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USA

Chance Vought F4U Carrier Qualifications

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F4U CARRIER LANDING ISSUES AND QUALIFICATIONS

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LANDING ISSUES and CARRIER QUALIFICATIONS

THE PURPOSE OF THIS ANALYSIS

There has been discussion about the inexperienced Navy pilots inability to land safely aboard an aircraft carrier and become "deck qualified." The early trials indicated deficiencies that could be overcome by an experienced pilot but were problematic for training Navy pilots. As a result, the Corsair gained the early reputation as an "ensign eliminator." Now the argument or misunderstandings arise. When was the Corsair officially approved for carrier combat operations? Secondly there are questions as to why the Corsair approval was withheld? Was it because of the design deficiencies which made the Corsair difficult to make safe carrier landings or was it because there were "logistics" issues? For example, the web site **http://acepilots.com/usn_blackburn.html** states that "logistics" was the reason, but in March 1944 the Chief of Naval Air Operational Training, Jacksonville, Florida, drafted a letter "condemning the Corsairs from carrier operations because of *bounce issues.*" The result of this condemnation was the immediate implementation of **Program Dog**. The following chronicles the early Corsair carrier operations.

CONFLICTS, MISINFORMATION AND INTERPRETATION

It is not unusual in a historical discussion for people misremember events. In some cases, events are distorted to fit a narrative. Here are just nine (9) examples on the subject of Corsair deck qualifications and acceptance of the Corsair for carrier deployment.

1. Lt. Commander Blackburn states: "nasty bounce characteristics have been eliminated", September 1943.[1] Also see page 6. The Corsair was sent to Grumman to resolve oleo design issues 29 June 1943. In addition, **Program Dog** is initiated in March 1944 to eliminate the "bounce" issue.
2. The F4U was "deck qualified" by the Navy. Only Navy squadrons VF-12, VF-17 and VF(N)-101 were "deck qualified" prior to January 1944. Yet many insist the Navy had approved the Corsair for <u>all</u> carrier combat operations. This is counter to what is clearly stated by many sources including the National Air and Space Museum (NASM).
3. There is also some conflict/confusion on the cause(s) for the delayed deployment of the F4U Corsair. Was the reason logistics or poor landing characteristics? e.g. "it was felt in Washington that the problem of logistic support would be overly complicated"[2] However there was also a problem of "bounce" issues that hadn't been resolved i.e. **Program Dog**.

[1] Abrams, Richard, *F4U Corsair at War,* Scribners, pg 54
[2] Abrams, Richard, *F4U Corsair at War,* Scribners, pg 54

4. Further, according to the BuAer fighter history, in a test by Atlantic Fleet Air Force Carrier Aircraft Service Unit 23 (CASU-23), the F6F required 1.245 man-hours per flight hour, the F4U 1.65 man-hours, nearly a third more. Ordnance and communications gear were more difficult to service and the F4U had considerably more landing accidents.[3]
5. "Logistics" is cited by some sources for the reasons the Corsairs were not deployed to carriers earlier in the war. However, if we read item 4 above it appears although "logistics" may have been a factor there are multiple issues with the F4U being considered by the Atlantic Fleet Air Force Carrier Aircraft Service e.g. pilot training casualties. We agree "logistics" must have been a problem in light of what Lt. Cdr. "Tommy" Blackburn said in the following letter dated June 1943. "We were still struggling with the general cussedness of our Corsairs - problems landing, oil-coated windscreens and exploding batteries etc. " In addition Blackburn goes on to explain the design fault in the Corsair arresting hook point.[4]
6. Not mentioned in the discussion are the higher than normal U.S. Navy Corsair pilot causalities that result in the Corsair' nickname; "ensign eliminator." Undoubtedly training causalities must have had an influence whether Corsair were generally approved for carrier combat operation. In the book entitled "Widowmaker", there is a detailed account of the Royal Navy Corsair "causalities." [5]
7. The "Brits" i.e. Royal Navy, were the first to use the proper or preferred approach to the aircraft carrier. The approach was not unique to the Corsair but necessary to overcome the forward visibility issues. See Appendix A and Appendix B. There was no confirmed indication that the "Brits" were first in this approach (see page 17 "Royal Navy".) In fact, the forward visibility issues are not unique to the Corsair (Appendix B). However, this appears on the WIKIPEDIA[6] web page 2/21/2019. "Despite the clipped wings and the shorter decks of British carriers, Royal Navy aviators found landing accidents less of a problem than they had been to U.S. Navy aviators, thanks to the curved approach they used. British units solved the landing visibility problem by approaching the carrier in a medium left-hand turn, which allowed the pilot to keep the carrier's deck in view over the anhedral in the left wing root. This technique was later adopted by U.S. Navy and Marine fliers for carrier use of the Corsair.[68]" "However there is a problem i.e. footnote 68 references "Tillman, 1979 pg. 94, 95." Barrett Tillman's book, "Corsair" had been revised, 1984, and references to the landing approach have been removed. Unfortunately, people are using this as information as source material. See appendix A for the standard U.S. navy training for carrier approach and landing. See Appendix B for the requirement for the F6F Hellcat to use the "curved approach". Also in Boone

[3] Friedman, Norman; "*Fighters Over the Fleet*", Naval Institute Press, pg 411,Footnote 73
[4] Hiller-Graves, Tim, *Widowmaker Living and Dying with the Corsair,* Casemate, pg. 50
[5] Hiller-Graves, Tim, *Widowmaker Living and Dying with the Corsair,* Casemate, pg. 69
[6] https://en.wikipedia.org/wiki/Vought_F4U_Corsair

Guyton's book Whistling Death, page 112, Guyton mentions the "curving approach." This was November 1942, months before (1 June 1943) the Royal Navy received Corsairs.

8. Curved approach video, USS Wasp Flight operations 1942, beginning at 5 minutes and 22 seconds https://www.youtube.com/watch?v=A703yiAJHWA
9. Revealed in the book "Widowmaker" by Tim Hiller-Graves that the U.S. Navy was in fact using the "curved approach" for Corsair carrier landings as early as February 1943. "The first Corsair arrived in February (1943) and an intensive program began with the CO (Lt. Cdr. John "Tommy" Blackburn) playing a leading part. He realized early on when undergoing deck trials with the USS Charger in Chesapeake Bay, that the Corsair had to be handled differently to other aircraft when landing on a carrier. Blackburn reasoned that a standard, straight on approach was unsuited to this aircraft, because of its poor forward visibility when landing. Above all else, a pilot needed to see the deck and the batsman's (LSO) instructions and that could only be achieved with the Corsair using the curved approach from the port side." [7] Following this there is a letter from Blackburn which goes on to describing Corsair landing issues.

