

# *Aircraft Data—Technical Information and Drawings*

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**C**OMPILING A LISTING SUCH AS THIS was a difficult task due to so many variables and unknowns in researching aircraft technical data. Besides the loss of original records through house cleaning and mergers of companies, the problem was compounded by the fact that everyone does not record the data in the same format. Large variations can be found in such simple areas as aircraft dimensions. As an example, in some cases an aircraft was measured in the three-point position and the horizontal position to determine maximum height, thus creating two separate height measurements for the same plane. The two different means of measurement for this particular plane resulted in a discrepancy of approximately six feet for a comparatively small prewar aircraft. Performance figures for aircraft can be even more confusing. While the figures may have been exactly what the engineers recorded, in many cases there are no notes that give the conditions under which these figures were derived, such as: What was the loading of the aircraft, its altitude and speed when the technical specifications were recorded? At what period in the life cycle of the aircraft were these specifications taken and what, if any, were the modifications to the original aircraft? These are important considerations when trying to determine exactly what some of the older specifications really reveal about the plane. In compiling the following specifications, U.S. Navy specification charts and records were utilized as the primary source. Manufacturer's records, not press releases, were the

second choice if U.S. Navy specifications were not available. Lacking either of these, it was necessary in some cases to use recognized secondary sources, such as the *Aircraft Year Books*.

On 6 July 1962 the Department of Defense directed that all U.S. military aircraft be designated by a standard system. This required a complete change in naval aircraft designations. To help clarify the two different aircraft designation systems the old Navy aircraft designation system was used first followed by the DoD system in parentheses for those aircraft that were in service during the redesignation in 1962. Hence, the P2V-7 Neptune will be identified as P2V-7 (P-2H), first showing the old Navy designation and then followed by the new DoD designation in parentheses. Of course, those aircraft that entered service after July 1962 are identified by the new DoD system only.

Any discrepancies in these specifications are due to my misinterpretation or incorrect interpretation as to what was originally intended. Corrections are gratefully accepted so that the discrepancies will not be continued in future publications.

The aircraft data sections are done in alphanumeric order. Only the significant aircraft listed in the "Aircraft Assignment" section of the squadron histories are included in this appendix. The list of aircraft types in the data section are as follows: DT, F-5L, H-12, H-16, HS, NC-boats, P2D-1, P2V, P2Y, P-3, P3M-1/2, P4M-1, P5M, PB-1, PB2Y, PB4Y-1, PBM, PBO-1, PBY, PD-1, PH-1, PK-1, PM, PN-9, PN-12, PV-1 and PV-2.

## DT

The Navy experience in World War I indicated a requirement for an air-launched torpedo. In 1921, a contract with the Douglas Company led to Douglas' first military aircraft. The company designed the DT-1 as a single-engine, twin float biplane torpedo bomber but delivered only one article under that designation. All others were delivered as DT-2s. Douglas was not the only company to manufacture the DT-2, other manufacturers included the LWF (Lowe, Willard and Fowler) Company, Naval Aircraft Factory and the Dayton-Wright Company. All DT designated aircraft were produced as both float planes and land planes. A total of 78 DTs were accepted: 41 from Douglas, 6 from the Naval Aircraft Factory, 20 from LWF and 11 from Dayton Wright. The first aircraft was accepted in December 1922 and the DT-2s remained in inventory until April 1928.

### *Models Accepted from the Manufacturer*

#### **DT-1**

A prototype originally with one cockpit but modified to two at the Navy's request. It was designed with folding wings for shipboard storage. In the modified version the rear seat observer/gunner manned a flexible 30-caliber machine gun. The first flight is estimated to have occurred in November 1921.

#### **DT-2**

The DT-2 was a single engine, torpedo bomber, two-place biplane (pilot and observer) with tubular steel fuselage construction. The forward and center sections were metal covered while the rear third was fabric cov-

ered. Horizontal tail surfaces were also tubular steel with fabric covering. The vertical tail and wings were wooden with fabric covering. The aircraft could be used with either wheel undercarriage or twin floats.

Crew	2
Range	258 miles
Power Plant	One 400 hp Liberty
Weight:	
Empty	4,452 lbs
Gross	7,291 lbs
Dimensions:	
Wing area	706.9 sq ft
Wing span	50 ft (upper) 50 ft (lower)
Length	37 ft 8 in
Height	15 ft 1 in
Armament:	Maximum bomb capacity was one 1,835 lb torpedo

### *Modifications to Existing Airframes*

#### **DT-4**

The DT-4 was a Naval Aircraft Factory modified DT-2 with a cone shaped engine cowling over a 650 hp direct-drive Wright T-2 twelve-cylinder liquid-cooled engine. It was intended primarily as a bomber rather than a torpedo dropper. External radiators were mounted on the bracing struts between the lower wings and the fuselage. Four examples, A6423, A6424, A6427 and A6428, were built by the Naval Aircraft Factory. A6424 was flown by the Marine Corps in the 1923 Merchants Exchange of St. Louis Trophy Race and distinguished itself by making the fastest lap in the load-carrying competition with a speed of 115 mph.



*A DT-2.*

**DT-5**

These two aircraft, A6427 and A6428, were further modifications of the DT-4 with a 650 hp geared Wright T-2B engine.

**DT-6**

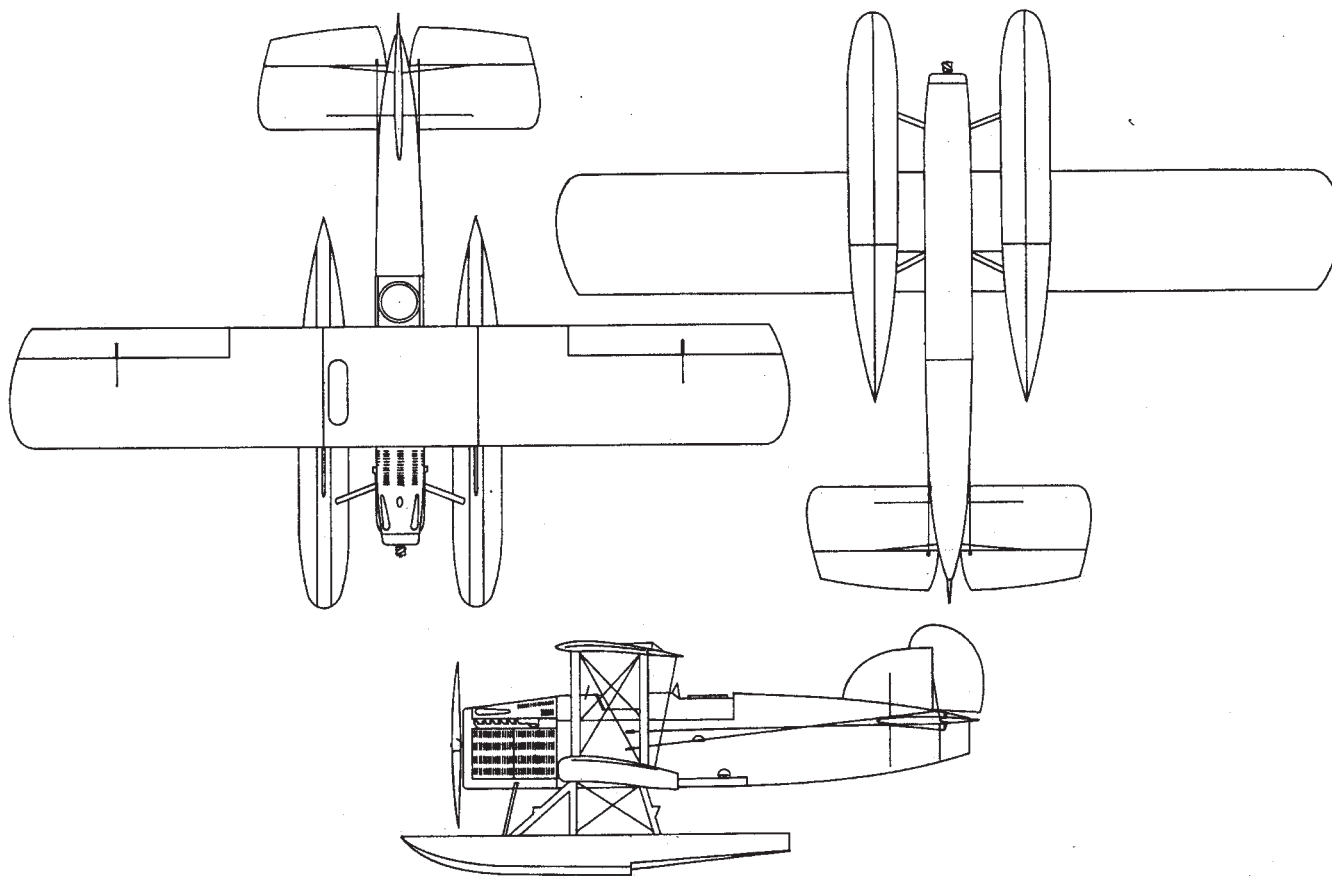
This aircraft, A-6581, was modified to experiment with a 450 hp Wright P-1 air-cooled radial engine in place of the 450 hp Liberty.

**SDW-1**

The Dayton-Wright Co. modified three LWF built DT-2s as long-range scout floatplanes. These aircraft had a deeper center fuselage and engine cowling that accommodated additional fuel tanks.

**Bureau Numbers**

DT-1	A6031
DT-2	A-6032-A6033.
DT-2	A6085-A6095 (Dayton Wright)
DT-2	A6405-A6422, A6563-A6582 (Douglas)
DT-2	A6583-A6602 (LWF)
DT-2	A6423-A6428 (Naval Aircraft Factory)
DT-4	A6424, A6427, A6428 (Naval Aircraft Factory)
DT-5	A6427, A6428 (Naval Aircraft Factory)
DT-6	A6581
SDW-1	A6594, A6596, A6597 (LWF)



*Three view drawings for DT-2.*

## F-5L

The F-5L was designed by the Curtiss Company under a contract issued by the Navy in 1918. The aircraft was actually a derivative of the earlier Curtiss H-12 and H-16s that had been sold to England in 1915–1916. This design was modified in England using the wings and tail surfaces but with a new hull design that could operate better in the rough North Sea environment. These modified boats were called F-2, -3 and -5, the designations identifying its origins as the Royal Naval Air Station at Felixstowe. Although Curtiss was producing later versions of the H-16, roughly equivalent to the F-3, the Navy decided to adapt the F-5 to American standards and use the new Liberty engines. The F-5Ls were designed to meet a Navy requirement for a long-range antisubmarine plane that was heavily armed with machine guns and bombs. A total of 227 F-5 aircraft were accepted by the Navy: 60 from Curtiss, 30 from Canadian Aeroplanes and 137 from the Naval Aircraft Factory. The first F-5L was received from Canadian Aeroplanes, Ltd. on 30 July 1918. The F-5Ls remained in the inventory until January 1931.

