

# Boeing PW-9's in the U.S. ARMY

by Robert L. Cavanagh



PW-9C AIR CORPS 27-200  
6TH PURSUIT SQUADRON...  
WHEELER FIELD.....  
TERRITORY OF HAWAII.  
2 OCTOBER 1929.

When one thinks of the pursuit airplanes flown by the United States Army from 1925 through 1930 one invariably recalls the Curtiss PW-8's and "Hawks." The reputation of these airplanes unfortunately overshadows that of another fine series of aircraft, the Boeing PW-9's. The first production American pursuit airplane to use tapered wings and a tunnel radiator, the PW-9 could fly rings around the PW-8 and offer stiff competition to the father of the "Hawk," the XFW-8B.

The Boeing Pursuit Airplane, eventually the first XFW-9, was built as a private venture replacement for the Boeing-produced MB-3A. This plan was adopted by Boeing in order to retain the design rights, thereby avoiding the risk of having the production contract awarded to a competitive firm on the basis of low bid. Design was started early in 1922 and the first flight occurred at Camp Lewis, Washington, on 29 April 1923. Just before the airplane was to be shipped to McCook Field a ground-loop accident damaged the wing tips and propeller. Since time did not permit obtaining another propeller, the tips of the damaged one were sawed off and reshaped.

Army Air Service Engineering Division Sub-order 3169-8 was issued on 22 June 1923 to uncrate and set up the Boeing Pursuit Airplane for inspection upon its arrival at McCook Field, Ohio. Flight tests conducted during the summer of 1923, using the reshaped propeller, showed a lesser high speed than that of the Curtiss PW-8 (later to be designated XFW-8). However, when using a Curtiss high-speed propeller the Boeing Pursuit Airplane equalled the Curtiss airplane's performance.

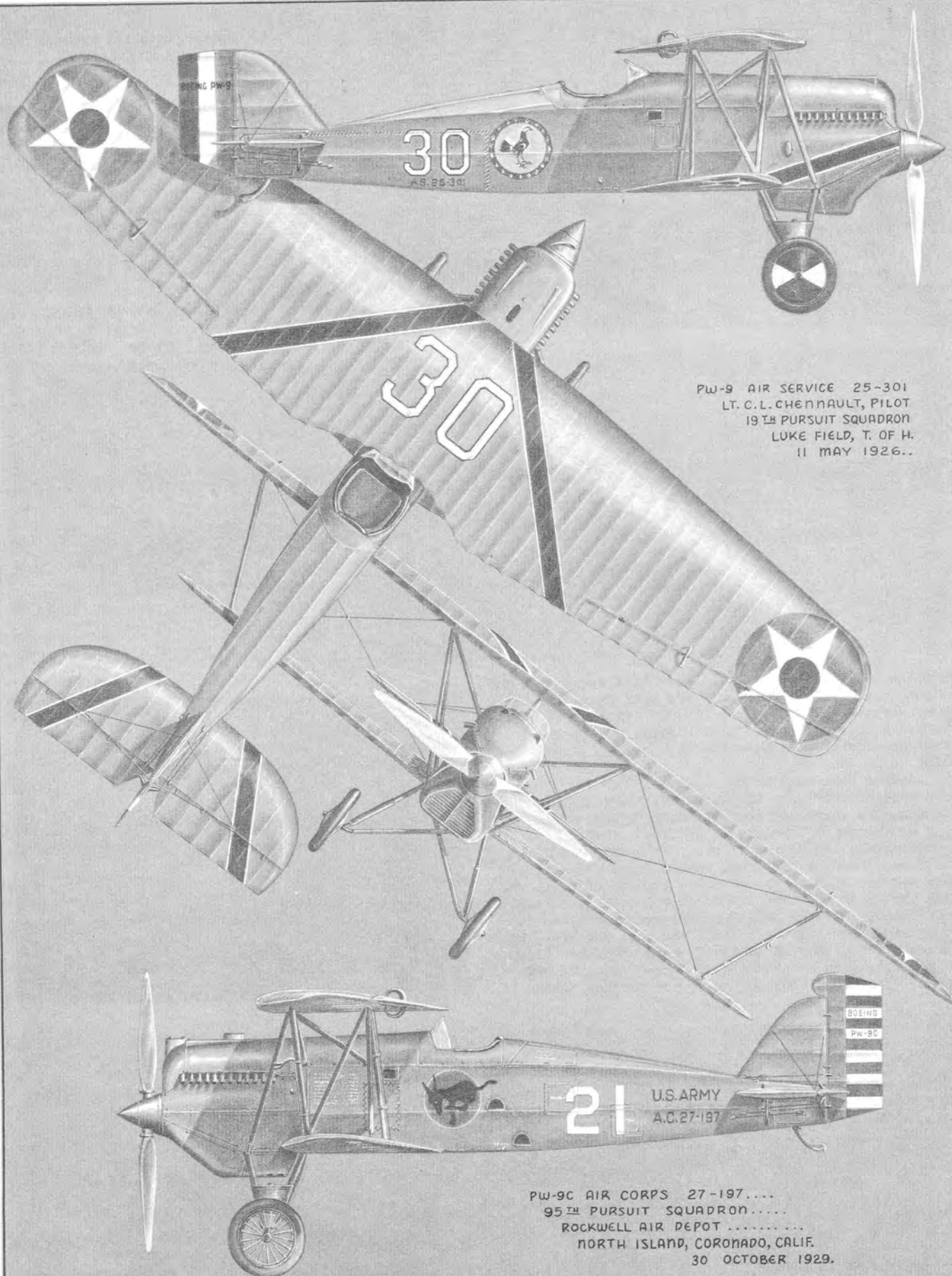
As a result of the McCook Field testing, Boeing was awarded Contract No. 713 on 29 September 1923 for three single-seater pursuit airplanes, Air Service

