EABO

U.S. naval aircraft carrier's as a non-solution

by LCDR Charles "Sunny" C. Sonntag

The initial assault and landing went flawlessly. Fifteen days later, a steady flow of LCACs and LCUs facilitated the transfer of logistics from ARG ships to the beach. On board LHD-1, the stores dropped to 30 percent. Pacific Command and Marine Forces Pacific scheduled us to link up with the USNS Arctic *for an underway replenishment to return our stores back to roughly 70 percent. One problem, we are still operating under an active enemy A2/AD WEZ (weapon engagement zone) while in an area that is still heavily sea mined. The USNS* Arctic*'s crew is composed of military contractors who will not sail into contested and dangerous waters. Further, the 1st MAW rotorary-wing and tiltrotor aircraft are schedule to arrive to supplement ongoing operations, but they are out of range.*

CVNs are inot a good EABO/FARP platform. *(Photo by SM Kevin Murphy Stennis.)*

With the forecast of the next war outlined by the *Marine Corps Operating Concept* and *21st Century Sea Power*, the Marine Corps and Navy must operate with resiliency in an active anti-access/area denial (A2/AD) environment that is further within the contested littoral waters of a foreign country. Planning for the fictitious vignette above, while tactically specific and unique, does present a real problem that requires innovation and critical thinking. Often, an idea surfaces about the efficacy of an U.S. Navy aircraft carrier (CVN) to solve the problem. CVN's have extremely large flight decks, uniquely suitable as an expeditionary advanced base operations (EABO) role or forward arming and refueling point (FARP). They offer greater range and have larger flight deck space than an amphibious assault ship. They are familiar with underway replenishment's and have organic helicopters onboard that further supplements the transfer of logistics between ships. Furthermore, CVN's have unlimited range, do not require refueling, and travel extreme distances to bridge the gap between MARITIME PREPOSITIONING SHIPS and ARG shipping. CVNs appear to be the perfect solution to this problem. Sadly, while their attributes will surely solve the above vignette, CVNs are in fact a terrible EABO/FARP platform. This article addresses the argument against using CVNs for anything other than their intended purpose. While these reasons may seem minute or trivial, their implications are significantly greater than they appear. Aircraft carriers are a conglomeration of various commands, systems, and networks that rely on each other for full system viability. As an example, aircraft launch and recovery systems require constant maintenance and operational system checks to remain fully operational. Crews constantly work on and fix these systems, walking the line between being operational and not. Introducing an EABO/FARP role will interfere with systems checks and maintenance which will reduce overall readiness. This will prevent the timely launching and recovering of aircraft either as a scheduled or alert sortie. While CVNs use of EABO and FARP platform appears viable, they are limited by their associated shipboard systems and attached commands and, therefore, must be avoided in being used outside of their designed role.

In 2016, the U.S. Navy implemented a scheduled and routine maintenance program for its fleet of aircraft carriers. Coined "Optimized Fleet Response Plan" or (OFRP), the goal was to better manage the carrier fleet through maintenance periods, resulting in bet-

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ter scheduled CVN presence to geographic combatant commanders (GCC) while reducing strain on those CVNs. A recent article published about OFRP states that it "gives the combatant commanders only as much presence as the service can generate without over-taxing the fleet."[1] Extended use since the Gulf War gave rise to an increase of maintenance and overhaul of shipboard and aircraft systems. With maintenance periods extending past scheduled completion dates, the U.S. Navy had no choice other than to redeploy working ships and aircraft to meet operational demands. The effect only compounded the problem, with more ships and aircraft breaking from overuse. OFRP combats this problem and will take a few cycles to become effective. How does the OFRP affect planning for the use of a CVN in either an EABO or FARP role? Simply put, the U.S. Navy does not have a CVN to spare. There are none mothballed or floating unused in "ghost fleets." The U.S. Navy currently has ten operating aircraft carriers. Eleven if you consider the USS *Gerald R. Ford* (CVN 78), which is not yet fully operational. OFRP ensures the fleet gets what it needs and nothing more. It does have a plan for standby aircraft carriers.