The designation F-5L has long been a subject of speculation. There is general agreement that the F stood for

Felixstowe and the 5 was the model number, but the L is a different matter. The U.S. Navy's General Board meeting of 18 December 1919 records Captain N. E. Irwin explaining that the L indicated manufactured at League Island, the site of the Naval Aircraft Factory. Others claim the L stood for the Liberty engine that was placed in the American version of the aircraft.

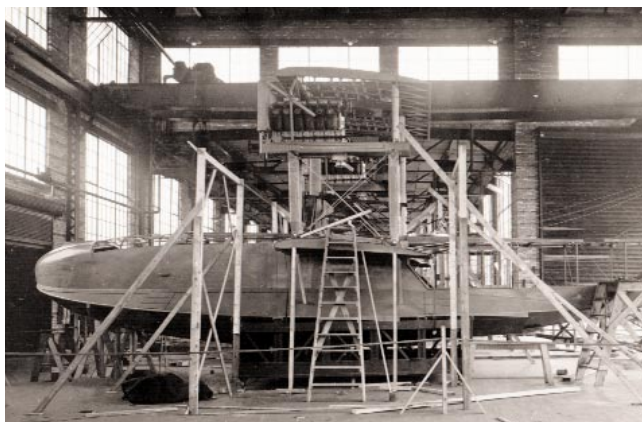
### *Models Accepted from the Manufacturer*

#### **F-5L**

Crew	4
Range	765 miles.
Power Plant	Two 12 cylinder 330 hp Liberty
Weight:	
Empty	8,250 lbs
Gross	13,256 lbs
Dimensions:	
Wing area	1,397 sq. ft
Wing span	103 ft 9 in (upper) 74 ft 4 in (lower)
Length	49 ft 4 in
Height	18 ft 9 in
Armament:	Six to eight flexible 30-caliber machine guns Four 230 lb bombs under the lower wings



*F-5Ls on the assembly line.*



*An F-5L under construction.*

### **Modifications to Existing Airframes**

#### **F-6L**

The last two F-5Ls built by the NAF were an improved version and designated F-6L. After the war the vertical tail surfaces were redesigned and all F-5Ls that were in service were retrofitted with this new style tail.

#### **PN-5, PN-6 and PN-7**

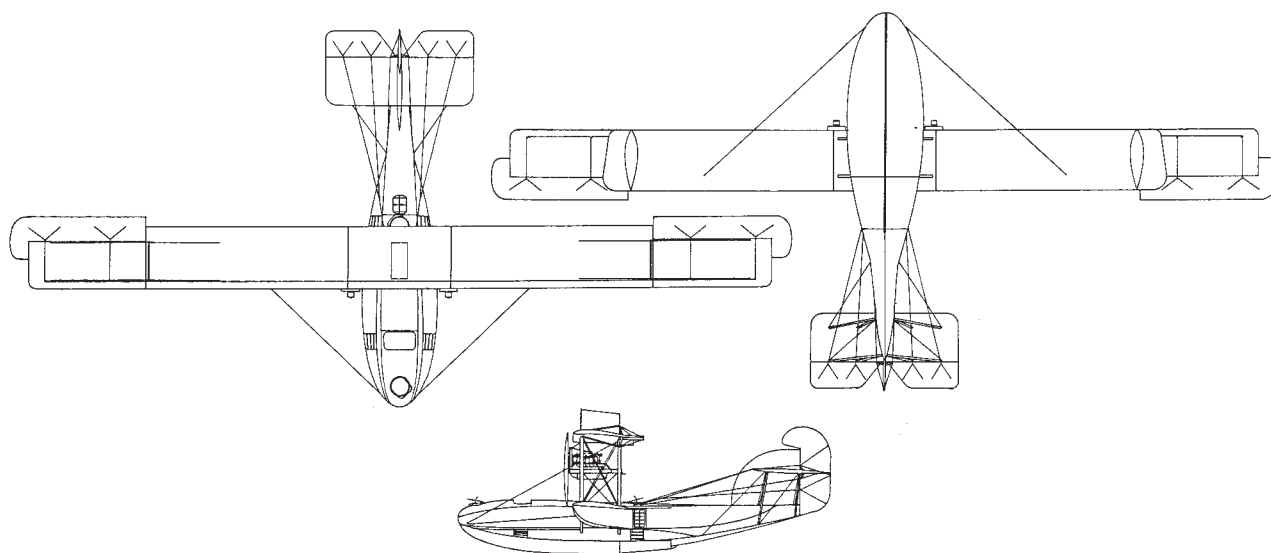
With the adoption of the new aircraft designation system in 1922, the F-5L was assigned the designation PN-5 (P for patrol, N for Navy, regardless of the actual manufacturer), while the F-6L became PN-6. In actual practice the new designations were not used for designs in production before adoption of the new system and they continued to be known as F-5Ls until retired by the Navy. However, an improved version using new wings and engines did use the new designation of PN-7.

### **Bureau Numbers**

F-5L	A3333–A3382 Canadian Aeroplanes Ltd. (A3363–A3382 canceled)
F-5L	A3559–A4035 Naval Aircraft Factory (137 accepted, the following were canceled: 3616–3658, 3684–3782, 3801–3858, 3881, 3883–3935, 3941–4008 and 4014–4035)
F-5L	A4281–A4340 Curtiss.
F-5L	A4470–A4819 Curtiss (all canceled)
F-5L	A5259–A5458 NAF (all canceled)
F-5L	A6557–A6559 Built at NAS Hampton Roads from spares
F-5L	A6697 Built at NAS San Diego from spares
F-6L	A4036–A4037 Naval Aircraft Factory



*An F-5L.*



*Three view drawings for F-5L.*

## H-12

In 1916, the Navy ordered an improved version of the "America" which was built by Curtiss for Mr. Rodman Wanamaker's attempt to fly the Atlantic. The H-12 was ordered from the Curtiss Company and was developed as a big biplane flying boat to meet Navy requirements for an antisubmarine and training aircraft. A total of 20 aircraft were accepted beginning in January 1917. They remained in inventory until July 1920.

### *Models Accepted from the Manufacturer*

#### **H-12**

The H-12 retained the laminated wood veneer hull similar to the "America" but had longer wings and two 200 hp Curtiss V-X-X engines. It had a crew of four in open cockpits. A number of the H-12s were sent to England for the RNAS. Dissatisfied with the underpowered Curtiss engines they substituted 275 hp Rolls-Royce Eagle I engines.

Crew	4
Power Plant	Two 200 hp Curtiss V-2-3
Weight	
Empty	6,500 lbs
Gross	9,400 lbs
Dimensions:	
Wing area	1,164 sq ft
Wing span	96 ft
Length	46 ft 5.5 in
Height	16 ft 9 in
Armament:	Four flexible 30-caliber machine guns
	Four 100 lb or two 230 lb bombs under the lower wing

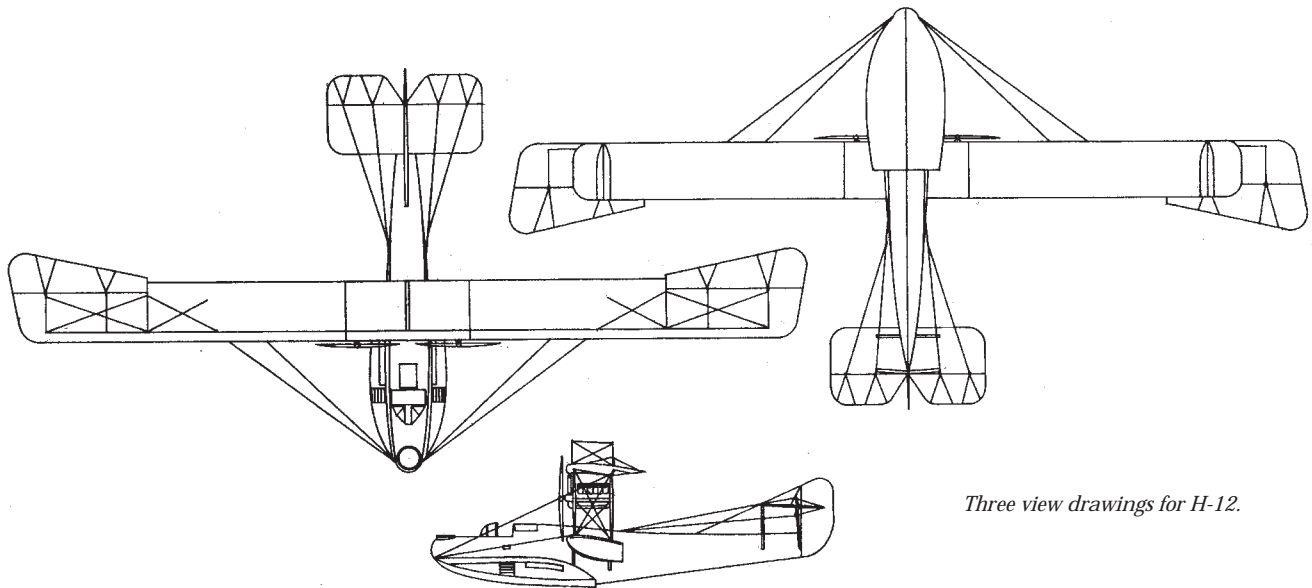
### *Modification to Existing Airframes*

#### **H-12L**

Liberty engines of 330 hp in place of the original Curtiss engines.

### *Bureau Numbers*

H-12    A152, A765–A783



*Three view drawings for H-12.*



*An H-12 at NAS Pensacola.*

## H-16

The H-16 flying boat biplane was built by the Curtiss Company and was an improved version of the H-12. The Navy contract for the H-16 was awarded in 1918 with the primary mission being antisubmarine and patrol. Curtiss eventually produced 124 H-16s. Due to other wartime commitments, Curtiss could not meet the full Navy requirement for H-16s, so the Navy undertook the manufacture of them at the Naval Aircraft Factory. The Naval Aircraft Factory produced another 150 H-16s, which were the first aircraft built at the Naval Aircraft Factory, were delivered to the Navy on 1 February 1918 and remained in the inventory until May 1930.

