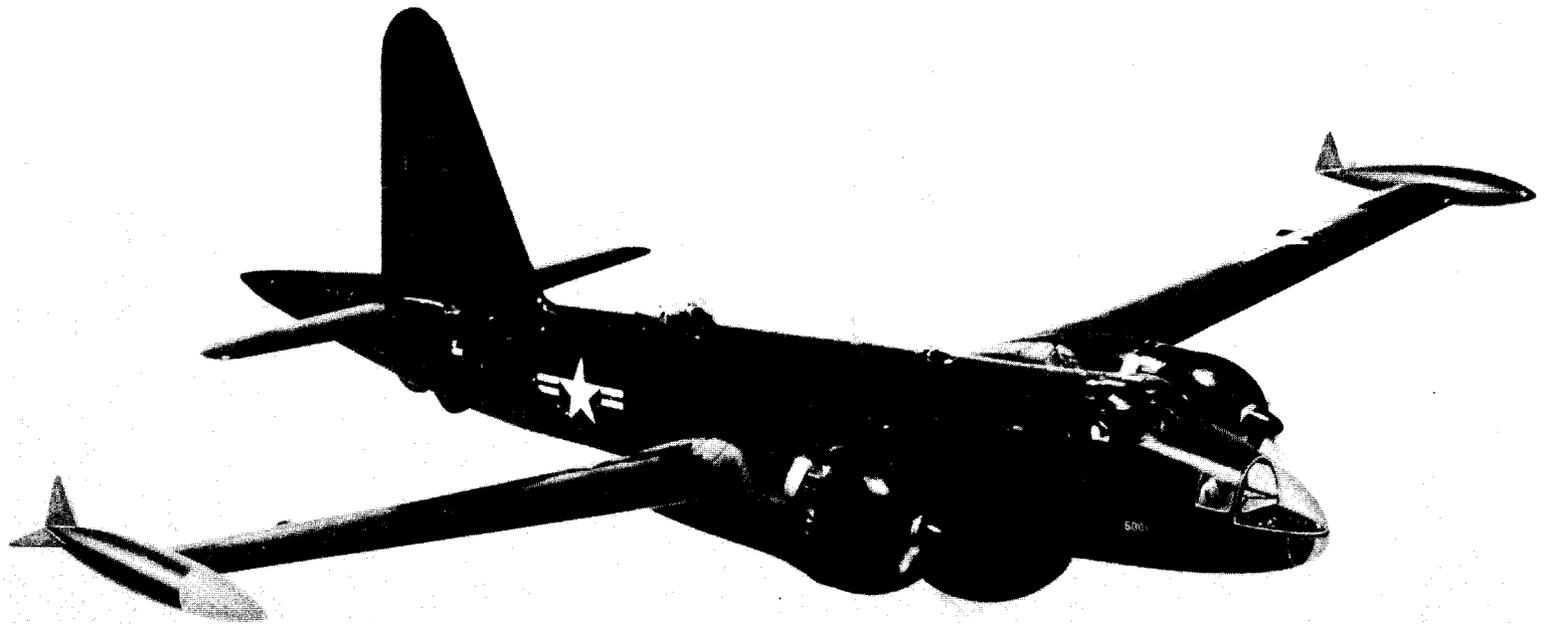
## P2V



<b>Span</b>		
-1,3		100'
-5		102'
-7		101'4"
<b>Length</b>		
-1		75'4"
-3		77'11"
-5		75'4"
-7		91'8"
<b>Horsepower</b>		
-1		2,300
-3		3,150
-5		3,700
-7		3,750
<b>Engines</b>		
-1	two	Wright R-3350-8
-3	two	Wright R-3350-26W
-5	two	Wright R-3350-30W
-7	two	Wright R-3350-32WA
		two Westinghouse J34-WE-36
		(with thrust of 3,400 lbs.)
<b>Maximum speed</b>		
-1,3		276 kts
-5		286 kts
-7		350 kts
<b>Service Ceiling</b>		
-1		24,200'
-3		25,800'
-5		24,300'
-7		29,700'
<b>Range</b>		
-1		3,450 nm
-3		2,875 nm
-5		3,510 nm
-7		3,221 nm
<b>Crew</b>		
-1,3		7
-5		8
-7		9
<b>Armament</b>		
-1	nose, deck, and tail each had two .50 machine guns	
-3	nose — six 20mm cannon deck — two .50 machine guns tail — two 20mm cannons sixteen 5" HVAR	
-5	same as -3 except nose had only two 20mm cannons	
-7	eight 5" HVAR	
All models carried up to 8,000 pounds of bombs, mines, torpedoes		

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Standard Aircraft Characteristics NAVAER 1335A (REV. 1-49)



# STANDARD AIRCRAFT CHARACTERISTICS

## P2V-5 "NEPTUNE"

LOCKHEED



**POWER PLANT**

NO. & MODEL....(2) R-3350-30WA  
 MFR.....Wright  
 SUPERCH.....1 Stage, 2 Speed  
 RED.GEAR RATIO.....0.4375:1  
 PROP. MFR.....Ham. Std.  
 PROP.BL.DES.NO.....2J17C3-36S  
 NO.BL./DIA.....4/14" - 2"

**RATINGS**

	<u>BHP</u>	<u>RPM</u>	<u>ALT.</u>
T.O.	3250	2900	S.L.
MIL.	3250	2900	S.L. to 3400'
	2550	2600	11400'-15400'
NORM.	2600	2600	S.L. to 6500'
	2450	2600	9600' to 16600'

SPEC. NO. N-856-A

**ORDNANCE**GUNS

<u>NO.</u>	<u>SIZE</u>	<u>LOCATION</u>	<u>RDS.</u>