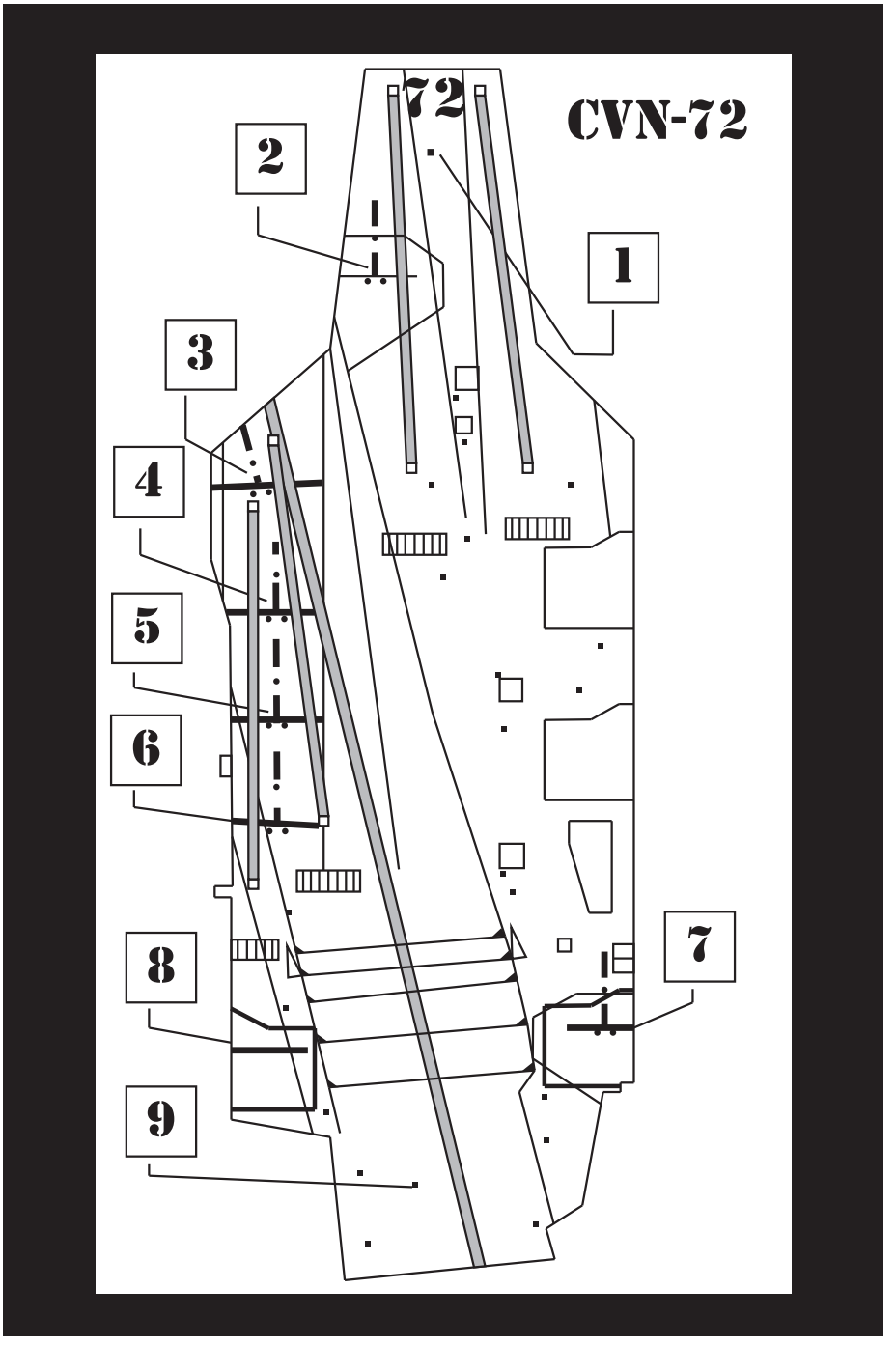

Figure 1. CVN flight deck configuration. **(CV NATOPS Manual.)** [3]

CVNs never sail alone since doing so will leave them inherently vulnerable to threats. While they do have multiple layers of defensive system, they are all just that, defensive. The CVN relies heavily on its attached carrier strike group (CSG) ships for protection. While some of its ships get tasking by GCCs for various missions, CVNs sail under the veil of its cruisers, destroyers, and submarine protection. Assuming the CSG can be distributed or broken up is another poor assumption. What does this mean for planning? While a deployed CVN may be able to assist as a temporary EABO or FARP, their associated CSG might be fixed in a location by a GCC. One cannot assume a CVN can move without the movement of its entire CSG. While the CVN may not be limited in its movement, its associated ships are.