### *Models Accepted from the Manufacturer*

#### **H-16**

The H-16 was a patrol bomber flying boat with a crew of four and an enclosed pilot's cockpit. Many of these aircraft were sold to Britain and Commander Porte of the Royal Navy developed an improved hull design for the H-16. This British version was built at RNAS Felixstowe as F.2, F.3 and F.5.

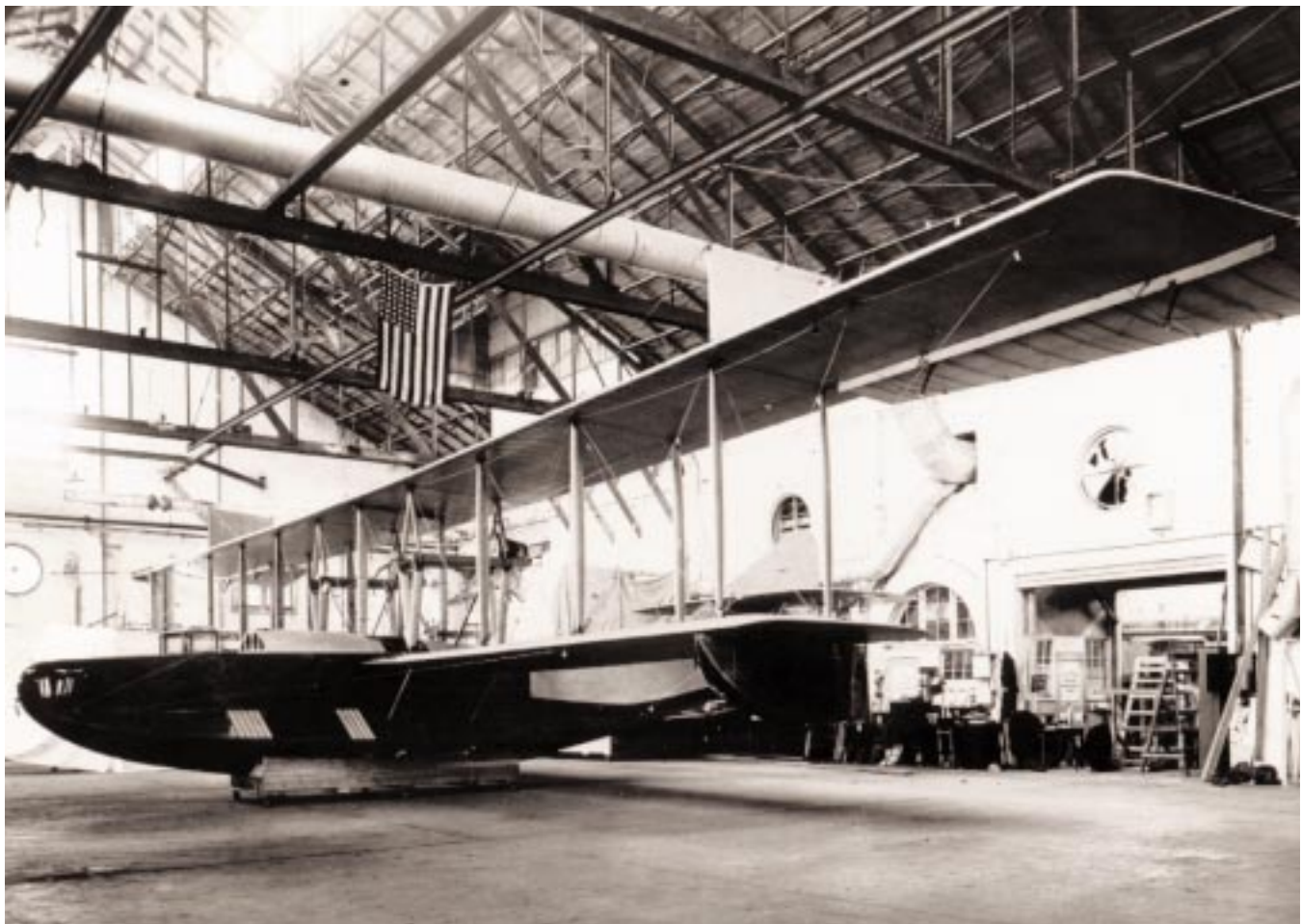
#### **H-16L**

Crew	4
Range	452 miles
Power Plant	Two 330 hp Liberty
Weight:	
Empty	7,400 lbs
Gross	10,906 lbs
Dimensions:	
Wing area	1,164 sq ft
Wing span	95 ft 1 in (upper) 67 ft (lower)
Length	46 ft 2 in
Height	17 ft 9 in
Armament:	Five or six flexible 30-caliber machine guns Four 230 lb bombs

### *Modification to Existing Airframes*

#### **H-16-1**

The engines were turned around to make it a pusher. Unfortunately, it proved to be excessively tail heavy and showed no advantage.



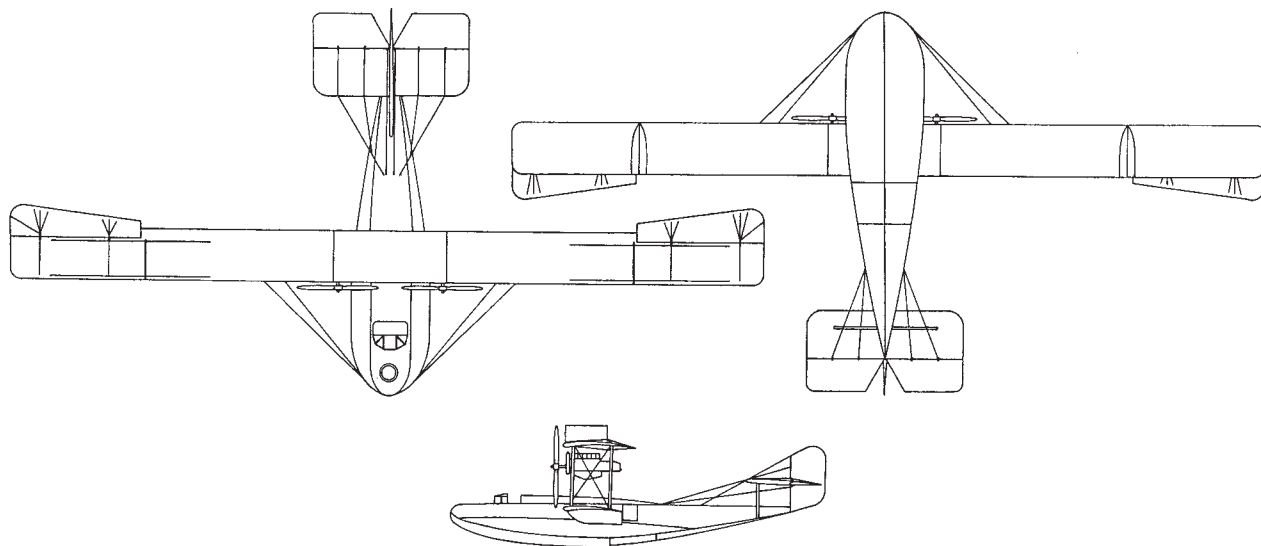
*An H-16 under construction at Curtiss Aeroplane and Motor Corporation.*

**H-16-2**

A pusher type with slightly longer wings that were swept back 5.5 degrees. The increased wing area required additional rudder area in the form of two auxiliary rudders mounted on the horizontal tail.

**Bureau Numbers**

H-16	A784–A799; A818–A867; A1031–A1048; A4039–A4078 (Curtiss)
H-16	A1049–A1098; A3459–A3558 (Naval Aircraft Factory)
H-16-2	A839 (Curtiss)



*Three view drawings for H-16.*



*An H-16 at Killingholm, England.*



## HS

The HS series was designed by Curtiss to be an anti-submarine warfare flying boat and was built by the designer and other companies. It was the first aircraft built for the Navy by both Lockheed and Boeing and by far the largest production of any Navy aircraft up to that time. A total of 1,095 were eventually delivered by the following builders: Curtiss 678, LWF (Lowe, Willard and Fowler) 250, Standard 80, Gallaudet 60, Boeing 25, and Loughhead 2. Curtiss initiated delivery of the aircraft under a 1918 order. The aircraft was built from an earlier prototype with the first delivery in February 1918. The HS remained in the inventory until September 1928.

### *Models Accepted from the Manufacturer*

#### **HS-1**

This design was derived from the unsuccessful H-14, but with a single pusher Curtiss V2 200 hp engine. The crew of two sat side by side. There were no armament capabilities. The first aircraft was received on 4 February 1918. No bureau numbers were

ever assigned to the HS-1 designation because the design was changed soon after the HS-1 production run began.

#### **HS-1L**

The production version of the HS-1, configured with a 375 hp Liberty engine. The engine was later upgraded to a 400 hp Liberty and it was the first aircraft to be flown with the new Liberty engine.

#### **HS-2L**

During World War I it was discovered that two 180 lb depth bombs were inadequate against submarines. In order for an HS to lift two 230 lb bombs in addition to a crew of three, it was necessary to increase the lift of the wings. This was accomplished by adding a new twelve-foot long upper wing center section and a six-foot panel between the hull and each lower wing outer panel.

By assembling an accumulation of spare parts from various naval air stations after the war, 24 more HS-2Ls were added to the inventory.