NAVY CARRIER QUALIFICATIONS

- The first F4U-1 Corsair carrier trials were flown from the escort carrier USS Sangamon CVE-26 in Chesapeake Bay, Virginia on 25 September 1942[8]
- Flying the seventh production F4U-1 BuNo 02159
- Pilot; Lt. Cdr. Sam Porter, USN
- Lt. Cdr. Porter reported the "Corsair did not yet qualify for aircraft carrier duty for the following reasons."
  - The Corsair had very poor visibility in the three-point landing attitude
  - The landing gear revealed stiff oleo shock absorbers causing a high bounce upon touch-down.
- Other issues included:
  - The Corsair exhibited a twitch or sudden directional bank in landing caused by the stalling of the left or port wing due to propeller up-wash
  - Some Corsairs exhibited lateral instability that required aileron trim tab adjustment of from 8 to 10 degrees of the allowable 15-degree adjustment
  - Boone Guyton notes; over rigid gear oleo[9]

[7] Hillier-Graves, Tim, *Widowmaker Living and Dying with the Corsair,* Casemate, pg. 49
[8] Musciano, W. A., *Corsair, The Saga of the Legendary Bent-Wing Fighter-Bomber*, Schiffer Military History, pg. 38
[9] Guyton, Boone T., *Whistling Death*, Orion Books, pg 113

- ❖ Lt. Commander Norman Hanson, RNVR describes in detail oleo problems, and bounce issues[10]

NAVY CARRIER QULIFICATIONS NAVY'S VF-12
OCTOBER 1942 THROUGH APRIL 1943

- U.S. Navy receives its first F4U-1 on 31 July 1942[11]
- 22 Corsairs turned over to VMF 124 December 1942
- Navy squadron VF-12 receives F4U-1, 3 October 1942
- 22 Corsairs turned over to VF-12, 3 January 1943
- Navy squadron VF-12 pronounced combat ready 14 January 1943.
- Navy's VF-12 engage in field practice landings at North Island 3 March 1943[12]
- VF-12 conducts carrier trials aboard U.S.S. Core (CVE-13) on 4 March 1943
- During VF-12s training 14 pilots are killed flying the F4U-1.[13,14] These accidents cannot be confirmed using this web site.
  https://www.aviationarchaeology.com/src/USN/F4U.htm
- Lt. Commander Clifton and Lt. (jg) John Magda made four landings each (BuAir Nos. 02234 and 02307)[15]
- The entire VF-12 squadron "deck qualified" April 1943[16]
- Navy still felt the Corsair was unsuitable for general carrier use.[17]
- April 1943, VF-12 turns over the Corsairs to Marine Corp at Espiritu Santo and re-equipped with F6F-3 Hellcats

NAVY CARRIER QULIFICATIONS NAVY'S VF-17
APRIL 1943 - NOVEMBER 1943

- Navy squadron VF-17 begins carrier qualification trials 1 March 1943 from the aircraft carrier USS Charger (CVE-30).
- Navy squadron VF-17 assigned to the USS Bunker Hill 9 April 1943
- VF-17 first operational Corsair squadron 19 April 1943 under Lt. Commander J.T. Blackburn
- VF-17 detached from USS Bunker Hill upon arriving in the New Georgia area September 1943.

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[10] Hanson, Norman; *Carrier Pilot*, Patrick Stevens, Cambridge., pg 118
[11] Green, William; *Famous Fighters of the Second World War*. Doubleday Second edition. pg. 82
[12] Musciano, Walter A., Corsair Aces, ARCO., pg 43
[13] Dean H. Francis, *America's Hundred Thousand*, Schiffer Military History, pg 516
[14] Tillman, Barrett; *Corsair,* Naval Institute Press, pg. 13, 14
[15] Tillman, Barrett; *Corsair,* Naval Institute Press, pg. 13
[16] Green, William" Famous Fighters of the Second World War, pg 83
[17] Wilson, Randy: *From Bent Wing Bird to Whistling Death*, http://rwebs.net/dispatch/output.asp?ArticleID=16

- Navy squadron VF-17 demonstrates the F4U-1A Corsair could be "deck-landed" by *experienced* pilots November 1943
- Navy squadron landed safely on Essex and Bunker Hill after combat operations 11 November 1943[18]

NAVY CARRIER QUALIFICATIONS VF(N) -101 DECEMBER 1943

AIRCRAFT CARRIER IN THIS PHOTOGRAPH IS THE USS ENTERPRISE (CV-6)

CORSAIR F4U-2, USS INTREPID (CV-11)

Before the Navy gave formal approval of the Corsair for carrier deployment in April 1944 the Navy squadron VF(N)-101 underwent intensive deck qualification training, December 1943, before deployment of the radar equipped Corsairs to the aircraft carrier Intrepid (CV-11).

"*Having completed the course at Charleston, the night fighter pilot spent several days on an escort carrier off the Quonset Point area in order to complete carrier qualifications. He then shipped out to Naval Air Station Barbers Point, Hawaii, where Night Attack and Combat Training Unit (Pacific) provided the final operational polishing prior to posting to a fleet unit. Twenty-nine weeks of hard training had gone into the finished product: a first-class Navy night fighter pilot."*[19]

[18] Tillman, Barrett; *Corsair,* Naval Institute Press, pg. 50

[19] Source: U.S. Naval Institute; https://www.usni.org/magazines/naval-history-magazine/1989/january/development-night-fighters-world-war-ii

INDEPENDENT CORSAIR EVALUATIONS BY A SEASONED

NAVY COMBAT PILOT SWEDE VEJTASA[20]

20 MARCH 1943

Swede Vejtasa returned to the states after trying out a new fighter, Vought's F4U Corsair, from USS *Enterprise 20 March 1943*. In fact, the aircraft had been sent out expressly for Vejtasa to sample. He didn't care for the gull-winged, long-nosed brute with its 2,000-hp engine and its massive prop. He wrote up a list of some 18 concerns (not available here), some of which were addressed, albeit with some reluctance by Vought, after being pushed by the Navy. The Corsair's tail wheel was too low and gave the aircraft an unhealthy stance on the ground or flight deck, resulting in the prop wash "blanking out" the rudder, and greatly diminishing the Corsair's controllability on the ground. Several young aviators ground looped their big, blue fighters. The wings were too wide, and in the very early models about three feet of each wing tip was hinged to fold upward. This modification was soon dispensed with in the main production run.