Type I, Model PW-9. The Boeing Pursuit Airplane now became the XFW-9, Air Service No. 23-1216, and the two additional airplanes were to be numbered 23-1217 and 23-1218. The contractor was instructed to hold back production of the second and third articles to permit incorporation of cooling system changes resulting from flight tests and any structural changes which might result from sand static tests of the first article. In November 1923 A.S. No. 23-1216 was removed from flight status and used as a static test article to prove the strength of the airframe. ①

The second and third articles, now XFW-9's, were delivered to the Assembly Building at McCook Field on 26 May 1924. Project numbers P-355 and P-356 were painted on the rudders of A.S. Nos. 23-1217 and 23-1218, respectively. McCook Field retained P-356 for further flight testing while P-355 went to Selfridge Field for service test by pilots of the First Pursuit Group. Lt. Brookley flew P-355 from McCook to Selfridge on 1 July 1924 and remained with the airplane during the service test period. Comparative tests were run on the afternoon of 17 July between the XFW-9, PW-8 ② and MB-3A

① The static tests were probably completed during December 1923.

② The delivery of production PW-8's to Selfridge Field was completed by 14 July 1924.



PW-9 AIR SERVICE 25-301  
 LT. C. L. CHENNAULT, PILOT  
 19<sup>TH</sup> PURSUIT SQUADRON  
 LUKE FIELD, T. OF H.  
 11 MAY 1926..

PW-9C AIR CORPS 27-197....  
 95<sup>TH</sup> PURSUIT SQUADRON.....  
 ROCKWELL AIR DEPOT .....  
 NORTH ISLAND, CORONADO, CALIF.  
 30 OCTOBER 1929.



Photos supplied through the courtesy of Robert L. Cavanagh.

At left - 19th Pursuit Squadron PW-9C's at Hickam Field, Hawaii in 1927. Airplane 43 is A.C. No. 27-183 (Photo - P.R. Mott).