Crew	2 or 3
Range	517 miles
Power Plant	One 330 hp Liberty



*HS-1s under construction.*

**Weight:**

Empty            4,300 lbs  
Gross            6,432 lbs

**Dimensions:**

Wing area        803 sq ft  
Wing span       74 ft 5 in (upper)  
                      64 ft 2 in (lower)

Length            39 ft  
Height            14 ft 7.25 in

Armament: One flexible 30-caliber Lewis machine gun  
                  Two 230 lb bombs under the wings

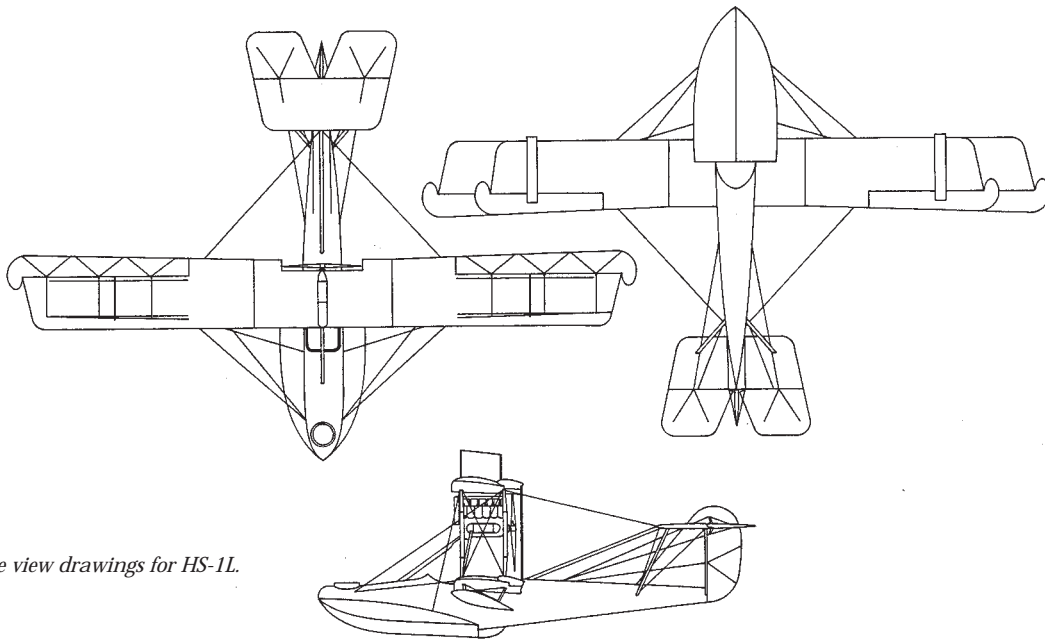
**HS-3**

An aerodynamically improved model with revised hull lines was under development at the end of the war. However, with the end of the war and the cancellation of many HS-2L contracts, the new development design for the HS-3 was dropped.

**Bureau Numbers**

HS-1L	A800–A815 (A815 cancelled), A1549–A1819 (Curtiss)
HS-2L	A1820–A2207 (Curtiss)
HS-1L	A1099–A1222 (LWF) <sup>1</sup>
HS-2L	A1223–A1398 (LWF) <sup>1</sup>
HS-2L	A1399–A1548 (Standard, A1478–A1548 canceled)
HS-2L	A2217–A2276 (Gallaudet)
HS-2L	A4231–A4255 (Boeing)
HS-2L	A4228–A4229 (Loughead)
HS-2L	Assembled from spare parts A5564–A5569; A5615–A5619 (A5619 canceled); A5787; A5808; A6506–A6513; A6553–A6556.

<sup>1</sup> A total of 50 aircraft from the LWF contract were canceled.



Three view drawings for HS-1L.



An HS-1L.

## NC Boats

During World War I the need for flying boats for antisubmarine warfare and long distance patrols led to the development of the NC series by Curtiss. Curtiss built four NC boats, the NC-1 through NC-4. Six NC boats, the NC-5 through NC-10, were built at the Naval Aircraft Factory to Curtiss specifications. The first Navy order was in 1918; no NC was delivered prior to 1919, too late to see war service. The NC-1, NC-3 and NC-4 undertook the first transatlantic crossing in May 1919 with only the NC-4 successfully completing the flight. The last NC boat was lost on 22 January 1921 and stricken from the inventory in March 1921.

### Models Accepted

#### NC-1 to NC-4

Long-range patrol flying boats built by Curtiss.

#### NC-5 and NC-6

Long-range patrol flying boats similar to the NC-1 through NC-4 of transatlantic fame, but in a trimotor configuration. The center engine was reversed to be a pusher. They were accepted by the Navy on 14 May 1920. The crew consisted of two pilots, a navigator/nose gunner, radio operator and two flight engineers.

#### NC-7 to NC-10

A four-engine configuration similar to original NC-1 to NC-4.

Crew	5
Range	1,470 miles
Power Plant	Four 400 hp Liberty engines
Weight:	
Empty	14,100 lbs
Gross	23,000 lbs

#### Dimensions:

Wing area	2,441 sq ft
Wing span	126 ft (upper)
	96 ft (lower)
Length	68 ft 3 in
Height	24 ft 5 in

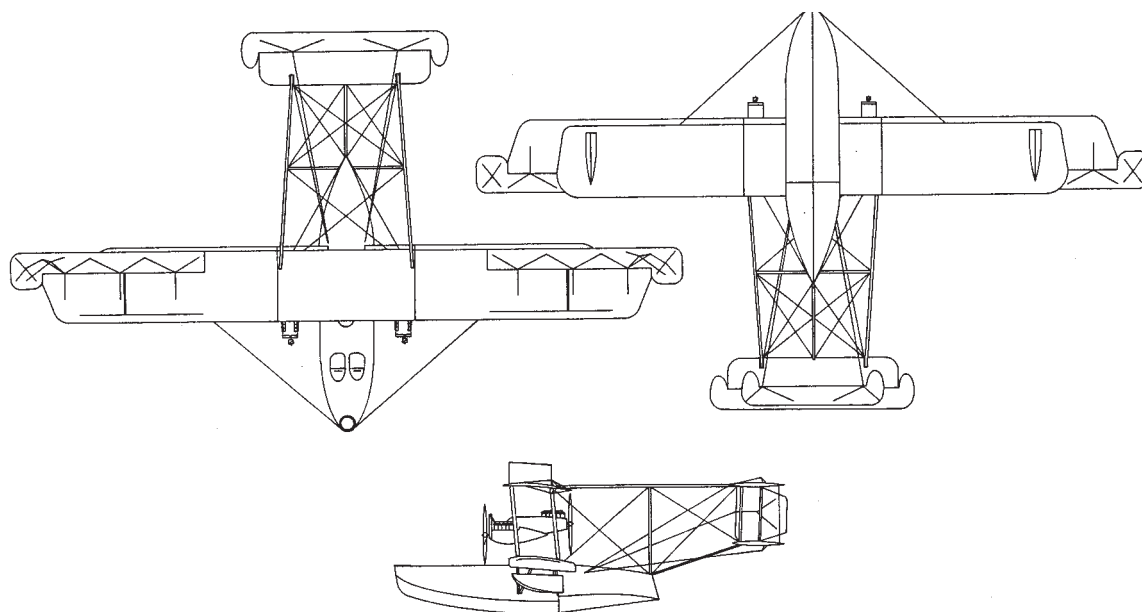
Armament: 30-caliber machine guns in the bow cockpit and the rear hull cockpits

#### Bureau Numbers

NC-5 and NC-8	A5632–A5636
NC-9 and NC-10	A5885–A5886



An NC-8.



Three view drawings for NC-8.

## P2D-1

The P2D-1 began as Bureau of Aeronautics' design XTN-1. The Naval Aircraft Factory designed this twin-engine, duralumin and fabric, amphibian biplane to provide a platform that could launch torpedoes, a requirement that had emerged during World War I but remained unmet by the mid-1920s. The Factory produced a single experimental model and, in keeping with Bureau policy to avoid large production runs, turned the plans over to the aircraft industry. In July 1925, the Navy awarded a contract to the Douglas Company to produce the XTN-1 under the designation T2D-1. The aircraft could be operated from both land and water. However, to avoid a conflict with the Army regarding which service was to operate land-based tactical aircraft, the Navy confined this aircraft to the float plane role and changed the designation to P2D-1 to stress its patrol, or sea focused, mission. The aircraft was in inventory from May 1927 to February 1937 and a total of 30 articles were accepted.

### TN-1

An experimental variant built by the Naval Aircraft Factory.

### *Models Accepted from the Manufacturer*

#### T2D-1

Original designation of production aircraft built by Douglas. However, due to considerable conflict with the Army when used as shore-based bombers it was politic to redesignate the T2D-1 as the P2D-1 to more

nearly reflect the mission as patrol, rather than any sort of bombing operation from a shore-based installation.

### P2D-1

The crew of four was carried in separate cockpits with a gunner in the bow cockpit and an observer/gunner in the rear cockpit. Like the T2D-1, these aircraft could be configured with either a wheel under carriage or twin pontoons. The first aircraft was received on 12 June 1930.

Crew	4
Range	1,140 miles
Power Plant	Two 525 hp Wright Cyclone R-1820-64

Weight:	
Empty	7,486 lbs
Gross	13,052 lbs

Dimensions:	
Wing area	909 sq ft
Wing span	57 ft (upper) 57 ft (lower)

Length	41 ft 11 in
Height	17 ft 6 in

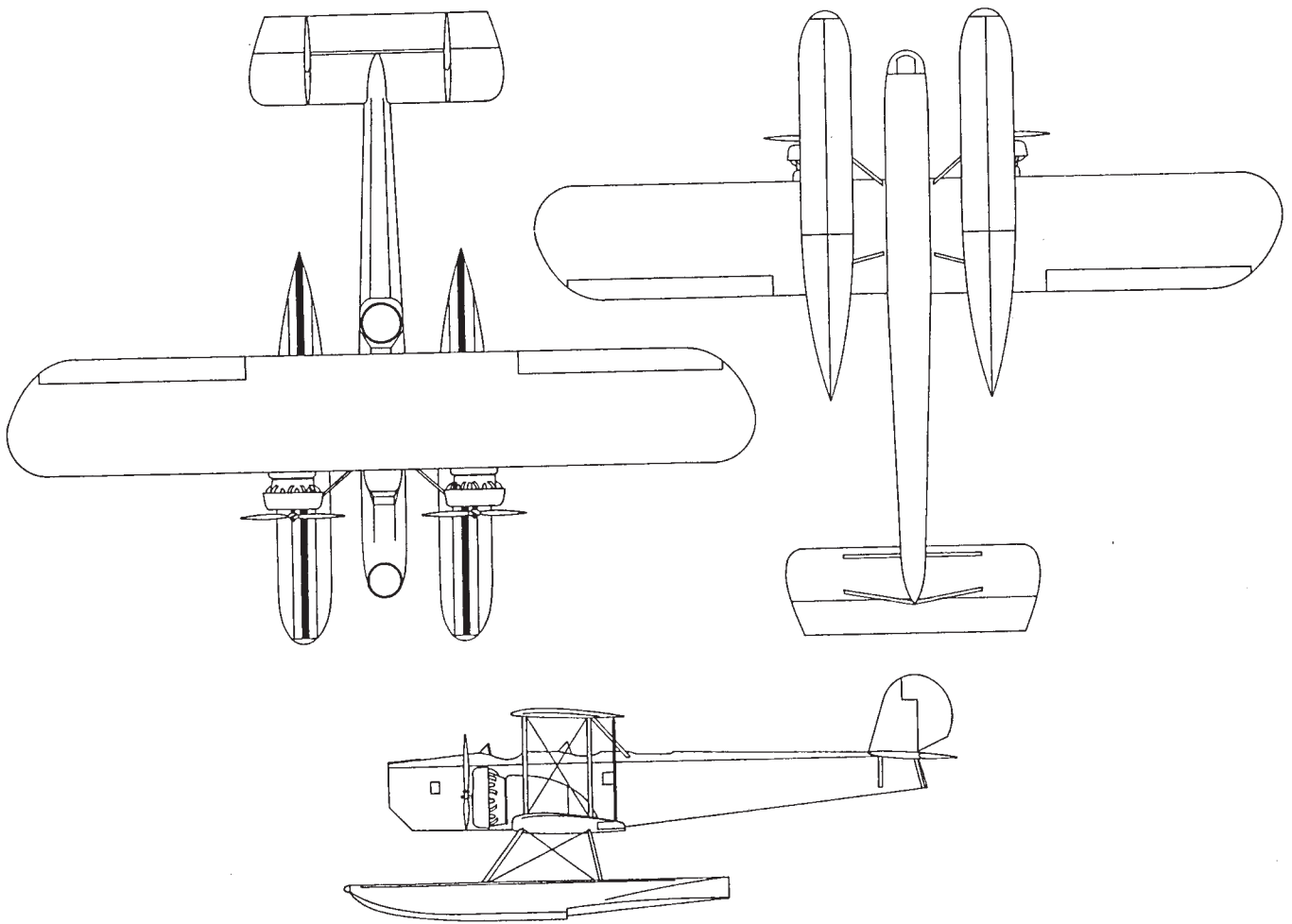
Armament: A single flexible 30-caliber machine gun in both the bow and rear cockpits  
The maximum bomb/torpedo capacity was one 1,680 lb torpedo