Film of Swede Vejtasa landing on USS Enterprise. 20 March 1943.
https://archive.org/details/NPC-921

CORSAIR PILOTED BY SWEDE VEJTASA 20 MARCH 1943[21]

[20] Biography of Swede Vejtasa: https://en.wikipedia.org/wiki/Swede_Vejtasa

[21] Photograph from World War Photos, https://www.worldwarphotos.info

GRUMMAN CORPORATION
OLEO STRUT DESIGN INFLUENCE

- 29 June 1943, F4U-1D, Bu No.57157 was delivered to Grumman with Chance Vought's new landing gear strut[22]
  - Put in plant 5 ground test hanger
  - Two weeks testing and several modifications pronounced comparable to the Hellcat F6F.
  - Grumman test pilot Corwin Meyer makes fifteen (15) field carrier practice landings and pronounced it comparable to the Grumman Hellcat F6F.

GRUMMAN HELLCAT F6F OLEO STRUT DESIGN INFLUENCE (cont.)

We have been focused on the F4U Corsair carrier landing issues, and specifically the problem of forward visibility. We want to remind the reader this problem was *not* unique to the Corsair. We cover this again on page 17 as well.

There was an article published in the May 1986 magazine "**Flying**" entitled, "***Come Hellcats or High Water. Life aboard the Enterprise in World War II as seen by a fighter pilot***". The article discusses the Hellcat carrier launch and landing issues. "Seeing over the nose in the landing attitude was impossible, so the pilot performed a curved approach, hanging on the prop just above the stall." [23]

The entire article, we felt, gives the reader, a fighter pilots perspective on how hazardous carrier landings were. There are sources that declare the Hellcat was a easier fighter aircraft to land on a carrier than the Corsair. That may be true to a degree. We encourage everyone to read a fighter pilots account. Both the Corsair and Hellcat had the powerful 2000 hp, Pratt and Whitney R-2800 engine. We have attached the entire article in Appendix B, pages 22 and 23.

[22] Meyers, Corwin; *Flight Test Journal*, Specialty Press: pg. 72
[23] Phelps, Mark; *Flying*, Come Hellcats or High Water, May 1986, pg. 24

NAVY CARRIER QULIFICATIONS
CORSAIR CONDEMED FOR CARRIER OPERATIONS

- March 1944 the Chief of Naval Air Operational Training, Jacksonville, Florida, drafted a letter condemning the Corsairs from carrier operations[24]
- The letter was held up
  - Precipitated by the efforts of Chance Vought's Jack Hospers (service representative), Captain John Pearson (USN Fighter Design Officer in the Bureau of Aeronautics), and Captain H. S. Duckworth (USN Chief of Staff, Fleet Air Jacksonville),
  - **Program Dog** initiated

PROGRAM DOG

- "**Program Dog**" initiated immediately to solve the "bounce" problems.
- All doubt concerning the Corsair's carrier landing characteristics were resolved aboard the carrier USS Gambier Bay (CVE-73) in April 1944.
  - Bounce problem resolved in ten (10) days
- Navy Squadron VF-301, equipped with F4U-1s which had the improved oleo struts, completed 113 landings with excellent results
- An order was issued to modify the oleo struts on all West Coast Corsairs.
- The Corsair was now completely acceptable for carrier duty
- Chance Vought notified of approval March 1944[25]
- Marine squadron VMF-124 went aboard USS Essex 21 December 1944
- VMF-124 carrier qualified[26]

F4U CORSAIR PROGRAM DOG SUMMARY

March 1944 Chief of Naval Air Operational Training drafts **letter** condemning the Corsairs from carrier operations. Reason: student pilot attrition rates were high i.e. "Ensign Eliminator". Cause: Bounce issues on deck landings. But because of the efforts of Chance Vought's Jack Hospers, Captain John Pearson (USN Fighter Design Officer in the Bureau of Aeronautics), and Captain H. S. Duckworth (USN Chief of Staff, Fleet Air Jacksonville), the letter was held up. "***Program Dog***" was instituted immediately. (See page 13)

[24]Chance Vought/LTE History, https://www.utdallas.edu/library/specialcollections/hac/vought/history.pdf, Ch.4
[25] Guyton, Boone T., *Whistling Death*, Orion Books, pg. 173
[26] Meyers, Corwin; *Flight Test Journal*, Specialty Press: pg. 72

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NAVY CARRIER QUALIFICATIONS
(continued)

The program, one of four that Vought engineers presented, took just 10 days to complete. It went right to the heart of the program -improving the oleo characteristics of the landing gear. By doing so, the "built-in bounce" of the Corsair was eliminated. Test flight results with the improved gear (made by Commander T. K. (Kip) Wright, USN and Lieutenant Colonel John Dobbins, USMC) were so successful that the aircraft was immediately endorsed by Commander, Fleet Air Jacksonville. All doubt concerning the Corsair's carrier landing characteristics were resolved aboard the carrier USS Gambier Bay in April 1944. Navy Squadron VF-301, equipped with F4U-ls which had the improved oleo struts, completed 113 landings with excellent results. As a result of the USS Gambier Bay trials, an order was issued to modify the oleo struts on all West Coast Corsairs. The Corsair was now completely acceptable for carrier duty.[27]

- **The Chance Vought Corsair , Profile Publications, Number 47,** https://rclibrary.co.uk/files_titles/1918/Profile_047_Chance_Vought_F4U-I_Corsair%20.pdf

"It is the opinion of the board that the F4U is a better fighter, a better bomber and equally suitable carrier airplane as compared with the F6F ... It is strongly recommended that the carrier fighter and/or bomber compliments be shifted to the F4U type."

NOTES: From "Fighters over the Fleet: Naval Air Defense from Biplanes to the Cold War" by Norman Friedman, Notes to pages 134 - 138.