ASW			
2	.50 cal.	Deck Turret	800
MINE LAYER			
2	20mm	Nose	800
2	20mm	Tail	800

FIRE CONTROL

MK. 18 Mod. 6

BOMBS AND ROCKETS

16-Aero 14B-2 rocket launcher  
 (max.cap. 500 lbs.each) on  
 alternate outer wing slats.  
 Torpedoes, Mines and Bombs  
 carried in the fuselage.

Max.Load Capacity 12,000 lbs.

**MISSION AND DESCRIPTION**

The P2V-5 is designed for use as a long range anti-submarine airplane. It's secondary tactical mission is mine laying.

The airplane carries a crew of nine and features Fowler wing flaps, "varicam" stabilizer wing and tail surface thermal anti-icing, electrical propeller deicing, droppable wing tip tanks, radar and searchlight equipment. As an alternate mine laying airplane, the MAD tail and observer nose are replaced by a 20 mm nose and tail turrets.

The P2V-5 has an all metal semi-monocoque fuselage with wings of conventional two-spar dural construction. This airplane is basically a P2V-4 modified to incorporate the R-3350-30WA engine and wing tip tanks of new design and capacity.

**DEVELOPMENT**

First Flight.....December 1951  
 Service Use.....September 1951

**DIMENSIONS**

WING  
 AREA.....1,000 sq. ft.  
 SPAN.....104' - 0"  
 MAC.....10' - 6"  
 LENGTH.....91' - 2"  
 HEIGHT.....28' - 1"  
 TREAD.....25' - 11"  
 PROP.GRD.CLEARANCE..0' - 9"

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**WEIGHTS**

<u>LOADINGS</u>	<u>LBS.</u>	<u>L.F.</u>
EMPTY.....	43,000.....	
BASIC.....	44,900.....	
DESIGN.....	67,500.....	2.67
COMBAT (ASW) ...	61,320.....	2.95
MAX.T.O.....	80,000.....	2.25
MAX.OVERLOAD LANDING	62,000.....	