Organically, CVNs house their own unique limitations that operational planners within the sister Services rarely understand. Because of its organic limitations, they are poor EABO and FARP platforms. Again, a CVN will almost always have its carrier air wing (CVW) attached. CVWs have between 70 and 75 aircraft. Moving these aircraft around the flight deck and hangar bay is a methodical, highly trained evolution. CVNs have nine total helicopter landing spots, (see Figure 1.) and it can easily be misconstrued that all nine are always available. This is not the case, on average between two and four helicopter spots are only ever readily available at any given time on a deployed CVN. Deck space quickly becomes valuable. If planning to use a CVN as a tempo-

rary FARP with MAW rotary-wing and tiltrotor aircraft, it must be understood that all nine spots will be available. Furthermore, it takes substantial time, upward of twelve hours, to reconstitute a CVN flight deck for this FARP role. This reconstitution is necessary to open up the most helicopter landing spots. A CVN hangar bay only holds a maximum of 28 aircraft. This leaves upward of 41 remaining on the flight deck.[2] Those remaining 41 aircraft are going to be parked tightly from the bow to the base of the control tower. In some cases, a few of those aircraft must park on the fantail of the ship. What does this mean for planning? Simply stated the CVN only offers six workable helicopter spots. That number changes based on munitions, aircraft type, weather, and time of day.

Forward firing ordinance places further limitations on the number of available helicopter spots. The *CVN Flight/Hangar Deck NATOPS Manual* states:

> The area in front of helicopters with forward firing ordnance shall be clear of personnel and equipment. Helicopters with forward firing ordnance shall not launch/recover on spot 7.[4]

Because of the threat of an accidental discharge and the potential for a shipboard fire and casualty, the number of helicopter spots falls to four (spots 3, 4, 5, and 6). Nighttime and inclement weather limits that number of available helicopter spots to five as well. *NAVAIR 80T-*105 states "Left seat slide-in visual recoveries to Spot 3 are prohibited. Left seat slide-in visual recoveries to Spots 2 are not recommended."[5] The same limitations apply to Spot 1. The reason for this limitation is simple. Night time and bad weather prevent the pilot from seeing the ship, discerning a horizon, and knowing his height above the flight deck, which makes landing a dangerous procedure. For larger helicopter and tiltrotor aircraft, the MH-53s and MV-22s, the number of available helicopter spots drops down to two. These aircraft have a much larger footprint and rotor wash and are therefore limited to only landing inboard Spot 4 on runway centerline and Spot 9. *NAVAIR 80T-105* states the reasoning for this is because of the severe hazard of rotor wash; consideration should be given to conducting CH-53E, MH-53E, and V-22 operations from afterdeck spots only.[6] Helicopter Spot 8 has numerous limitations and is typically never used. Based on these helicopter spot restrictions, dropping the available spots from nine to two in some cases, CVNs are not viable FARP platforms.

Consideration also needs to be made as to whether these aircraft will be landing onboard the CVN before refueling and taking back off (hot pump), or if they are going to land and shutdown (stuff). In the author's experience, a hot pump takes around fifteen minutes. Loitering aircraft will not have to wait long before a hot pump is completed and a helicopter spot opens up. It should be noted that not all helicopter spots can support a hot pump evolution. *NAVAIR 80T-120* states, "Hot refueling operations shall not be conducted on Spot 8."[7] Time increases exponentially if aircraft land, shutdown, and stuff. After aircraft are shutdown, they must be folded up for deck space (if applicable) and towed out of the way. This evolution takes upward of 30 minutes. This increases the airborne aircraft loiter time for those aircraft also waiting to land and stuff. Further time increases occur when non-Marine and naval aircraft are planned to be used on the CVN. This is addressed in *NAVAIR 08T-105* when it states

> Army helicopters are not equipped with an automatic blade fold/spread system. Time for manually folding and spreading main rotor blades should be taken into account for tactical planning during shipboard operations.[8]

Furthermore, CVNs do not have the equipment or crew to service MAW aircraft. They must come from the individual squadrons. Therefore, Marine squadron personnel will have to be prestaged or flown onboard in advance to service their respective aircraft if they are planning to stuff.

Attached CVWs further complicate these planning factors. Fixed-wing pilots are required to maintain currency with carrier arrested landings or "traps." Currency equals combat readiness, and CVW pilots are required to maintain currency for the CVN to project its power. CVW pilots must get a minimum of one night trap every seven days. If they exceed this seven-day window, the requirements increase. Pilots then require the completion of one day trap before they can complete their night trap for currency. This "day for night" window is critical. Outside of seven days, carrier pilots must perform a series of field carrier landing practices at a landbased airfield before returning to the CVN for their day-for-night traps for currency. Field carrier landing practices must be conducted with a qualified and current landing signal officer who will determine if that pilot is safe for his currency traps. (See Figure 2.) Tracking of these metrics is vital and counts for CVW readiness and lethality. It is unacceptable to a GCC for a deployed CVN/CVW to lose its power projecting CVW arm. What does this all mean for planning? Accounting for the 12-hour flight deck reconstitution before and after the planned FARP operation and the seven-day night trap currency requirement, only six days are left for flexibility in planning. At the end of those six days, the CVN *must* resume organic shipboard carrier operations for pilots to remain current and the CVN employment as a vital warfighting and power projecting platform. This CVW

Outside of seven days, carrier pilots must perform a series of field carrier landing practices (FCLPs) at a land-based airfield before returning to the CVN for their day-for-night traps for currency.