- Paragraph "O". The BuAer correspondence file includes a 24 August 1943 message (sent before the Bunker Hill trials) stating these aircraft (i.e. Corsairs) would be sent only to the Marines. However, the aircraft was kept carrier capable (as happened) it was issued to carriers later on. See VF-17 page 6.
- Memo in the BuAer VF4U1/F1-1 Vol. I file. The Corsair was considerably faster than the F6F Hellcat (about 20 mph in maximum speed); had better high-speed control; and offered better quiet and comfort recommended that the Corsair again be employed as a carrier fighter. Dated assumed to be late 1943. No specific date.
- Further test carried out 1 February 1944 on escort carrier Charger

[27] Chance Vought/LTE History; https://www.utdallas.edu/library/specialcollections/hac/vought/history.pdf

F4U CORSAIR

NAVAL CARRIER APPROVAL PROCESS 1943/1944

1. There exist a very detailed description of the final approval and deployment of the F4U Corsair in the book "Fighters Over the Fleet" by Norman Friedman; footnote #74. The following Item (5) was copied from footnote #74, page 411.
2. "The question of whether to replace the Hellcat with the Corsair was revived in 1944. An initial (unfortunately undated, but probably late 1943) memo argued that the Hellcat was superior in stability and low speed control (for landing); in maintenance; in cooling characteristics; and in its cockpit arrangement. The Corsair was considerably faster (about 20 mph in maximum speed); had better high-speed control; and offered better quiet and comfort in its cockpit. Patuxent River, which prepared the report, therefore recommended that the Corsair again be employed as a carrier fighter. This memo is in the BuAer VF4U1/F1-1 Vol 1 file. Further tests were carried out early in 1944. For example. on February the training escort carrier Charger reported tests of landings under light wind conditions (as request late in 1943). These tests and take-off tests showed that the Corsair could operate from an escort carrier, but only with considerable wind over deck. It was clearly suitable for a larger carrier with higher speed. In April an improved F4U-1 was tested against an improved F6F-3 (equivalent to an F6F-5); the improvements in the Corsair were a new unframed canopy and improved oleo undercarriage. It proved entirely superior in speed and rate of climb and equally maneuverable. and showed excellent landing characteristics. The test pilots considered it entirely satisfactory as a carrier aircraft (the landing signal officer agreed). The report was signed by Commander Fleet Air West Coast, Rear Admiral Frederick C. Sherman, a future CNO. The tests also showed that the F6F-5 was sufficiently superior to the F6F-3 that the two should not operate together. The 28 April report of this trial seems to have led to a definite decision to place Corsairs on board carriers. The trials ship was the large escort carrier Gambier Bay. The 30 April 1944 chart of the current and projected US naval air organization showed the fighting squadrons of Air Groups 84 and 85 were to use Corsairs. They would operate from the Essex class carriers. In May Quonset Point Air Station, which trained British pilots on the Corsair, reported to ComAirLant that its training experience with the Corsair showed that it was a superior fighter. The landing "bounce" problem had been solved, so the Corsair now landed smoothly as other carrier types; and the landing gear was so sturdy that it rarely suffered damage from hard landings. Its large flap area decelerated a landing Corsair more rapidly than a Hellcat, so that arresting wire run-out was shorter. The Corsair carried more fuel, so it had a considerably greater cruising radius (and fuel consumption of its engine was somewhat less at the same power setting). The Corsair was more maneuverable, lighter on the controls and was probably a better gun platform. Maintenance time was only slightly greater than for the Hellcat. The only drawback of the Corsair was a longer familiarization period. In June , Commander Air Forces Pacific rejected replacement of the F6F-3 by the F4U-1 on logistical grounds. DCNO(Air) replied on 28 June that the coming F4U-4 was definitely desired for carriers if its performance came up to expectation. By this time the F4U-4 was definitely planned

for the groups of the new Midway class heavy carriers (CVBs) and ComAirPac proposed that it also equip four new fleet carrier air groups, together with related night-fighter squadrons. DCNO(Air) agreed that Air Groups 7, 84, 85 and a spare group (probably CVAG 98) should be equipped with F4U-4s by November 1944. Due to special equipment and engineering required, DCNO(air) rejected the request for night-fighting F4Us for the present (later an F4U-4N version was fielded, as well as an F4U-4E intended specifically for night attack). This correspondence in the BuAer VF4U1 / A4 Vol 1 file is interesting because it shows that, contrary to the usual accounts, Corsairs were projected as carrier fighters before the Marine Corsairs squadrons were brought on board as an emergency measure late in 1944. It is not clear from the correspondence when the initial decision was made to place Corsairs on board the CVBs."[28]

COMMENTS

"**Program Dog**" is never mentioned in the above footnote. However, it is safe to assume that additional test conducted in April of 1944 resulted in the initiated "**Program Dog**." It appears from the dates that the Navy was not satisfied with the test conducted in February 1944 which led to a memo (see page 11, "Chief of Naval Air Operational Training, Jacksonville, Florida, drafted a letter condemning the Corsairs from carrier operations.")

PROGRAM DOG

APPROVAL TRIALS APRIL1944

In March 1944, the Chief of Naval Air Operational Training, Jacksonville, Florida, drafted a letter condemning the Corsairs from carrier operations. The prime reason for this: the F4Us, especially when in the hands of inexperienced pilots, tended to bounce on deck landings. Student pilot attrition rate was high. Had the letter actually been released, the Corsair probably would have been deleted for all time as a carrier-based fighter. But because of the efforts of Chance Vought's Jack Hospers, Captain John Pearson (USN Fighter Design Officer in the Bureau of Aeronautics), and Captain H. S. Duckworth (USN Chief of Staff, Fleet Air Jacksonville), the letter was held up. "Program Dog" was instituted immediately.

The program, one of four that Vought engineers presented, took just 10 days to complete. It went right to the heart of the program -improving the oleo characteristics of the landing gear. By doing so, the "built-in bounce" of the Corsair was eliminated. Test flight results with the improved gear (made by Commander T. K. (Kip) Wright, USN and Lieutenant Colonel John Dobbins, USMC) were so successful that the aircraft was immediately endorsed by Commander, Fleet Air Jacksonville. All doubt concerning the Corsair's carrier landing characteristics was resolved aboard the carrier USS Gambier Bay in April 1944. Navy Squadron VF-301, equipped with F4U-ls which had the

[28] Friedman, Norman; "*Fighters Over the Fleet*", Naval Institute Press, pg 411, Footnote 74

improved oleo struts, completed 113 landings with excellent results. As a result of the USS Gambier Bay trials, an order was issued to modify the oleo struts on all West Coast Corsairs. The Corsair was now completely acceptable for carrier duty.[29]

Regarding the F4U bounce problems. "The undercarriage legs had oleo shock-absorbers, air on top of oil. As the wheel took the weight of landing, the shock was transmitted to the oil which in turn compressed the air. Unfortunately, the air expanded again too quickly and too forcibly. The oleo leg immediately extended again, and the aircraft leapt into the air like a jack rabbit. If the pilot didn't catch a wire on his first contact with the deck, the odds were that he would finish up in the barrier." [30]

Lieutenant Commander Norman A. Hanson RNVR gave a detailed description of the Corsair problems and the occasional fatal crashes of the Corsair. The captain of *Her Majesty's* aircraft carrier recommended further deck-landing training after several accidents. What followed was weeks intensive training on the escort carrier *Ravager.* The training included a change to the usual British landing approach. [31]

USS GAMBIER BAY (CVE-73)

[29] Chance Vought/LTE History; https://www.utdallas.edu/library/specialcollections/hac/vought/history.pdf
[30] Hanson, Norman, Carrier Pilot, Patrick Stevens, Cambridge., pg 118
[31] Abram, Richard, *F4U Corsair at War,* Scribners, pg 73

USS GAMBIER BAY (CVE-73)

<u>MODEL</u> NOT THE ACTUAL AIRCRAFT

USS GAMBIER BAY (CVE-73), 1944

THE ROYAL NAVY

I didn't want to ignore the Royal Navy's participation on the Corsair carrier operations /qualifications. I mentioned this briefly in item six (6) page 4.