### *Bureau Numbers*

TN-1	A7027
T2D-1	A7051–A7053, A7587–A7595
P2D-1	A8644–A8661



*A rear shot of a P2D-1*



*Three view drawings for P2D-1.*

## P2V (P-2) Neptune

The Bureau of Aeronautics issued a contract for the P2V to Lockheed on 19 February 1943. Lockheed delivered 1,036 Neptunes to the U.S. Navy and another 193 to other organizations or countries. In March 1947 VP-ML-2 became the first squadron to receive the P2V Neptune. The last Neptune, an SP-2H, reported in the Navy's inventory was in April 1982. The P2V designation was changed to P-2 in 1962.



*An XP2V-1 being presented to the press, December 1945.*

### *Models Accepted from the Manufacturer*

#### **XP2V-1**

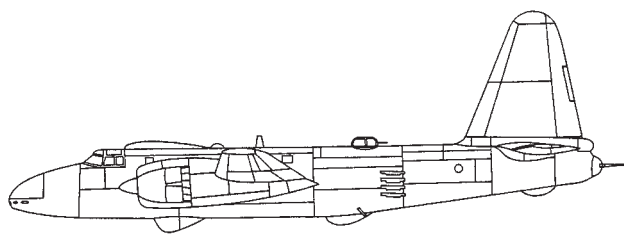
This aircraft was designed as a long-range land-based patrol bomber with greater range and load carrying capabilities than was available in the World War II designs. The final configuration provided a fuselage optimized for operational efficiency, carrying a crew of seven, a wide range of electronic equipment and a weapons bay large enough for two torpedoes or 12 depth charges. The first aircraft flew on 17 May 1945.

#### **P2V-1**

Powered by two 2,300 hp Wright R-3350-8A engines with a crew of eight. Armed with six 50-caliber machine guns and a maximum bomb load of 8,000 lbs with underwing provisions for two 11.75 inch Tiny Tim or sixteen 5.0 inch HVAR rockets.

#### **P2V-2**

The engines were upgraded to two 2,800 hp Wright R-3350-24Ws for takeoff with water-alcohol injection. The crew was reduced to seven. Provisions were made for the addition of four jet assisted take off (JATO) bottles on each side of the fuselage.



*Side view drawing for P2V-2.*

#### **P2V-2N**

Ski-equipped landing gear added for Arctic operations. All armament including dorsal turret were removed and an early Magnetic Anomaly Detection (MAD) probe was installed in the tail. The protective tail skid was removed.

#### **P2V-2S**

Equipped with APS-20 search radar in a ventral installation.

#### **P2V-3**

Aircraft engines were upgraded with the installation of 3,200 hp Wright Cyclone R-335-26Ws.

#### **P2V-3C**

Developed to provide a long-range patrol bomber capable of carrying an atomic bomb that could be launched from an aircraft carrier. The modifications included installation of additional fuel tanks and the removal of the astrodome, under belly radome, nose armament, dorsal turret, wing rocket attachment points and tail skid. The 20-mm tail turret was retained for defense.

#### **P2V-3B**

A modification of the P2V-3W equipped with the ASB-1 Low Level Radar Bombing System.

#### **P2V-3W**

Configured as an early warning aircraft with the addition of the APS-20 search radar in a large belly mounted radome.

#### **P2V-3Z**

A combat transport equipped with a special interior and heavy armor for flying VIP personnel into combat areas. The nose armament and dorsal turret were removed and four-blade propellers replaced the normal three-blade type.

#### **P2V-4 (P-3D)**

Powered by two Wright R-3350-30W Turbo-Compound engines with four blade propellers. The range was extended with the installation of jettisonable wing tip fuel tanks. The forward portion of the starboard tank housed a powerful searchlight. The APS-20 search radar used on the -3W was standard on the -4.

**P2V-5**

The nose armament was replaced with a power operated turret carrying two 20-mm cannon. These guns were synchronized with the searchlight in the starboard wing tip fuel tank. The port tank housed a APS-8 search radar in the forward portion. The tanks were enlarged with fins added and mounted to the outer edge of the wing tip rather than under as before. Other armament and weapons capabilities remained the same.

**P2V-5F (P-2E)**

Two Westinghouse J34-WE-34 turbo jet engines of 3,250 lbs thrust each were installed beneath the wings on pylons just outboard of the engine nacelles. This deleted four rocket launchers, however the overall ordnance capability was increased up to 10,000 lbs.

**P2V-5FD (DP-2E)**

All armament including the dorsal turret, rocket launchers, much of the avionics, and the astrodome as well as the wing tip tanks were deleted. Additional electronic equipment was added for the control of target drones that were carried on pylons outboard of the jet engines.

**P2V-5FE (EP-2E)**

This type had J-34 jet engines and increased electronic equipment.

**P2V-5FS (SP-2E)**

This version had J-34 jet engines and expanded ASW capability with the addition of Julie/Jezebel submarine detection system.

**P2V-6 (P-2F)**

The P2V-6 had a longer nose with the Emerson twin 20-mm cannon ball turrets. The aircraft had Wright Cyclone R-3350-36W engines but no additional jet engines. A small radome on the forward belly housed the APS-70 radar. Several hundred pounds of armor were installed for protection during low level attacks.

**P2V-6B/P2V-6M (MP-2F)**

Capable of carrying and launching the Fairchild Petrel AUM-N-2 air-to-underwater missiles. Originally designated P2V-6B, the designation was changed to P2V-6M to more correctly show its mission.

**P2V-6F (P-2G)**

This aircraft type was retrofitted with the Westinghouse J-34-WE jet engines on pylons outboard of the engine nacelles.

**P2V-6T (TP-2F)**

All armament including the dorsal turret was removed for use in a trainer role. In most of the training aircraft the wing tip tanks were also removed.

**P2V-7 (P-2H)**

The APS-20 radome was mounted further forward than on the -5. The wing tip fuel tanks were made

smaller. Early versions had both nose and tail 20-mm cannon turrets but these were replaced later with the observers nose and MAD tail configuration.

Crew	7-9
Range	4,350 miles
Power Plant	Two 3,700 hp Wright Cyclone R-3350-32W and two 3,400 lbs static thrust Westinghouse J-34-WE-36 turbojets

**Weight:**

Empty	49,548 lbs
Gross	79,778 lbs

**Dimensions:**

Wing area	1,000 sq ft
Wing span	101 ft 4 in
Length	91 ft 8 in
Height	29 ft 4 in

Armament: Two 20-mm cannon in the nose and tail turret.

Two 50-caliber machine guns in the dorsal turret

Ordnance load up to 10,000 lbs

**P2V-7S (SP-2H)**

Additional ASW/ECM equipment including Julie/Jezebel.

**P2V-7L/7LP (LP-2J)**

The APS-20 radar was removed. Retracting skis, large tip tanks with APS-31 radar, an auxiliary power unit, integral nacelle heaters, provisions for 16 JATO bottles, and other equipment for Antarctic research and exploration were fitted in this version. Three of the P2V-7L aircraft were converted to P2V-7LPs by the installation of tri-metrigon cameras.

**AP-2H**

The MAD boom was deleted and replaced by a twin 20-mm tail turret. The large APS-20 radome was replaced with the smaller APQ-292. Chin mounted infrared sensors and low light level TV were installed, while the dorsal turret was removed and faired over. Other armament consisted of a 7.62-mm minigun pod that was mounted at a 30 degree down angle and fuselage mounted 40-mm grenade launchers.

**DP-2H**

Modified for drone control work.

**EP-2H**

Modified as an airborne relay platform for drone telemetry.