All weights are actual

**FUEL AND OIL**

<u>NO. TANKS</u>	<u>GALS.</u>	<u>LOCATION</u>
4	2800	Wing
2	400	Wing Tip
2	700	Bomb Bay
FUEL GRADE.....	115/145	
FUEL SPEC.....	MIL-F-5572	

**OIL**

CAPACITY (GALS.).....165  
 GRADE.....1100  
 SPEC..... MIL-L-6082A

**ELECTRONICS**

Interphone.....AN/AIO-5B  
 Radio Transm.....AN/ART-13  
 Comm. Rec.....AN/ARC-5  
 Liaison Rec.....AN/ARP-15 A  
 UHF.....AN/ARC-27  
 VHF.....(P.S.I.) AN/ARC-1  
 Indicator.....AN/APA-81  
 Direct Finder.....AN/ARN-6  
 Radio Altimeter.....AN/APN-22  
 Marker Beacon.....AN/APN-12  
 Loran.....AN/APN-70

(Continued on NOTE Page)

**PERFORMANCE SUMMARY**

TAKE-OFF LOADING CONDITION	(1) ASW PATROL 2 MK-41 Torps.	(3) MINELAYER 8 Mines		(5) FERRY
TAKE-OFF WEIGHT lb.	71,400	80,000		73,170
Fuel lb.	19,200	18,793		23,400
Payload Torpedoes/Mines lb.	2,400	8,000		None
Wing loading lb./sq.ft.	71.4	80.0		73.2
Stall speed - power-off kn.	95.0	100.0		96.0
Take-off run at S.L. - calm ft.	2,700	3,560		2,850
Take-off run at S.L. 25 kn. wind ft.	1,600	2,300		1,725
Take-off to clear 50 ft. - calm ft.	3,600	4,760		3,790
Max. speed/altitude (A) kn./ft.	273/17,500	255/17,500		271/17,500
Rate of climb at S.L. (A) fpm	1,030	760		980
Time: S.L. to 10,000 ft. (A) min.	10.5	15.1		11.2
Time: S.L. to 20,000 ft. (A) min.	27.8	49.0		30.5
Service ceiling (100 fpm) (A) ft.	23,200	20,000		22,100
Combat range n.mi.	2,775	2,290		3,375
Average cruising speed kn.	180	170		175
Cruising altitude(s) ft.	1,500	1,500		1,500
Combat radius n.mi.	1,110	1,120		--
Average cruising speed kn.	180	170		--
Mission Time hrs.	15.6	12.69		
COMBAT LOADING CONDITION	(2)	(4)		
COMBAT WEIGHT lb.	61,320	64,480		
Engine power	Military	Military		
Fuel lb.	10,080	7,520		
Combat speed/combat altitude kn./ft.	266/1,500	258/S.L.		
Rate of climb/combat altitude fpm/ft.	1,800/1,500	1,640/S.L.		
Combat ceiling (500 fpm) ft.	22,500	20,900		
Rate of climb at S.L. fpm	1,820	1,640		
Max. speed at S.L. kn.	263	258		
Max. speed/altitude kn./ft.	281/16,400	273/16,400		
LANDING WEIGHT lb.	53,402	54,456		51,168
Fuel lb.	1,202	1,249		1,398
Stall speed - power-off kn.	82.3	83.0		81.0
Stall speed - with approach power kn.	73.7	74.2		72.5