DAY

Days Since Last Day Current	Requirements Prior to a Day Landing	Weather	Deck	Divert Field	Currency Requirement
1 - 14 days	FCLP not required	Ships mins	ALL conditions	N/R	arrested landing

NIGHT (3)

Days Since Last Day Current	Requirements Prior to a Night Landing or Night CAT Shot (6,7,9)	Weather	Deck	Divert Field	Currency Requirement
1-7 days	None	Ships mins	ALL conditions	N/R	1 arrested landing (T/G or arrested) (10)

Figure 2. CVN pilot flight deck certification table.[9]

limitation is the most crucial of all the arguments listed.

Furthermore, reconstitution of the flight deck and continuous "packing" of fixed-wing aircraft around the CVN introduces those aircraft to the unnecessary risk of towing collisions or "crunches." Crunches vary in their aircraft debilitation, ranging from a scratch in an aircraft's paint to entire control surfaces needing to be replaced. Regardless, each crunched aircraft must be downed for inspection for an undetermined amount of time, taking away the lethality of the overall CVN. It may sound like a remote occurrence, but CVW aircraft are routinely parked within inches of each other to save and optimized valuable flight deck space. Asking for flight deck reconstitutions to be done more often than usual will expose the CVW aircraft unnecessarily to the increased potential for crunches. Shipboard aircraft launch and recovery equipment also provides their own limitations. The catapults and arresting gear systems are inherently complex and require constant, round the clock preventative and non-preventative maintenance and operational checks. If the flight deck is flooded with CVW and MAW aircraft that are parked on top of the CVN's arresting gear engines and catapults, maintenance crews will be unable to perform those required preventative checks. Wire pulls and catapult no-loads for operational checks cannot happen and must wait until after the flight deck is reconstituted for normal use. These operational checks take hours to perform and could increase the amount of time before flight operations may resume. The risk of shipboard fire increases when CVW and MAW aircraft are refueled above CVN catapult tracks. Constant refueling of aircraft on top of the super-heated catapult tracks increases the likelihood of a "catapult-track fire." The catapults are super-heated with steam and covered with grease. This heat is a system requirement and aids in metal lubricity, makes the metal more malleable, and ensures it is fully expanded without cracks. Overtime, residual fuel leaks from these aircraft coats the catapult tubes and grease. Once superheated, it ignites and causes a catapult-track fire. This author has personally witnessed half a dozen catapult track fires. While usually not debilitating to the CVN, these fires do expose the CVN, aircraft, and personnel to unnecessary risk.

In conclusion, this article proposes several strong arguments as to why planning for the use of a CVN in an EABO, FARP, or logistic connector setting should be avoided. CVNs come with their own set of unique and specific limitations that the average military planner does not understand. From the threat of shipboard fire to CVW currency, CVNs, while seeming to offer a lot to a critical thinking planner, should be avoided unless all other options are exhausted. If no other options exist, a CVN can be used in a limited capacity; however, they should be used for a period not exceeding six days. More than six days of use in any role that prevents the attached CVW from flying will drastically reduce CVN lethality and will likely be met with heavy resistance.

Notes

1. LCDR Charles C. Sonntag, USN, "U.S. Fleet Forces: New Deployment Plan Designed to Create Sustainable Naval Force," *USNI, (*Annapolis, MD: January 2016), available at https://news.usni.org.

2. Yendry Martinez, Aviation Boatswains Mate, Chief, USN, telephone conversation, March 2018.

3. Naval Air Systems Command, *CV Naval Air Training and Operating Procedures Standardization (NATOPS Manual),* (Patuxent River, MD: 2009).

4. Naval Air Systems Command, *CVN Flight/Hangar Deck NATOPS Manual*, (Patuxent River, MD: 2010).

5. *CV NATOPS Manual.*

6. Ibid.

7. Ibid.

8. Ibid.

9. Naval Air Systems Command, *LSO [Landing Support Operations]NATOPS Manual.* (Patuxent River, MD: 2001).