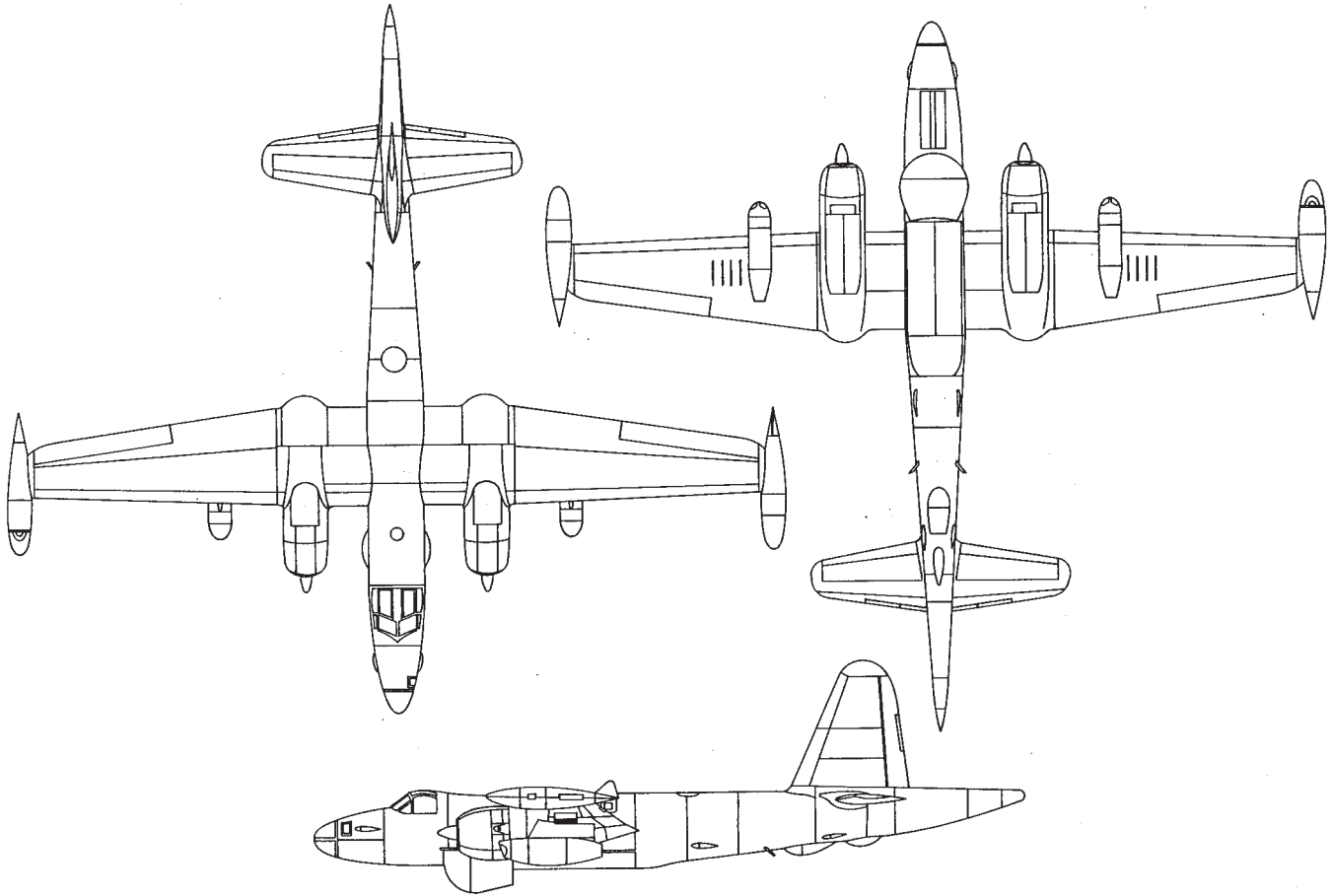
**OP-2E**

The large belly mounted APS-20 radar was replaced with a smaller radar unit installed on the chin turret. The MAD housing was removed, giving the aircraft a distinctive blunt tail. Much of the ASW equipment was removed, and provisions were made for window-mounted M60 7.62-mm machine guns. Additional gun

Pods were added that could be mounted on the in-board rocket launchers. A camera installation was provided in a bulge under the rear fuselage. These aircraft were used to drop movement sensors along the Ho Chi Minh Trail in Vietnam.

#### *Bureau Numbers*

XP2V-1	48237–48238	P2V-5	124865–124909; 127720–127782; 128327–128422; 131400–131543; 133640–133651; 134664–134676 (134664–134670 canceled); 134718–134723
P2V-1	89082–89085; 89087–89096	P2V-6	126514–126573 (126548–126573 canceled); 131544–131550; 134638–134663
XP2V-2	89086	P2V-6M	131551–131566
P2V-2	39318–39468 (39369–39468 canceled); 122438–122467	P2V-7	135544–135621; 140151–140160; 140430–140443; 140962–140986; 141231–141251; 142542–142545; 143172–143183; 144262–144267 (all canceled); 144675–144692; 144732–144734 (144733–144734 canceled); 145900–145923; 146431–146438; 147562–147571; 147946–147971; 148330–148336; 149070–149081; 149089–149130
P2V-3	122923–122951; 122964–122987	P2V-7S	148337–148362; 150279–150283
P2V-3W	124268–124291; 124360–124361 (canceled)	P-2H	153611–153616
P2V-4	124211–124267		



*Three view drawings for P2V-7/P-2H.*





*The P2V-1 Truculent Turtle set a long distance record flight in October 1946.*



*A P2V-7 assigned to VC-8.*



*One of the last P2V-7s accepted by the Navy.*

## P2Y

The Bureau of Aeronautics issued its first contract for the P2Y to Consolidated Aircraft on 26 May 1931. Its first flight was on 26 March 1932 and the first squadron to receive the P2Y was VP-10S on 1 February 1933. The Navy accepted 47 articles, including XP2Y-1, P2Y-1s, XP2Y-2 and P2Y-3s. The last P2Y reported in squadron inventory was on 31 March 1941 with VP-43, operating the P2Y-3.

### *Models Accepted from the Manufacturer*

#### **XP2Y-1**

Twin engine sesquiplane patrol flying boat with a crew of three in enclosed compartments. The two 575 hp Wright Cyclone R-1820E engines were mounted close beneath the top wing. It was originally tested with a third engine strut mounted on the centerline above the wing which was removed after one month of trials. The aircraft was first tested at NAS Anacostia in April 1932.

#### **P2Y-1**

All production models had only two engines.

#### **XP2Y-2**

In the last production P2Y-1, the engines were upgraded to Wright Cyclone R-1820-88 and raised to the wing's leading edge, thereby reducing drag.

#### **P2Y-3**

The engines were mounted on the leading edge of the wing and upgraded to Wright Cyclone R-1820-90s.

Crew	5
Range	1,780 miles
Power Plant	Two 700 hp Wright Cyclone R-1820-90

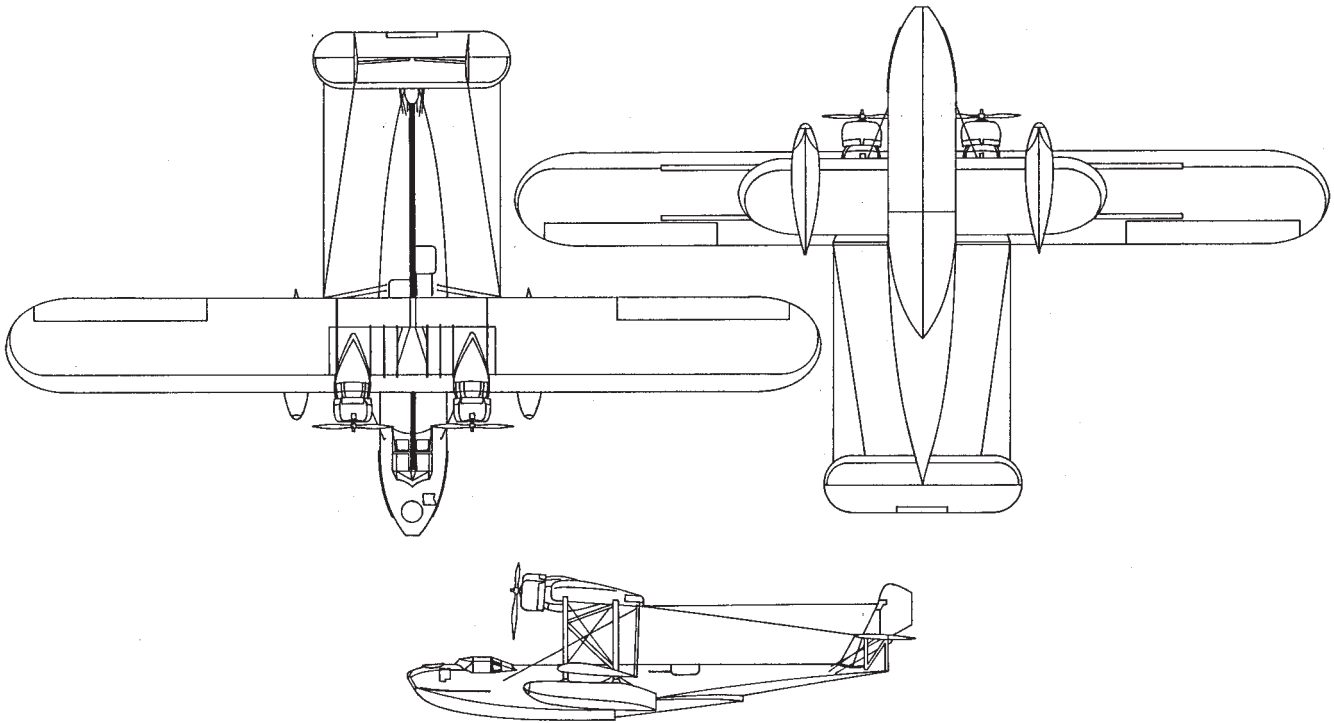
Weight:	
Empty	11,829 lbs
Gross	20,545 lbs

Dimensions:	
Wing area	1,514 sq ft
Wing span	100 ft
Length	61 ft 9 in
Height	17 ft 3 in

Armament: One flexible 30-caliber machine gun in the bow cockpit and two dorsal gun hatches behind the wings

### *Bureau Numbers*

XP2Y-1	A8939
P2Y-1	A8986–A9007
XP2Y-2	A9008
P2Y-3	A9551–A9571, 9618–9619



*Three view drawings for P2Y-2.*



*A P2Y-2.*

## P-3 Orion

The Bureau of Aeronautics issued a contract for the P3V (P-3) to the Lockheed Company on 2 February 1959. Lockheed delivered 610 aircraft to the U.S. Navy and an additional 36 for use by other organizations or countries. On 22 August 1962 VP-8 became the first squadron to receive the P-3 Orion. The P-3 continues to be an active aircraft in the Navy inventory.

### *Models Accepted from the Manufacturer*

#### **YP3V-1 (YP-3A)**

The prototype P3V modified from an L188 Lockheed Electra airliner. This aircraft was later redesignated NP-3A.

#### **P3V-1 (P-3A)**

The aircraft was designed as an antisubmarine patrol bomber with a crew of 10 including 5 in the tactical compartment. The aircraft's first flight was on 30 March 1961. The designation P3V-1 was changed to P-3A in 1962 with the introduction of the DoD system of aircraft designations.