**NOTES**

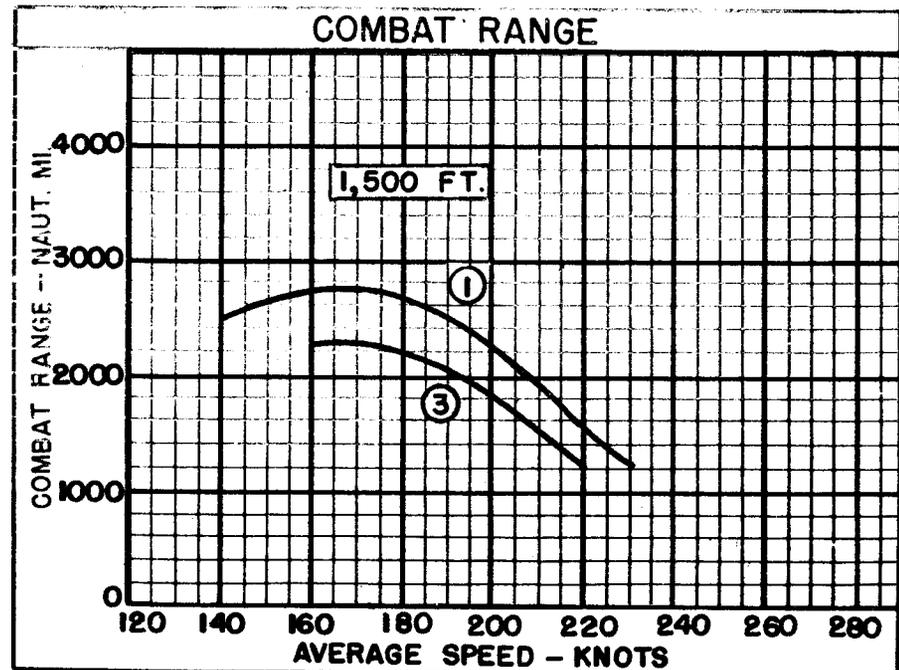
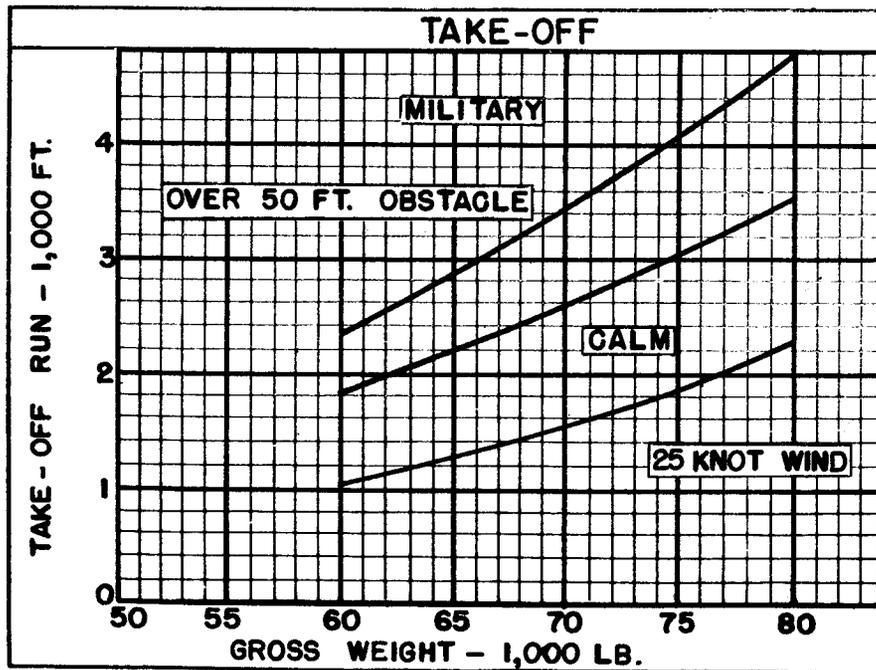
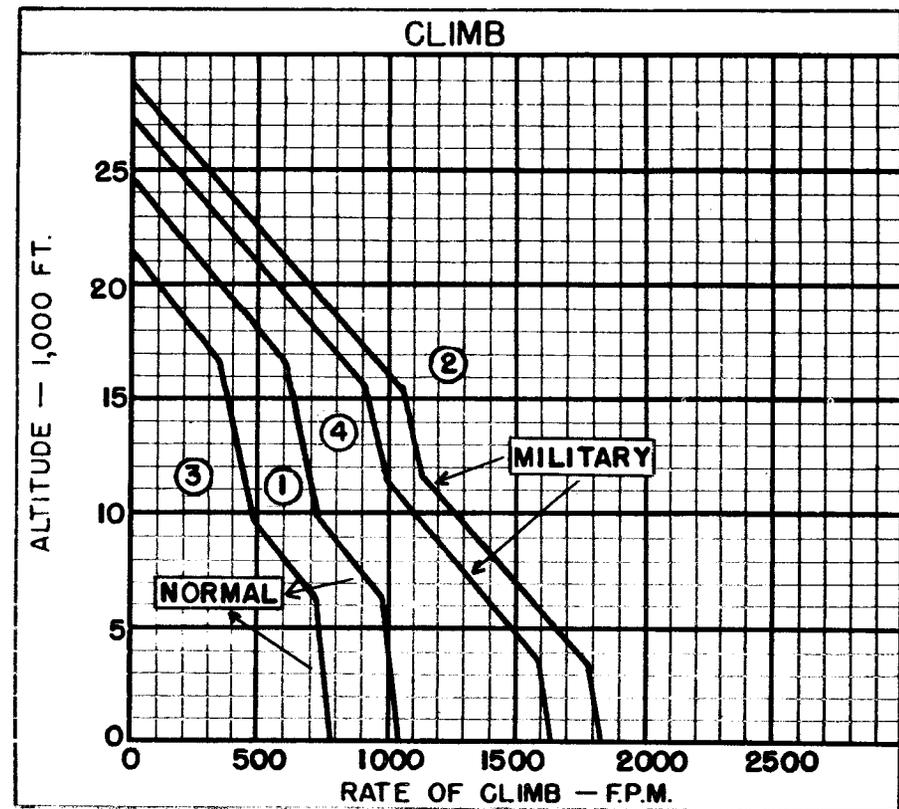