Below and bottom - the XPW-9 and the Curtiss XPW-8B during the pursuit evaluation trials in late 1924. (Photos - below, 166234 USAF and bottom, 166238 USAF)

Below right - PW-9, A.C. 25-295 with metal wings by Thomas Morse. (Photo - 166235 USAF).



airplanes. All three airplanes were filled with gas and oil but the XPW-9 was the only one with guns. The XPW-9 outmaneuvered the MB-3A above 10,000 feet and held its own below this altitude. Surprisingly, the MB-3A compared remarkably well with the PW-8 and XPW-9 in the climb to 15,000 feet.

Another test was run on 18 July 1924. For this test each of the three airplanes carried a 0.50 cal. gun with 200 rounds of ammunition, a 0.30 cal. gun with 600 rounds of ammunition and fuel sufficient for approximately two hour's flight. With this load it was found that the XPW-9 and PW-8 climbed far better than did the MB-3A. The PW-8 was able to hold its own with the MB-3A in combat above 10,000 feet. In combat near 18,000 feet the XPW-9 outmaneuvered the PW-8 in every way. The pilot's opinion was that the XPW-9 was far superior to the MB-3A and PW-8 in maneuverability at all altitudes and equal to the PW-8 in climb and speed. The XPW-9 took off not quite as fast as the



MB-3A but more quickly than the PW-8. It landed a little faster but was not as difficult to land as the MB-3A.

All pilots of the First Pursuit Group were permitted to fly both the XPW-9 and PW-8 for approximately one and one-half hours each and the members of a specially appointed Comparative Test Board flew each airplane several times for a total of approximately six hours each.

Each of the Board pilots were allowed 30 minutes to become familiar with the airplane and to fill out the Pilot's Observation Report. The two airplanes would then meet over the field, climb to about 17,000 feet and engage in combat. During the combat at least one comparative dive of over 5,000 feet was made. Upon completion of the first test the pilots would change airplanes and immediately go up and duplicate the described test. On each flight the planes carried full tanks of gas and oil, oxygen apparatus, one 0.50 cal. gun with 200 rounds of ammunition, and one 0.30 cal. gun with 600 rounds of ammunition. At all times during the flight the pilots observed relative speed, climb, dive, approach, get-away and maneuverability in combat.

In one of his reports Lt. Brookley observed that oxygen apparatus was used by pilots of the First Pursuit Group for the first time during these tests. They were surprised and pleased to find that they had eliminated all headaches and the bad effects of high altitude in such a simple way. The pilots were very much in favor of so equipping all airplanes and using oxygen above 15,000 feet.

During the comparative tests with the XPW-9, the PW-8 developed leaks in the wing radiator each day. Some were attributed to damage received in shipping and unpacking, but leaks were also caused by heavy vibrations that developed in the radiator shell during hard maneuvering. The front left exhaust manifold of the XPW-9 burned out after about eight hours of flying and was replaced with Curtiss type individual stacks. The landing after the tests on 18 July caused the tail skid of the XPW-9 to fail about the pivot. The D-12 engines in each airplane cut out severely in quick maneuvering, pushing into or coming out of dives, flying on their sides, or at any stall position. The cutting out was attributed to carburetion deficiencies.

It was the opinion of the Comparative Test Board that the XPW-9 was superior to the PW-8 for pursuit work. On 25 July 1924 the Chief, Engineering Division, McCook Field, radiogrammed the Chief, Air Service, "Boeing XPW-9 recommended for production.....This conclusion result of Selfridge Field tests." As a result of these tests, 12 PW-9's were procured under ASO (Air Service Order) 2564 dated 19 September 1924. The unit cost of each airplane was \$14,000.

The Chief of the Army Air Service, General Patrick, expressed his desire for a board similar to the PW-8/XPW-9 Board to evaluate the PW-8, XPW-8A and XPW-9. Selfridge Field was requested to send pilots to McCook Field along with XPW-9, P-355 for this purpose. Comparative tests were run on 19 and 23 September 1924 between the XPW-9 and XPW-8A. (3) The XPW-9 was found to be markedly superior to the XPW-8A in maneuverability and controllability, making the XPW-9 more desirable for pursuit work.