Although Corsairs operated successfully from British carriers and were highly praised as a land-based weapon, the U. S. Navy was not ready to "buy" the F4U-1 as a carrier-based fighter.[32] That was true and is explained on page 11 "Program Dog."

There is a misunderstanding on what role the Royal Navy had in carrier training of United States Navy pilots flying the F4U Corsair. It is clear from the accounts of Lieutenant Commander (A) Norman S. Hanson, RNVR that the Royal Navy had *not* established the preferred landing procedure of the F4U Corsair until December 1943. This was nearly a year, November 1942, after the training of U.S. Navy pilots at NAS San Diego, CA noted a "curving approach" by Boone Guyton. Although the "curving approach" was not specifically mentioned in carrier qualification of squadrons VF-12 and VF-17 it is assumed the "curving approach" was used not only for the F4U Corsair but other aircraft with similar forward visibility issues.

As an aside, the reader may want to refer to Boone Guyton's book "Whistling Death" and the photograph of Boone Guyton flying the Boeing F4B-4 off the carrier Lexington in 1936. Note that the forward visibility issues are similar to the F4U Corsair. In fact, in the photograph below, forward visibility appears to be a more serious issue.

BOEING F4B-4 SIMILAR TO THE F4B-4 FLOWN BY BOONE GUYTON IN 1936.

This earlier F4B-4 did not have the Townend Ring that is shown on Guyton's airplane.

[32] Chance Vought/LTE History; https://www.utdallas.edu/library/specialcollections/hac/vought/history.pdf, pg. 23

Shortly after the Royal Navy had acquired the F4U Corsair the first two squadrons were deployed to the aircraft carrier *Illustrious* in December 1943. Norman Hanson, Lt. Commander RNRV notes, that their experience "proved to be distinctly hazardous." The captain of the *Illustrious* determined that more intensive training was required and that training was temporarily transferred to the escort carrier *Ravager*. [33] This same experience, with additional detail, is in Hanson's book "Carrier Pilot" page 118.

From Hanson's account. " The main troubles were first, the poor cockpit hood and low seating position; second the "in-built" bounce of the undercarriage; and third , the fact that the current RN landing "pattern" was totally unsuited to Corsairs. When a new landing pattern was established, landing improved immediately and the casualty rate dropped. "[34]

Again, it is important for the reader to note that the Royal Navy training and "pattern" changes occur well after the U.S. Navy had the F4U Corsair and had employed the "curving approach"; see appendix A.

Further the Corsair carrier approach is addressed by Hanson in this account. " The beast's long nose, which gave the pilot extremely poor visibility in the nose up landing attitude, shut out completely any idea of approaching from dead astern. In order to keep both deck and batesman (LSO) in view, the pilot had to approach the round-down in a great, sweeping, descending curve from the ship's port quarter."[35]

Hansen includes detail on the "bounce" problem, the oleo shock absorbers, and eventual solutions in the book "Carrier Pilot" page 118.

[33] Abrams, Richard, *F4U Corsair at War*, Charles Scribner's & Sons 1980? , pg. 73
[34] Abrams, Richard, *F4U Corsair at War*, Charles Scribner's & Sons 1980? , pg. 73
[35] Hanson, Norman, *Carrier Pilot*, Patrick Stevens, Cambridge., pg 159

TANGENT ISSUES
also page 11 & 12 item 2.

HELLCATS, CORSAIRS, PERFORMACE & PRODUCTION

In Norman Friedman's book, "Fighters Over the Fleet", there is a comprehensive discussion of the issues surrounding the production, and deployment of the Chance Vought F4U Corsair. These issues all influenced carrier qualifications to some extent. The following was copied from Chapter 5, footnote #74 page 411.

"The question of whether to replace the Hellcat with the Corsair was revived in 1944. An initial (Unfortunately undated, but probably late 1943) memo argued that the Hellcat was superior in stability and low-speed control (for landing); in maintenance; in cooling characteristics, and in its cockpit arrangement. The Corsair was considerably faster (about 20 mph in maximum speed); had better high - speed control; and offered better quiet and comfort in its cockpit. . Patuxent River, which prepared the report, therefore recommended that the Corsair again be employed as a carrier fighter. This memo is in the BuAir VF4U1/F1-1 Vol I file. Further tests were carried out early in 1944. For example, on 1 February the training escort carrier *Charger* reported tests of landings under light wind conditions (as requested late in 1943). These tests and take-off tests showed that the Corsair could operate from and escort carrier, but only with considerable wind over the deck. It was clearly suitable for a larger carrier with higher speed. In April and improved F4U-1 was tested against an improved F6F-3 (equivalent to an F6F-5); the improvements in the Corsair were a new unframed canopy and improved oleo undercarriage. It improved entirely superior in speed and rate of climb and equally maneuverable and showed excellent landing characteristics. The test pilots considered it entirely satisfactory as a carrier aircraft (the landing signal officer agreed). The report was signed by Commander Fleet Air West Coast, Rear Admiral Fredrick C. Sherman, a future CNO. The tests also showed that the F6F-5 was sufficiently superior to the F6F-3 that the two should not operate together. The 28 April 1944 report of this trial seems to have led to a definite decision to place Corsairs on board carriers. The trials ship was the current and projected US *Gambier Bay.* The 30 April 1944 chart of the current and projected US naval Air organization showed that the fighting squadrons of Air Groups 84 and 85 were to use Corsairs. They would operate from the Essex class carriers. In May Quonset Point Air Station, which trained British pilots on the Corsair, reported to ComAirLant that its training experience with the Corsair showed it was a superior fighter. The landing bounce problem had been solved so the Corsair now landed as smoothly as other carrier types and the gear was so sturdy that it rarely suffered damage from hard landings. Its large flap area decelerated landing Corsair more rapidly than a Hellcat, so that arresting hook run-out was shorter. The Corsair carried more fuel, so it had a considerably greater cruising radius (and fuel consumption of its engine was somewhat less at the same power setting). The Corsair was more maneuverable, lighter on the controls and was probably a better gun platform. Maintenance time was only slightly greater than for the Hellcat. The only drawback of the Corsair was a longer familiarization period. In June, Commander Air Forces Pacific rejected replacement to the F6F-3 by the F4U-1 on logistical grounds . DCNO (Air) replied on 28 June the coming F4U-4 was definitely desired for carriers if