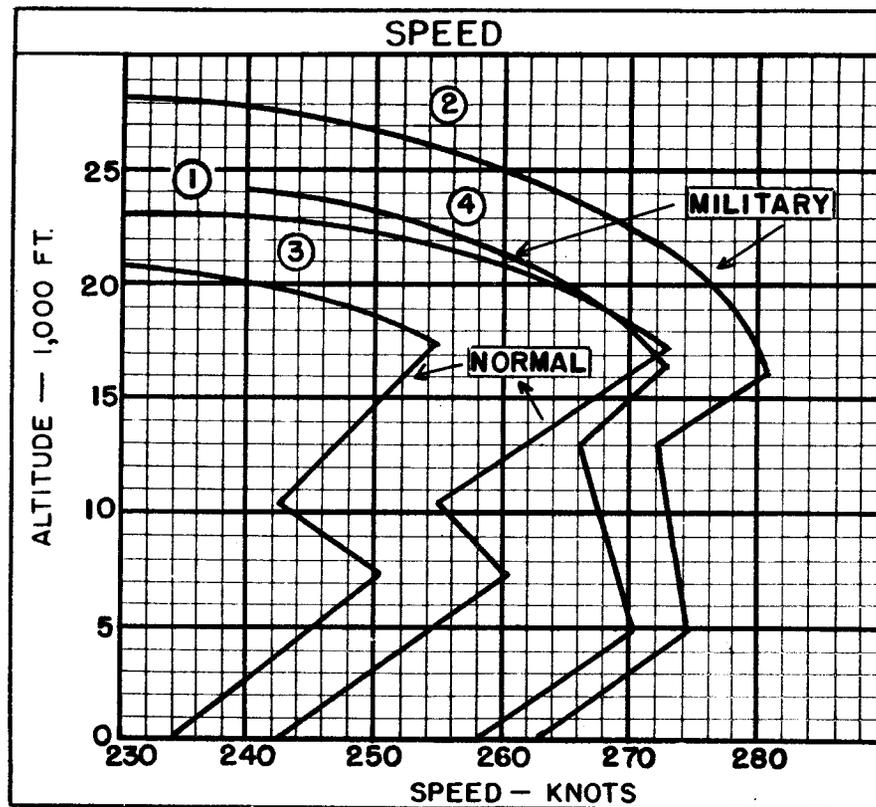
REASON FOR REVISION: Flight test data on the P2V-5 airplane and incorporation of APS-20B radome.