Additional tests were conducted at McCook Field on 8 and 9 October 1924 with results similar to those of previous tests. During the tests on 8 October, Lt. Eugene H. Barksdale flew the XPW-8A, P-364, and Lt. Brookley flew the XPW-9, P-356. The Curtiss-Reed dural propeller of the XPW-9 limited the D-12 engine to 1605 rpm on the ground while the XPW-8A engine turned over at 1790 rpm. The XPW-9 was also very tail heavy for these tests. The XPW-8A exhibited a

greater rate of climb and a higher speed than did the XPW-9, but the XPW-9 was superior to the XPW-8A in combat maneuverability.

The number of PW-9's on order was increased to 30 by Army Air Service Contract No. 7615 (ASO 25213) entered into on 16 December 1924. The contract called for a total of 33 aircraft and spares to be delivered, divided as follows:

18 PW-9 aircraft for the Army Air Service, S/M A.S. 25-307 through 25-324.

10 VF type aircraft for the Navy, FB-1's A-6884 through A-6893.

2 VF type aircraft for the Navy equipped with arresting gear, FB-2's A-6894 - 6895.

1 VF type aircraft equipped with a Wright P-1 engine for the Navy, FB-4 A-6896.

1 VF type aircraft equipped with a Packard 1A-1500 engine for the Navy, FB-3 A-6897.

1 Aircraft modified for the NACA (National Committee for Aeronautics).

3 Water type landing gears.

Spares.

The NACA airplane had the guns and gun gear removed. Pressure orifices, tubing and instruments were installed in the wings and empennage for in-flight pressure studies. The contract further specified that, "All excess weight available should be used to strengthen the structure as the aircraft is to be used in particularly violent maneuvering." This airplane was used for an extensive series of tests to determine the pressure distribution (and thus, airloads) over wings and tail surfaces in level flight, pull-ups, rolls, spins, inverted flight, dives and pull-outs. The results of the tests were reported in NACA Technical Report No. 364.

Another round of comparative tests were held at McCook Field on 19 March 1925 between the XPW-9 (P-356), XPW-8B (P-364) and PW-8 Supercharged (P-358). The XPW-8B was found to be slightly to markedly superior to the XPW-9 in everything except individual maneuverability. More important, the XPW-8B was found to be superior in combat. The XPW-8B, of course, was the XPW-8A with single bay tapered wings. It had a marked similarity in appearance to the XPW-9.

Delivery of the production PW-9's began in October 1925. Lt. George Tourtellot, after flight testing A.S. No. 25-295 on 23 September 1925, reported in his Pilot's Observation Report that the airplane was, "exceptionally easy to control on the ground after landing. Can be made longitudinally stable (in flight) by means of throttle settings and adjustable stabilizer at all speeds."

Tables I and II present information concerning the station assignments, squadron usage and disposal of the XPW-9's and PW-9's. It should be noted that A.S. No. 25-324, the last PW-9 of ASO 25213, was changed to an XP-4 by Purchase Order No. 55695 prior to delivery. Although not indicated by Table II, the 12 airplanes assigned to Hawaii were divided between the 6th and 19th Pursuit Squadrons.

Key to abbreviations of lesser known Stations:

MAD- Middletown Air Depot, Middletown, Pennsylvania

SAAD- San Antonio Air Depot, San Antonio, Texas

HAD- Hawaiian Air Department

Luke- Luke Field, Ford Island, Territory of Hawaii

Wheeler- Wheeler Field, Schofield Barracks, Wahiawa,

Territory of Hawaii

RAD- Rockwell Air Depot, North Island, Coronado, Calif.

Rockwell- Rockwell Field, North Island, Coronado, California

PAD- Philippine Air Department

France- France Field, Panama Canal Zone

(3) The XPW-8A was, in essence, a PW-8 with single bay wings and a tunnel radiator similar to that of the XPW-9

Part II of this article by Robert L. Cavanagh will be continued in a subsequent issue, including tables of the PW-9A, -C and -D.