its performance came up to expectation. By this time the F4U-4 was definitely planned for the air groups of the new Midway class heavy carriers (CVBs) and ComAirPac proposed that it also equip four new fleet carrier Air groups, together with related night-fighter squadrons. DCNO (AIR) agreed that Air Groups 7, 84, 85 and a spare group (probably CVAG 98) should be equipped with F4Us by November 1944. Due to special equipment and engineering required, DCNO (Air) rejected the request for night- fighting F4U-4s for the present (later an F4UN version was fielded, as well as an F4U-4E intended specifically for night attack.). This correspondence in the BuAer VF4U / A4 Vol 1 file is interesting because it shows that, contrary to the usual accounts , Corsairs were projected as carrier fighters before the Marine Corsair squadrons were brought on board as an emergency measure late in 1944. It is not clear from the correspondence when the initial decision was made to place Corsairs on board the CVBs.

COMMENTS

Again, "**Program Dog**" is never mentioned in the above footnote. However, it is safe to assume that additional test conducted in April of 1944 were the result of the initiated "**Program Dog**" discussed on page 11. It appears from the dates that the Navy was not satisfied with the test conducted in February 1944 on the escort carrier "*Charger*" which led to a memo. (see page 11, "Chief of Naval Air Operational Training, Jacksonville, Florida, drafted a letter condemning the Corsairs from carrier operations.")

Logistics is cited by some sources for the reason the Corsairs were not deployed to carriers earlier in the war. Logistics i.e. *the detailed coordination of a complex operation involving many people, facilities, or supplies*, as it relates to the F4U Corsair, is a complex issue. Remember from page 4 "Tommy" Blackburn said in the following letter dated June 1943; "We were still struggling with the general cussedness of our Corsairs - problems landing, oil-coated windscreens and exploding batteries etc". In addition, Blackburn goes on to explain the design fault in the Corsair arresting hook point. Would the navy deploy Corsairs to carriers with the many design issues still to be resolved?

EPILOGUE

Corsair the Rapidly Evolving Navy Fighter Aircraft

The Corsair underwent "more than nine hundred major engineering changes some twenty thousand minor ones" [36] during its production life. Many of these changes occurred before the Corsair was approved by the Navy for general carrier deployment in April 1944. The central reason for these changes was not for lack of speed or "superior performance." The Corsair and the engine that powered the Corsair, the Pratt and Whitney R-2800, were providing speeds that exceeded 400 MPH. A major reason for these changes revolved around making the Corsair a more pilot friendly, easier to land on a carrier deck, fighter aircraft. Many of these changes to the XF4U-1 were influenced by the Navy. Whether it was a vicious stall, poor visibility, oleo bounce issues, cockpit arrangement, oil leaks, marginal roll rate, the changes were frequent as noted by Boone Guyton below. The Navy had to decide; do we place the Corsair on aircraft carriers while Vought is making major changes to make the Corsair a more pilot friendly aircraft? In the meantime, the Navy had an excellent alternative waiting in the wings, the Grumman F6F Hellcat. While the changes were numerous the parts required, as a follow on to those changes, would necessarily adversely affect logistics.

Regarding the questions of why the Corsair was not accepted for general Navy carrier deployment until April 1944 we have this quote from a letter written by the primary Corsair test pilot, Boone Guyton[37].

"The Navy's acceptance of the Corsair did not come easy. In brief, it was never one or two discrepancies that prevented it from shipboard operation. Rather it was like the artful prize fighter's punches a combination. These included the left-wing sagging tendency at the stall, the soft oleo action of the landing gear, restricted vision from the cockpit, a peculiar yawing of the airplane when the tail came down and for a short time, the vision distorting oil film on the wind screen."

Most if not all the issues that Guyton mentions in this letter had been resolved shortly before "Program Dog" was initiated. (see page13) It was apparent the Navy was concerned with the Corsair's design flaws, i.e. the "bounce" issue, up to the time "Program Dog" began.

Design Evolution of the F4U Corsair.

It would be helpful if we briefly discussed the early design changes of the F4U Corsair. Specifically, we take the reader from the original design XF4U-1 up to the F4U-1A Corsair. We ended with the F4U-1A because this model incorporated many changes which insured acceptance by the Navy for general aircraft carrier deployment in April 1944.

The Navy team, which included engineers and test pilots, had recommended major design changes to the Xf4U-1. This was summed up by Admiral Charles D. Griffin. "We redesigned some aircraft to a large

[36] Guyton, Boone T., *Whistling Death*, Orion Books, pg.158
[37] Hiller-Graves, Tim, *Widowmaker Living and Dying with the Corsair,* Casemate, pg.92

degree right there at Anacostia. Of course, Trapnell (Navy's Chief of Test Flight) was the expert in this. No, we did not merely test airplanes we actually redesigned some of them right there. This ability on the part of test pilots was greatly sought after and much appreciated by the contractors, by the design engineers, and so forth."[38]

In April 1941 the Navy began intense flight test and evaluation of the XF4U-1 Corsair headed by the Navy's Chief of Flight Test, Fredrick "Trap" Trapnell. While flying the Grumman F4F in proximity of the Corsair, Trapnell closely monitored the flight characteristic of the Corsair as the Corsair's primary test pilot, Boone Guyton, repeated a series of spin maneuvers. Flaws were identified and corrective action e.g. new ailerons to improve roll rate. The fabric covering was replaced with plywood covered with fabric. Trapnell personally flew the Corsair after the modification was made. Satisfied with the improvement in May 1941 BuAer gave Vought the go ahead on a limited production contract of 584 Corsairs. It took until June 1942 before the first production Corsair is ready for flight test.

