

Farmer's Notes – the Myth of Midway
Version 1.0
5 January 2018

(c) 2019, Joseph A. Farmer
5madfarmers@gmail.com

This work is subject to copyright and license under the Creative Commons “Attribution, Non-commercial, No Derivatives” license found at:

<https://creativecommons.org/licenses/by-nc-nd/3.0/us/legalcode>

This will be quite possibly the shortest of the free papers. The topic lends itself to that.

Since World War Two a debate has raged on whether having the armor on a carrier was better if it was placed on the hanger deck or the flight deck. In British practice they armored the flight deck. Multi-page papers are available on what they perceived as the advantage of that. On the American side the claim was armoring the hanger deck was the superior practice due various reasons – mainly having to do with the carriers not being big (compared to later carriers).

The American view can be found here:

http://www.navweaps.com/index_tech/tech-030.php

British retort here:

<http://www.armouredcarriers.com/debunking-slade-and-worths-armoured-carrier-essays/2014/5/30/debunking-slade-and-worths-armoured-carrier-essays>

So which is correct? Neither actually. I'll let you review both papers if you wish to see their claims. Both claims are missing the point. Let's compare three carriers which either had kamikaze attacks or suffered extensive damage from other means:

“*Cabot* remained on patrol off Luzon, conducting strikes in support of operations ashore, and repelling desperate *kamikaze* attacks. On 25 November, a particularly vicious one occurred. *Cabot* had fought off several *kamikazes* when one, already flaming from hits, crashed the flight deck on the port side, destroying the still-firing 20 mm gun platform, disabling the 40 mm Mounts and a gun director: Another of *Cabot's* victims crashed close aboard and showered the port side with shrapnel and burning debris. 62 men were killed or wounded but careful training had produced a crew which handled damage control smoothly and coolly. While she continued to maintain her station in formation and operate effectively, temporary repairs were made. On 28 November, she arrived at Ulithi for permanent repairs. “

CVL-28, the USS *Cabot*, was a very small aircraft carrier. While hit, viciously, by kamikaze attacks the carrier made temporary repairs and then steamed to Ulithi for permanent repairs.

“Before dawn on 19 March 1945, *Franklin*, which had maneuvered to within 50 miles (80 km) of the Japanese mainland, closer than any other U.S. carrier during the war, launched a fighter

sweep against Honshū and later a strike against shipping in Kobe Harbor. The *Franklin* crew had been called to battle stations twelve times within six hours that night and Gehres downgraded the alert status to Condition III, allowing his men freedom to eat or sleep, although gunnery crews remained at their stations.

Suddenly, a single aircraft – possibly a Yokosuka D4Y "Judy" dive bomber, though other accounts suggest an Aichi D3A "Val", also a dive bomber – pierced the cloud cover and made a low level run on the ship to drop two semi-armor-piercing bombs. The damage analysis came to the conclusion that the bombs were 550 pounds (250 kg). Accounts differ as to whether the attacking aircraft escaped or was shot down.

One bomb struck the flight deck centerline, penetrating to the hangar deck, causing destruction and igniting fires through the second and third decks, and knocking out the Combat Information Center and air plot. The second hit aft, tearing through two decks. At the time she was struck, *Franklin* had 31 armed and fueled aircraft warming up on her flight deck. The hangar deck contained planes, of which 16 were fueled and five were armed. The forward gasoline system had been secured, but the aft system was operating. The explosion on the hangar deck ignited the fuel tanks on the aircraft, and gasoline vapor explosion devastated the deck. Only two crewmen survived the fire. The explosion also jumbled aircraft together on the flight deck above, causing further fires and explosions and detonating 12 "Tiny Tim" air-to-surface rockets. *Franklin* was dead in the water, without radio communications, and broiling in the heat from enveloping fires. On the bridge, Captain Gehres ordered *Franklin's* magazines flooded but this could not be carried out as the ship's water mains were destroyed by the explosions or fire. Admiral Ralph Davison transferred his flag to the destroyer USS *Miller* by breeches buoy and suggested abandoning ship, but Gehres refused to scuttle the *Franklin* as there were still many men alive below deck.”

CV-13, the USS *Franklin*, was an Essex class carrier. Much larger than the USS *Cabot*. The damage to the *Franklin* was so extensive that she returned to the U.S. for repairs and probably should have been scrapped.

“In June 1967, *Forrestal* departed Norfolk for duty in waters off Vietnam. In the Gulf of Tonkin on 29 July, *Forrestal* had been launching aircraft from her flight deck. For four days, the planes of Attack Carrier Air Wing 17 flew about 150 missions against targets in North Vietnam from the ship. On 29 July 1967, during preparation for another strike, a Zuni rocket installed on an F-4 Phantom (#110), misfired, impacting an armed A-4 Skyhawks side #405, parked on the port side. The rocket's impact dislodged and ruptured the Skyhawk's 400-gallon external fuel tank. Fuel from the leaking tank caught fire, creating a serious conflagration that burned for hours, killing 134, injuring 161, destroying 21 aircraft and costing the Navy US\$72 million. On the flight deck that day was Lieutenant Commander (later Senator) John McCain”

CV-59, the USS *Forrestal*, is really the first “Supercarrier.” Much larger than the USS *Cabot*, or the USS *Franklin* for that matter, she has an armored flight deck. A single Zuni rocket, at 5” in

diameter and weighing in at under 100lbs, caused enough damage for 134 men to die. The Franklin had 807 killed. On the USS Cabot the number of dead was 35.

Thus we get to the answer. Is the armored flight deck or hanger deck better from a “withstanding attacks” point of view? The answer to that is the question is wrong. Whether the armor is at the hanger or flight deck level isn’t the determinate of damage. The USS Cabot, a very small carrier, withstood a much more severe bomb hit than the Zuni rocket hit that the Forrestal took yet the damage was much less. The Franklin was hit by only two bombs yet the damage was completely outside the norm for damage one would expect.

The two main determinants of damage to aircraft carriers, when hit, are:

- 1) What is the state of the carrier.
- 2) How good is their damage control.

The Cabot didn’t have a huge number of armed and fueled aircraft on deck. Both the Franklin and Forrestal did – at least compared to the Cabot. The extensive damage suffered by the two larger carriers was a direct result of their own aviation fuel and munitions being ignited.

Regardless of the state of the carrier, the second part that affects damage is damage control itself. Thus, instead of using size and armor level, we can view the carriers from the more applicable angle:

- 1) Cabot didn’t have a lot of aviation fuel or bombs to be ignited. Damage control was rapid and effective.
- 2) Forrestal had significant fuel and munitions on deck. Damage control was rapid and effective.
- 3) Franklin had significant fuel and munitions on deck. Damage control was anemic and non-effective.

“Was it better to place the armor at the flight or hanger deck level?” The question is wrong. It doesn’t matter whether it is placed at the flight or hanger deck. An aircraft carrier without any armor at either level can survive heavy punishment if they keep the hanger decks empty and have quality damage control. This was seen in the Philippine Sea with the “Taffy” carriers – escort carriers without any significant armor were pounded by surface units of the Japanese Navy. Damage control and state of the carrier determined the result.

People in the debate on whether it was better to have the armor at the flight, or hanger, deck have completely missed the point with regards to the damage a carrier will take if hit. “It doesn’t really matter. That won’t be what determines the extent of the damage.” No more, or less, than what speed the carrier is traveling at.