TABLE I **XPW-9**

| A. S. NO. | DATE REC. | STATION | SQUADRON | A/C NO. | DATE | REMARKS                    |
|-----------|-----------|---------|----------|---------|------|----------------------------|
| 23-1216   | 6-23      | McCook  |          | P-309   |      | Surveyed 2-25 as XPW-9     |
| 23-1217   | 7-24      | McCook  |          | P-355   |      | Surveyed 1-29 as XPW-9     |
| 23-1218   | 6-24      | McCook  |          | P-356   |      | Donated Sch 12-28 as XPW-9 |

TABLE II **PW-9**

|        |                                                                    |                                                    |          |       |            |                                                                                  |
|--------|--------------------------------------------------------------------|----------------------------------------------------|----------|-------|------------|----------------------------------------------------------------------------------|
| 25-295 | 10-30-25<br>10-12-27<br>11-27-27<br>3-31-30<br>5-22-30<br>10-30-30 | McCook<br>MAD<br>Aberdeen<br>SAAD<br>Kelly<br>SAAD |          | P-430 |            | Surveyed 3-4-30 as PW-9<br>due to Fair Wear and Tear                             |
| 25-296 | 10-31-25<br>12-4-25<br>4- 29<br>11- 29<br>3- 30<br>6- 30           | HAD<br>Luke<br>Wheeler<br>Luke<br>Wheeler<br>Luke  |          |       |            | Surveyed 2-4-31 as PW-9<br>due to Fair Wear and Tear                             |
| 25-297 | 10-31-25<br>12- 4-25<br>5-31-27<br>2- 29                           | HAD<br>Luke<br>MAD<br>Wheeler                      | 19th Pur | 32    | 12-26      | Shipped to MAD 11-23-27<br>Surveyed 4-17-30 as PW-9<br>due to Fair Wear and Tear |
| 25-298 | 10-31-25<br>12- 4-25<br>2- 29<br>8- 30                             | HAD<br>Luke<br>Wheeler<br>Luke                     |          |       |            | Surveyed 9-26-30 as PW-9<br>due to Fair Wear and Tear                            |
| 25-299 | 10-31-25<br>12- 4-25                                               | HAD<br>Luke                                        | 19th Pur | 34    | 9-26       | Surveyed 11-9-26 as PW-9<br>due to wreck 9-12-26                                 |
| 25-300 | 10-31-25<br>12- 4-25<br>2- 29                                      | HAD<br>Luke<br>Wheeler                             |          |       |            | Surveyed 10-8-30 as PW-9<br>due to Fair Wear and Tear                            |
| 25-301 | 10-31-25<br>12- 4-25<br>11-13-26<br>7- 27<br>2- 29                 | HAD<br>Luke<br>RAD<br>HAD<br>Wheeler               | 19th Pur | 30    | 5-26       | Shipped to MAD 6-30-27<br>Surveyed 9-5-30 as PW-9<br>due to Fair Wear and Tear   |
| 25-302 | 10-31-25<br>12- 4-25<br>3- 29                                      | HAD<br>Luke<br>Wheeler                             |          |       |            | Surveyed 7-28-30 as PW-9<br>due to Fair Wear and Tear                            |
| 25-303 | 10-31-25<br>12- 4-25                                               | HAD<br>Luke                                        |          |       |            | Surveyed 7-25-27 as PW-9<br>due to Fair Wear and Tear                            |
| 25-304 | 10-31-25<br>12- 4-25<br>4- 29                                      | HAD<br>Luke<br>Wheeler                             | 19th Pur | 33    | 5-26, 6-27 | Surveyed 2-8-30 as PW-9<br>due to Fair Wear and Tear                             |
| 25-305 | 10-31-25<br>12- 4-25<br>2- 29<br>8- 30                             | HAD<br>Luke<br>Wheeler<br>Luke                     | 19th Pur | 35    | 8-26       | Surveyed 9-26-30 as PW-9<br>due to Fair Wear and Tear                            |