To address the many mechanical issues and the difficult carrier landing problems Vought-Sikorsky and the engineering team headed by Rex Beisel, were making changes to the Corsair at a high rate in a short period of time. From Guyton's book this quote. "Design changes to production airplanes were ever present in our fast-flowing factory line. After the design was accepted by the Navy, an incorporation date was set, pending availability of parts from the shop, or a subcontractor. The 201st airplane could differ some from the 199th, the 322nd from the 321st and so on. With possible exception of major changes modifications came so fast that the pilots often get advanced notice."[39]

The Vought-Sikorsky F4U Corsair struggled to gain the United States Navy acceptance for general aircraft carrier deployment during the early part of WW2. As noted in the document there were Navy squadrons deck qualified in the Corsair before the general deployment acceptance in April 1944. The problem was that the less experienced "green" ensign pilots had major carrier landing issues which resulted in a higher rate of fatalities than the experienced pilots. Guyton, in his book Whistling Death the F6F Hellcat was "easy to handle" and had the parts supply available. [40]

In Guyon's book "Whistling Death" he describes the changes made to the F4U-1 Corsairs prior to the Marine squadron VMF-124 taking possession of the Corsairs on February 12, 1943.

- Replace engine cowl flap hydraulic controls with mechanical controls
- Raise the pilot's seat 6 inches
- Modify canopy; add rear view mirror
- Modify master brake cylinders
- Improve duct seals, engine to intercooler and to carburetor
- Improve engine ignition harness for operation at altitude (An item that would still require fixing as VMF-124 reached the South Pacific.)
- Reinforce strength of the horizontal stabilizer in the tail

[38] Trapnell, Frederick M. and Tibbitts, Dana Trapnell. *Harnessing the Sky,* Naval Institute Press, pg.90
[39] Guyton, Boone T., *Whistling Death*, Orion Books, pg.158
[40] Guyton, Boone T., *Whistling Death*, Orion Books, pg. 143

- Strengthen attachments of rudder control horn to rudder
- Incorporate changes to improve belt feed of 50 caliber guns
- Reinforce attachments of self-sealing fuselage fuel tank to bulkheads

The above list of changes did not include the "stall improvement device" or "6-inch wedge" attached to the right wing. Its purpose, spoiling the air flow over a section of the wing behind it as the airplane approached the stall, was proved effective. The first Corsair with the stall improvement device was BuNo 02510 delivered to NAS and then the Naval Aircraft Factory for testing. This took place on about April 15, 1943.[41] As Guyton mentions above these changes were happening so rapidly that "the 201st airplane could differ from the 199th airplane."[42] In this case the spoiler was added to the 943rd Corsair onward and field modifications were happening as well.

In the book "F4U Corsair" by Nichalos Veronico he notes there were forty-two (42) major changes incorporated into the F4U-1A BuNo 17647. Some of these changes included:

- New pilots seat that could be raised and lowered approximately 9 inches.
- An armored pilot's head rest.
- Lengthened control stick
- Revised rudder/brake pedals
- New Instrument panel
- Gun sight
- Bubble canopy
- New turtleneck and cockpit armor plating
- Reinforcement of the overturn structure

From the book "Fighters Over the Fleet" by Francis H. Dean pg. 517, we believe the above changes were incorporated on August 9, 1943.

CONCLUSION: The changes shown above were a fraction of the major engineering changes made to the Corsair in a short period. Would logistics have delayed carrier deployment of the Corsair? Two comments on Guyton's letter. Guyton does not mention logistics as a reason for delayed deployment of the Corsair although logistics clearly played a part. The Navy had a choice to make. Do we deploy the Corsair with all the changes that were being made to solve not only mechanical problems but the nagging problem of "green pilots" landing a Corsair safely on a carrier deck? The Grumman's "easy to handle" F6F Hellcat was available. Grumman demonstrated the know-how from working with the F4F Wildcat that had previously equipped carrier squadrons and had commonality of parts with the F4F Wildcat. Considering the many changes taking place to the Corsair, parts supply for a rapidly evolving design must have been a concern. In April 1944 the logistics issue may have been in the rear-view mirror but then Program Dog was initiated to solve the "bounce" issue.

[41] Veronico, Nicholas A. with Campbell, John and Donna, F4U Corsair, Motorbooks International, pg. 14
[42] Guyton, Boone T., *Whistling Death*, Orion Books, pg. 158

Appendix A

WWII

STANDARD NAVY CARRIER APPROACH TRAINING

https://www.warhistoryonline.com/world-war-ii/how-the-us-navy-trained-its-pilots-in-wwii-the-bar-for-entry-was-high.html