(A) Normal Rated Power

(B) Military Rated Power

Performance Basis: Calculations and contractor flight test data on the P2V-5 airplane.

(Continued on NOTE Page)



○ LOADING CONDITION COLUMN NUMBER

# NOTES

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## ASW FIXED WING AIRCRAFT

Combat Radius = 40% of combat range at 1,500 ft. altitude.

### MINE LAYER

WARM-UP, TAXI, TAKE-OFF: 10 minutes at normal rated power at sea level.

CLIMB: To cruise altitude of 1,500 ft. at normal rated power.

CRUISE-OUT: At speed for long range at cruise altitude.

DESCEND: To sea level.

RUN-IN: 50 nautical miles at military rated power.

DROP MINES:

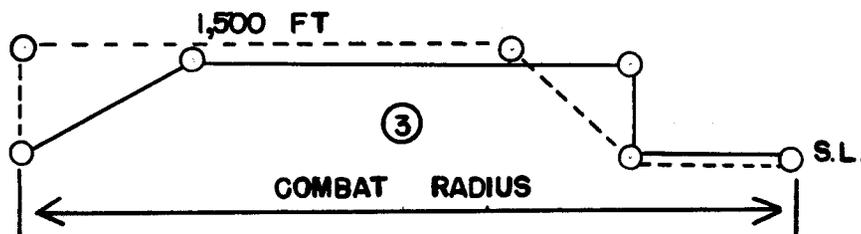
RUN-OUT: 50 nautical miles at military rated power.

CLIMB: To cruise altitude of 1,500 ft. at normal rated power.

CRUISE-BACK: At speed for long range at cruise altitude.

RESERVE: 20 minutes at speed for long range at sea level plus 5% of initial fuel load.

$$\text{MISSION TIME} = \text{CLIMB} + \text{CRUISE-OUT} + \text{RUN-IN} + \text{RUN-OUT} + \text{CLIMB} + \text{CRUISE-BACK}$$



Combat Radius (mine layer problem) is reduced approximately 6 nautical miles for each additional minute of military power operation.

Rate of climb at sea level, military rated power, one engine inoperative (propeller feathered), flaps and gear-up. (ASW Configuration)

<u>Gross Weight - lbs.</u>	<u>Rate-of-climb - ft./min.</u>
56,000	545
67,500	270
70,000	220
76,000	100

○ LOADING CONDITION COLUMN NUMBER

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# NOTES

## ELECTRONICS (Continued)

IFF Equip.....AN/APX-6  
                                   AN/APX-7  
 (in planes APS 20B & C only)  
 ECM.....AN/APA-9B  
                                   AN/APA-11

Sonobuoy Rec.....AN/ARR-26  
 Grd. Pos. Ind....AN/APA-57B  
 M.A.D.....AN/ASQ-8  
 D.M.F.....AN/ARN-21  
 Search Radar.....AN/APS-20B

ECM-Dir. Find.....AN/APA-69  
 Omn.-Dir. Find....AN/ARN-14A  
 (P.S.I.) AN/APS-20C-(P.S.I.) AN/APS-31  
 AN/APS-31 will be back fitted with  
 AN/APS-20B  
 Radar Bomb.....AN/APS-16

## PERFORMANCE SUMMARY (Continued)

Combat range and radius are based on engine specification fuel consumption data increased by 5%.

Oil capacity consists of 120 gals. in wing tanks and 36 gals. in fuselage tank. Later P2V-5 (R-3350-30WA) models have total wing tank oil capacity of 165 gals. and no fuselage oil tanks.

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