|        |                                                                             |                                                               |          |    |       |                                                       |
|--------|-----------------------------------------------------------------------------|---------------------------------------------------------------|----------|----|-------|-------------------------------------------------------|
| 25-306 | 10-31-25<br>12- 4-25<br>2- 29                                               | HAD<br>Luke<br>Wheeler                                        |          |    |       | Surveyed 7-29-30 as PW-9<br>due to Fair Wear and Tear |
| 25-307 | 11- 6-25<br>12- 4-25<br>4- 29                                               | HAD<br>Luke<br>Wheeler                                        |          |    |       | Surveyed 4-1-31 as PW-9<br>due to Fair Wear and Tear  |
| 25-308 | 1- 1-26<br>7-10-26<br>10-24-27                                              | Langley<br>Kelly<br>Bolling                                   | A.C. Det | 32 | 3-38  | Surveyed 6-8-28 as PW-9<br>due to wreck 3-21-28       |
| 25-309 | 1- 1-26<br>5-24-26<br>11-16-27<br>12-13-27<br>8-13-28<br>5- 9-29<br>5-14-30 | Langley<br>Kelly<br>SAAD<br>Rockwell<br>March<br>MAD<br>Kelly | 43d Sch  | 1  | 7-26  | Surveyed 8-4-31 as PW-9<br>due to Fair Wear and Tear  |
| 25-310 | 11-30-25                                                                    | Bolling                                                       |          |    |       | Destroyed by fire 1-25-26                             |
| 25-311 | 11-30-25                                                                    | Bolling                                                       |          |    |       | Destroyed by fire 1-25-26                             |
| 25-312 | 12-12-25<br>1-31-26                                                         | PAD<br>Clark                                                  | 3d Pur   |    | 8-28  | Surveyed 2-14-29 as PW-9<br>due to wreck 8-1-28       |
| 25-313 | 12-12-25<br>1-31-26                                                         | PAD<br>Clark                                                  | 3d Pur   |    | 8-28  | Surveyed 2-14-29 as PW-9<br>due to wreck 8-1-28       |
| 25-314 | 12-11-25<br>2-28-26                                                         | PAD<br>Clark                                                  | 3d Pur   |    | 11-27 | Surveyed 4-5-28 as PW-9<br>due to wreck 11-21-27      |
| 25-315 | 12-12-25<br>1-31-26                                                         | PAD<br>Clark                                                  |          |    |       | Surveyed 6-23-30 as PW-9<br>due to Fair Wear and Tear |
| 25-316 | 12-12-25<br>1-31-26                                                         | PAD<br>Clark                                                  |          |    |       | Surveyed 9-24-30 as PW-9<br>due to Fair Wear and Tear |
| 25-317 | 12-12-25<br>1-31-26                                                         | PAD<br>Clark                                                  |          |    |       | Surveyed 3-13-29 as PW-9<br>due to wreck 4-26-28      |
| 25-318 | 12-24-25                                                                    | France                                                        | 24th Pur | 3  | 8-27  | Surveyed 10-6-27 as PW-9<br>due to wreck 8-9-27       |
| 25-319 | 12-24-25                                                                    | France                                                        |          |    |       | Surveyed 6-11-29 as PW-9<br>due to Fair Wear and Tear |
| 25-320 | 12-24-25                                                                    | France                                                        | 24th Pur |    | 10-29 | Surveyed 6-11-29 as PW-9<br>due to Fair Wear and Tear |
| 25-321 | 12-24-25                                                                    | France                                                        | 24th Pur |    | 6-27  | Surveyed 7-7-30 as PW-9<br>due to Fair Wear and Tear  |
| 25-322 | 12-24-25                                                                    | France                                                        | 24th Pur | 1  | 8-27  | Surveyed 10-3-27 as PW-9<br>due to wreck 8-9-27       |
| 25-323 | 12-24-25                                                                    | France                                                        | 24th Pur | 2  | 1-27  | Surveyed 6-11-29 as PW-9<br>due to Fair Wear and Tear |