*The P-3A and its armament, June 1964.*

#### **P-3B**

The horsepower was increased with the introduction of Allison T56-A-14 turboprops of 4,910 ehp in place of the original 4,500 shp T56-A-10Ws. Many of these aircraft were equipped to carry the Bullpup missile and many were modified with the TAC/NAV MOD package.

#### **YP-3C**

A prototype from the P-3B production model later modified to RP-3D, then NP-3D.

#### **P-3C**

This aircraft was equipped with a new integrated ASW and navigation avionics AN/ASQ-114 computer system making it the world's first ASW aircraft with a centralized computer, and with the AN/AQA-7 acoustic processors and display system.

Crew	12
Range	3,420 miles
Power Plant	Four Allison T56-A-14 4365 eshp
Weight:	
Empty	66,900 lbs
Gross	135,000 lbs
Dimensions:	
Wing area	1,300 sq ft
Wing span	99 ft 8 in
Length	116 ft 10 in
Height	33 ft 8½ in

Armament: Internal stowage up to 7,225 lbs bombs, mines, nuclear depth bombs torpedoes, etc  
Ten underwing pylons for bombs, mines, guided missiles, etc. up to 12,000 lbs

#### **P-3C Update I**

This update introduced a seven-fold increase in computer memory; an Omega navigation system; significant improvements in DIFAR; an additional tactical display at sensor stations 1 and 2; a new operational program providing computer aided acoustic analysis; and ESM signal sorting and refinement of the Omega navigation signals. Some were converted to P-3C Update III configuration.

#### **P-3C Update II**

Major improvements in this update included the installation of an infrared detection system; provisions for carrying and launching Harpoon antiship missiles; incorporation of a 28-track acoustic tape recording system; and the mounting of a sonobuoy reference system for continuous monitoring of sonobuoy positions.

#### **P-3C Update II.5**

In this update selected systems were replaced by more reliable and/or more easily maintained systems; IACS was added to provide a communication link with friendly submerged submarines; a MAD compensation group adapter was installed; wing pylons were stan-



*A Lockheed P-3C in flight.*

standardized; and improvements were made in fuel tank venting.

#### **P-3C Update III**

Included a completely new underwater monitoring system (UYS-1 Proteus) that was twice as effective as that in the Update II.5 aircraft.

#### **UP-3C**

Japanese Maritime Self Defense Force (JMSDF) electronic systems test bed.

#### **RP-3D**

Modified for use by VXN-8 in collecting worldwide magnetic data required for ASW and sundry scientific programs, later redesignated NP-3D.

#### **UP-3D**

JMSDF electronic threat simulation aggressor aircraft.

#### **WP-3D**

Built for the National Oceanic and Atmospheric Administration (NOAA), a civilian agency under the U.S. Department of Commerce, to undertake atmospheric research and weather modification experiments.

#### **P-3F**

Built for the Imperial Iranian Air Force. These aircraft had a P-3C airframe with a cabin layout that was a hybrid of the P-3B and P-3C.

#### **P-3G**

A temporary designation for the LRAACA (Long-Range, Air Antisubmarine Warfare-Capable-Aircraft)

program, later designated P-7A. The program was canceled in 1990.

#### **P-3H**

A proposed Orion II alternative to the cancelled P-7A.

### *Modifications to Existing Airframes*

#### **P-3A(CS)**

This aircraft, modified for the U.S. Customs Service, was equipped with AN/APG-63 radar in the nose to improve its ability to intercept aircraft flying illegally into the United States. It also included other electronic equipment to work with the U.S. Customs ground stations, Coast Guard vessels and civilian law enforcement agencies.

#### **P-3N**

Two P-3Bs with most of the ASW equipment removed for use by the Norwegian Coast Guard.

#### **P-3P**

Six P-3Bs modernized for service with the Portuguese air force.

#### **CP-3A**

A proposed cargo/passenger modification of the P-3A.

#### **EP-3AP-3**

As modified as electronic research platforms. Many were redesignated RP-3A, then NP-3D.

#### **EP-3A(EATS)**

Further modified as Extended Area Tests System airborne instrumentation stations for use by the Pacific

Missile Test Center, NAS Point Mugu, Calif. Later redesignated RP-3A, then NP-3D.

### **EP-3A(SMILS)**

The Sonoboy Missile Impact Locating System was developed to provide support for tests of Navy submarine-launched ballistic missiles by determining accurately the impact point of strategic re-entry bodies and rating the accuracy of missiles and trajectories. Later redesignated RP-3A, then NP-3D.

### **NP-3A**

The P3V-1 prototype was modified extensively for use as an equipment testbed for National Aeronautics and Space Administration.

### **RP-3A**

Modified for Oceanographic Development Squadron Eight (VXN-8) to study the acoustic and thermal characteristics of oceans and collect environmental and polar ice data. Designation also later applied to some EP-3A, EP-3A (EATS) and EP-3A (SMILS) aircraft.

### **TP-3A**

P-3As equipped as cockpit crew trainers for P-3C crews. All delicate ASW electronic equipment was removed to eliminate damage to the equipment in the course of repeated touch-and-go landings during training flights.

### **UP-3A**

All ASW equipment was removed and the aircraft was used as a utility transport. It has spartan personnel accommodations and extra cargo was carried in the weapons bay.

### **VP-3A**

This version was modified as a flag officer/staff transport with airline-type seats and other VIP amenities.

### **WP-3A**

This aircraft had most of the ASW gear removed for use in meteorological missions. The aircraft had weather reconnaissance radar added in a ventral radome; a shorter tail boom due to the removal of the MAD equipment; and the installation of meteorological systems. All were converted later to VP-3As or EP-3A.

### **EP-3B**

P-3B modified as an electronic flying laboratory for the Naval Research Laboratory.

### **EP-3B (Batrack)**

Most ASW equipment was removed and replaced with an assortment of electronic monitoring equipment for direction finding, radar signal analysis, communications intercept and recording, etc.

### **NP-3B**

This aircraft was modified so extensively for use as a special testbed that it could not be brought back to operational standards.

### **UP-3B**

All ASW equipment was removed and the aircraft was used as a utility transport. It has spartan personnel accommodations and extra cargo was carried in the weapons bay.

### **P-3C Update IV**

Advanced systems were installed to enable the P-3C Orion to detect quieter submarines. One P-3C Update II was modified as the Update IV prototype. The program was cancelled.

### **P-3 AEW & C**

P-3Bs modified for the U.S. Customs Service with E-2C rotodomes and radar systems for drug interdiction missions.

### **P-3K**

Royal New Zealand Air Force P-3Bs with upgraded avionics.

### **P-3N**

Norwegian Coast Guard P-3Bs with upgraded avionics.

### **P-3P**

Portuguese Air Force P-3Bs with upgraded avionics.

### **P-3T**

P-3A modified for use by the Royal Thai Navy.

### **P-3W**

An unofficial designation used for some RAAF P-3Cs with upgraded systems.

### **AP-3C**

Designation given to RAAF P-3Cs with upgraded systems.

### **EP-3C**

Two Japanese P-3Cs modified by Kawasaki as electronic reconnaissance platforms for the JMSDF.

### **EP-3E (Aries I)**

Former P-3As from which most ASW equipment was removed and replaced with an assortment of electronic monitoring equipment for direction finding, radar signal analyzing, communication interception and recording, etc.

### **EP-3E (Aries II)**

Former P-3Cs from which most ASW equipment was removed and replaced with an assortment of electronic monitoring equipment for direction finding, radar signal analysis, communications intercept and recording, etc. These aircraft replaced the EP-3B (Batrack) and EP-3E (Aries I) aircraft.

### **EP-3J**

P-3Bs modified as electronic threat-simulation aggressor aircraft.

**NP-3C**

This aircraft was modified so extensively for use as an equipment testbed that it could not be brought back to operational standards.

**NP-3D**

A designation given to former RP-3A, EP-3B and RP-3D aircraft used for a wide range of research and test missions, including oceanographic and magnetic survey. Some of these aircraft have been modified with rotating radomes for AEW development.

**RP-3D**

YP-3C, RP-3A and EP-3B modified for use in collecting worldwide environmental data required for ASW and sundry scientific programs. All ASW equipment was replaced by specialized gear for oceanographic research and magnetic surveying. RP-3Ds later redesignated NP-3D.

**TAP-3**

P-3Bs modified into RAAF cockpit crew trainers and logistics aircraft.

**UP-3E**

JMSDF P-3Cs modified for specialized reconnaissance.

**UP-3T**

P-3A modified for utility missions for the Royal Thai Navy.

**Bureau Numbers**

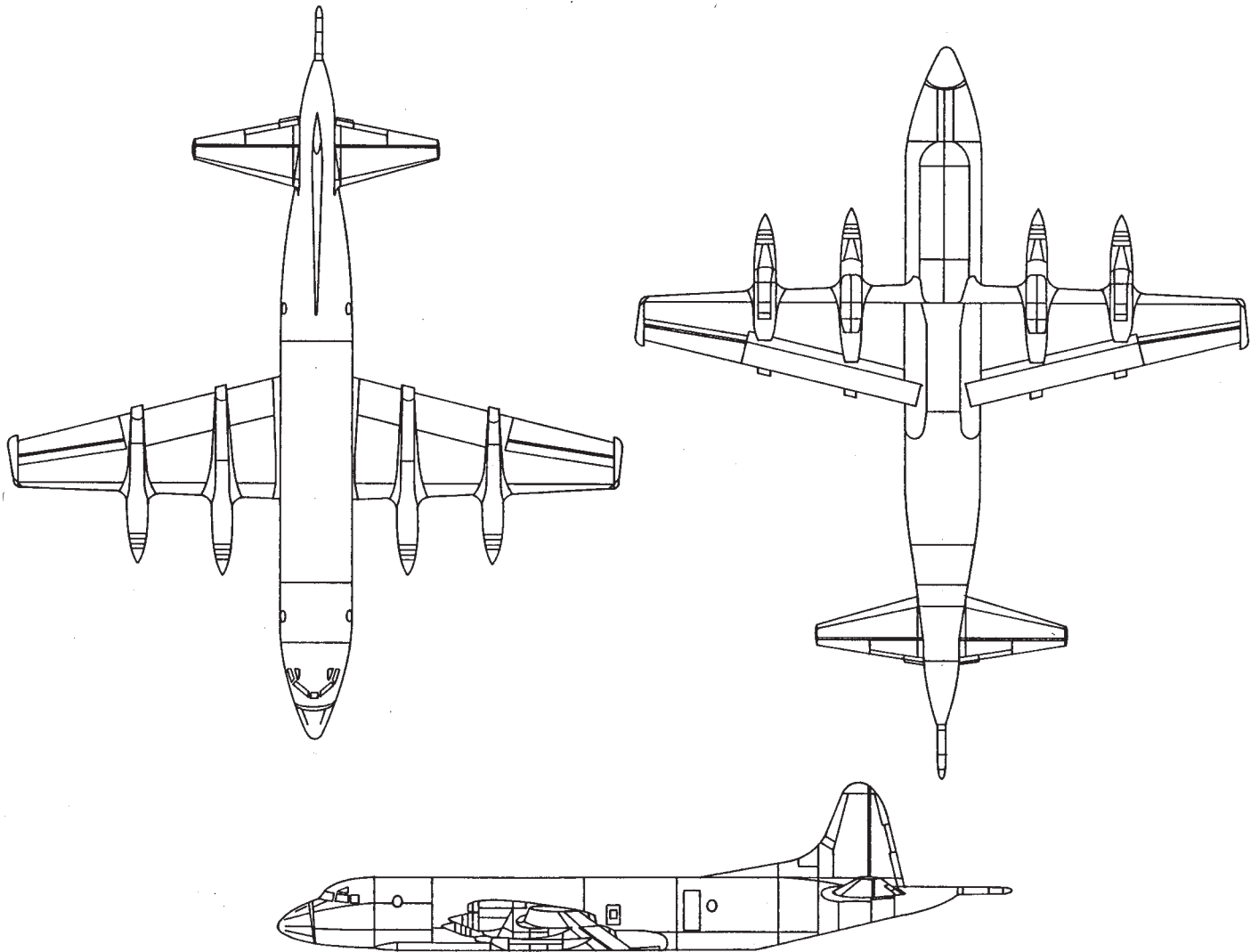
YP3V-1 (YP-3A)	148276
P3V-1	148883-148889; 149667-149678; 150494-150529; 150604-150609; 151349-151396