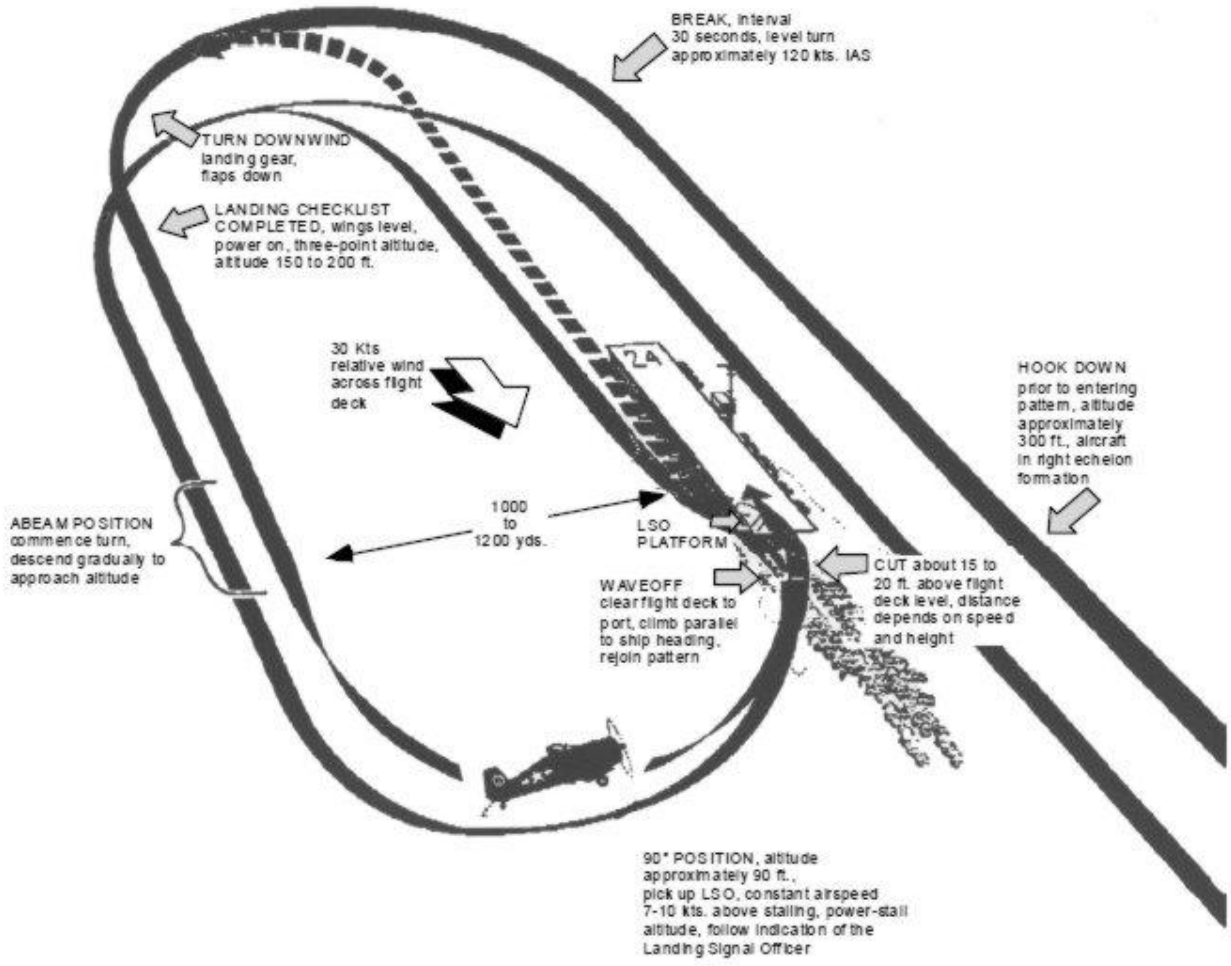


Diagram showing the landing pattern of U.S. Navy aircraft carriers during the Second World War. The aircraft carrier depicted is the Independence-class light carrier USS Belleau Wood (CVL-24).

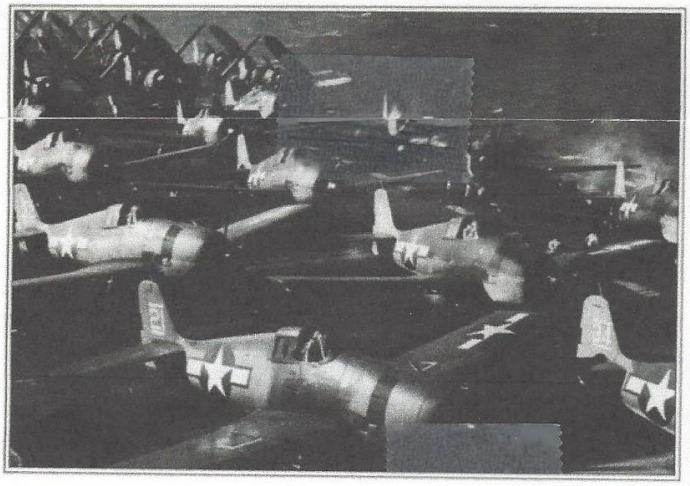
Appendix B

Flying
May 1986

FLYING MAY 1986

Come Hellcats or High Water

Life aboard the Enterprise *in World War II, as seen by a fighter pilot.*



DURING WORLD WAR II, flying on and off an aircraft carrier was a feat of bravery in itself, never mind the combat part. Early in the war, takeoffs were performed without catapults. Later, the first "cat launches" propelled aircraft at just above stalling speed to waffle along at full power, below deck level, until they gained real airspeed. Landings, without benefit of a meatball, tested the skill and precision of pilots exhausted after long overwater missions. Eight arrester cables stretched across the aft end of the straight flight deck, but number four was the cable of choice. Catching number one meant that you had cut matters too close, and number eight was stretched the tightest, snapping the aircraft to an even more abrupt halt short of the crash barrier. The responsibility on the shoulders of a landing signal officer was awesome.

Former Navy Hellcat pilot Stanley "Hoover" Kurant remembers the procedures just as he first learned them at NAS Pensacola, Florida, 44 years ago from his instructor Lt. Gordon Firebaugh. Kurant tends to pace as he relates the landing drill, gesturing and occasionally wagging an admonishing finger, as though briefing a fresh replacement pilot on his old ship, the USS *Enterprise*. "Carry lots of power, balanced just five knots above the stall. You're always turning on approach to see around that Hellcat's big nose, and the carrier is turning as well. Watch the LSO and let him show you what to do with his paddles—higher, lower, more power or whatever. Then you either get a cut or a wave-off."

Kurant once received a wave-off order from an inexperienced LSO because his battle-damaged fighter appeared drooped and awkward on approach. Shot-up tail surfaces forced him to hold full right rudder deflection throughout the long return flight from Iwo Jima to the *Enterprise*, and he had to carry one wing low to compensate. On his second turn around the carrier, low on gas, he heard the voice of the ship's veteran LSO taking over the post and breaking strict radio silence. "I'll get you aboard, sir," he whispered. The young pilot's right leg muscles twitched uncontrollably for two hours afterwards from holding rudder against the torque. The senior LSO, who had arrived aboard the *Enterprise* dark-haired, turned snow white after six months' duty.

Kurant's training at Pensacola involved practice landings on a carrier "deck" painted onto the runway. On land, he flew the North American SNJ (AT-6), but his first actual carrier landing was at the controls of the Grumman F6F-3 Hellcat that he would fly into combat—heady experience for a 23-year-old from Vermont.

The Hellcat was powered by the huge 18-cylinder Pratt & Whitney R-2800 radial engine, turning a three-blade Hamilton Standard propeller. Seeing over the nose in the landing attitude was impossible, so the pilot performed a curved approach, hanging on the prop just above the stall. The carrier was turning also, to maximize the headwind and minimize the turbulence caused by hot stack gases playing havoc with the air over the aft landing deck. Many aircraft stalled and splashed upon encountering the effects of stack gas at such a tenuous stage of flight. Another reason for the carrier's turning, during both launches and recoveries, was to avoid running over pilots who wound up in the drink after failed takeoffs or landings. Floating too close to the ship's wake could suck them into the vortex of the ship's four propeller screws.

In many ways, the World War II era was the most hazardous period for aircraft carrier operations. Aircraft technology had advanced markedly in a very short time, and the ships and procedures were hard pressed to keep up. Decks designed for relatively docile 150-knot biplanes ended up accommodating 2,000-hp, 300-knot hot rods with vastly more complex systems and ordnance. Pilots and ships' crews closed the gaps only with superhuman effort. The added urgency of combat continuously taxed resources to their limits but simultaneously served to galvanize the spirit of unity and teamwork among the men on board.

Kurant says, "If I could, I'd do it all over again—the training, the friendships, the adventures...except for the combat. I wouldn't wish that on anybody ever."

MARK PHELPS

NAVAL AVIATION 75 YEARS