P-3A	152140-152187
P-3B	152718-152765; 152886-152890; 153414-153442; 153444-153458; 154574-154605; 155291-155300; 156599-156603.
YP-3C/RP-3C	153443
P-3C	156507-156546 (156531-156546 canceled); 157310-157341 (157333-157341 canceled); 157934 (canceled); 158204-158226; 158563-158574; 158912-158947 (158936-158947 canceled); 159318-159329; 159503-159514; 159883-159894; 160283-160294 <sup>1</sup> ; 160610-160612; 160751-160770; 160999-161014; 161121-161132; 161267 -161269; 161329-161340; 161368-161380; 161404-161415; 161585-161596; 161762-161773; 162314-162325 (162319-162325 canceled); 162656-162665; 162770-162781 (162779-162781 canceled); 162998-163009 (163007-163009 canceled); 163289-163297 (163296-163297 canceled); 163578-163590; 164467-164469; 165098-165105 158227
RP-3D	158227
WP-3D	159773; 159875
P-3F	159342-159347
P-3H	153611-153616 (canceled)

<sup>1</sup> Bureau number 160294 was originally assigned to the first RAAF airframe; the aircraft's number was changed to 160751 in keeping with the RAAF's desire to have all of its P-3C aircraft carry sequential numbers.



A Lockheed P-3C Update III in flight.



*Three view drawings for P-3.*



## P3M-1/2

The XPY-1, prototype for the P3M-1/2, was produced by Consolidated. Martin won the contract to produce the P3M-1, the production version of the XPY-1. A total of 9 P3M-1/2 aircraft were delivered to the Navy by Martin. On 29 April 1931 VP-10S became the first squadron to receive the P3M-1. VP-15 was the last squadron to report the P3M-2 in its inventory on 31 May 1938.

### *Models Accepted from the Manufacturer*

#### **P3M-1**

The P3M-1s were the first three aircraft produced by Martin after they won the contract to produce the production version of Consolidated's XPY-1. They were twin-engine parasol wing monoplane flying boats of metal and fabric covered metal construction with a crew of 5. The first flight of a P3M-1 was believed to be in December 1928.

#### **P3M-2**

The P3M-2 aircraft were equipped with larger engines. These engines were also retrofitted to the P3M-1s.

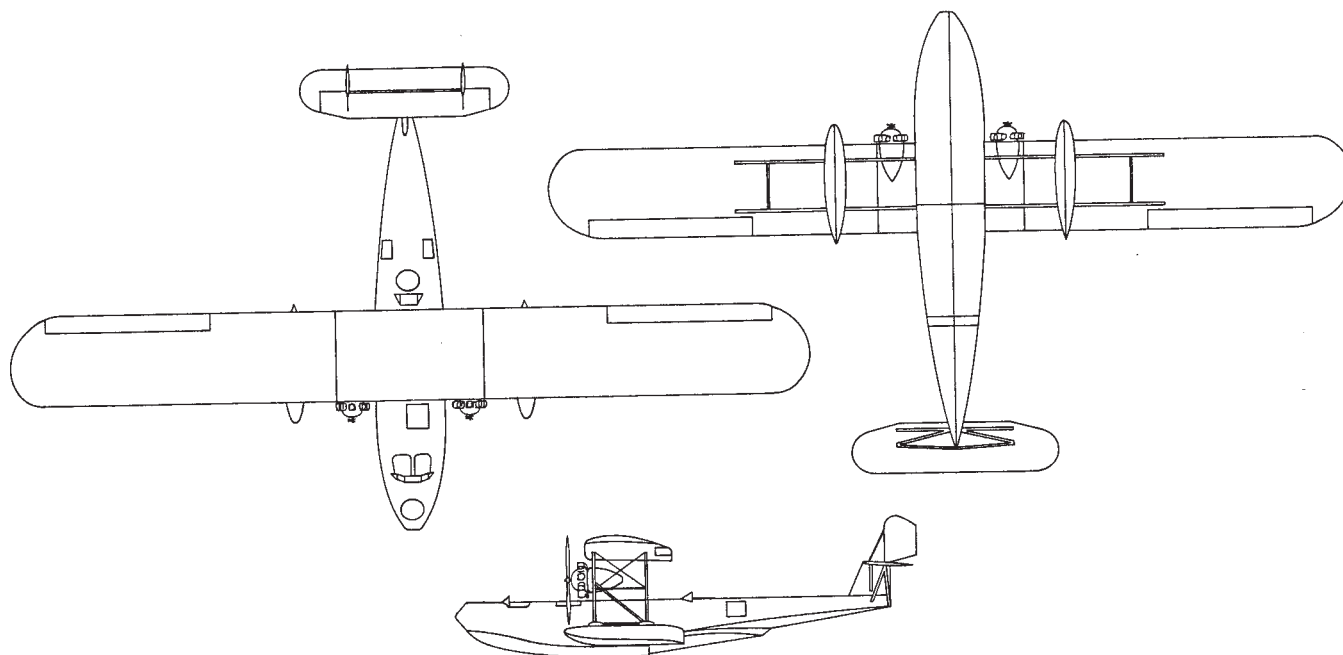
Crew 4-5  
 Range 1,570 miles  
 Power Plant Two 525 hp Pratt & Whitney Hornet R-1690-32

Weight:  
 Empty 9,903 lbs  
 Gross 15,559 lbs  
 Dimensions:  
 Wing area 1,115 sq ft  
 Wing span 100 ft  
 Length 49 ft 2 in  
 Height 16 ft 8 in

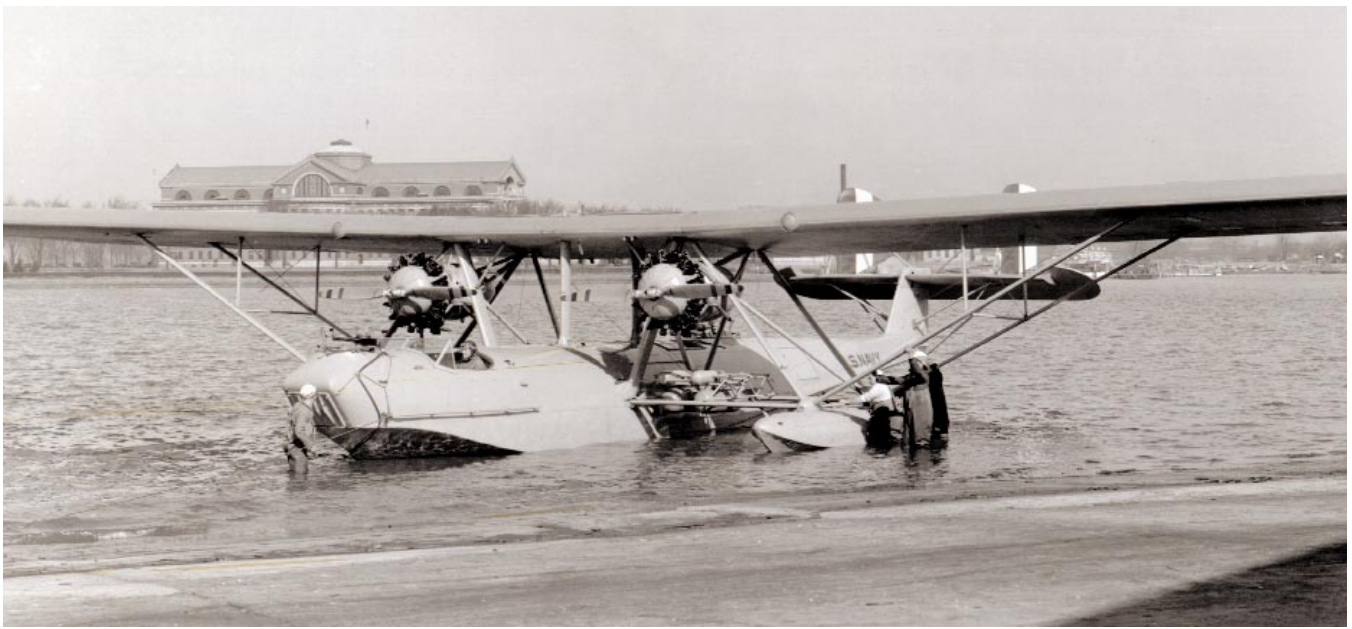
Armament: Two flexible 30-caliber machine guns in both the bow and dorsal positions

### *Bureau Numbers*

P3M-1 A8412-A8414  
 P3M-2 A8415-A8420



*Three view drawings for P3M-1.*



*A P3M-1 at NAS Anacostia for testing, February 1931.*



*A P3M in flight.*