The VFA Time-Force Problem

Date Submitted: 12 May 2022

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing this collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0704-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. **PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.**

1. REPORT DATE *(DD-MM-YYYY)*	2. REPORT TYPE	3. DATES COVERED *(From - To)*
12-05-2022	FINAL	N/A

4. TITLE AND SUBTITLE

The VFA Time-Force Problem

5a. CONTRACT NUMBER
N/A

5b. GRANT NUMBER
N/A

5c. PROGRAM ELEMENT NUMBER
N/A

6. AUTHOR(S)

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5d. PROJECT NUMBER
N/A

5e. TASK NUMBER
N/A

5f. WORK UNIT NUMBER
N/A

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)

Writing & Teaching Excellence Center
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686 Cushing Road
Newport, RI 02841-1207

8. PERFORMING ORGANIZATION REPORT NUMBER
N/A

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)

N/A

10. SPONSOR/MONITOR'S ACRONYM(S)
N/A

11. SPONSOR/MONITOR'S REPORT NUMBER(S)
N/A

12. DISTRIBUTION / AVAILABILITY STATEMENT
Distribution Statement A: Approved for public release; Distribution is unlimited.

13. SUPPLEMENTARY NOTES A paper submitted to the faculty of the NWC in partial satisfaction of the requirements of the curriculum. The contents of this paper reflect my own personal views and are not necessarily endorsed by the NWC or the Department of the Navy.

14. ABSTRACT

The Carrier Air Wing's (CVW's) three F/A-18 squadrons must be specialized to provide high-end capabilities desired by senior commanders. The current portfolio of missions is too large to be effectively executed by VFA squadrons who focus disproportionately on air-to-air combat training. This paper asserts that the large portfolio of F/A-18 missions and air-to-air focus create a significant time-force problem which leaves CVWs unable to produce expertise sufficient for the modern battlespace. This paper confronts arguments that specialization will needlessly hinder CVW operational flexibility, and that change is irrelevant due to the aircraft carrier's questionable survivability against peer threats. This paper asserts that the current flexibility of the CVW is designed for high-sortie operations in littoral environments, making concerns about flexibility anachronistic. The Navy's investment in long-range weapons and maritime strike training signal that the carrier will participate in future major maritime operations. To provide maximum available combat potential, this paper outlines a model for CVW F/A-18 specialization for air-to-surface or air-to-air regimes.

15. SUBJECT TERMS (Key words)
VFA, F/A-18, Specialization, LRASM, maritime strike

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE	N/A		Director, Writing Center
UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED			19b. TELEPHONE NUMBER *(include area code)* 401-841-6499

Introduction

Carrier Air Wings (CVWs) are unable to provide the high-end capabilities desired by senior commanders in their current configurations. Steps to modernize CVW construction and task allocation have counterproductively yielded an overwhelmed Strike Fighter (VFA) force encumbered by an excessively large and ill-defined portfolio of mission sets. This creates a significant shortfall between the desires of operational commanders and the capabilities of the VFA force.

To fight and win in a future maritime conflict, the CVW's F/A-18 squadrons must be specialized to provide equally high proficiencies in offensive fires and force protection. Specializing squadrons for expertise in high-end strike or air-to-air (A/A) capability will yield such proficiency and produce CVWs capable of conducting operationally relevant action. Without this course correction, the CVW and aircraft carrier (CVN) will become critical weaknesses with grossly inadequate offensive capability.[1]

This claim is based on three arguments. First, the current portfolio of missions is too large to be effectively executed by VFA squadrons, creating a time-force problem. Second, VFA squadrons exacerbate this time-force problem by disproportionately focusing on A/A combat proficiency. Third, balancing space factors with the time-force problem requires mission specialization.

Background

The CVN/CVW team's formidable design combat potential, considerable strategic messaging capability, and limited numbers make it extremely valuable to regional combatant commanders and joint force functional component commanders. CVN/CVWs have been

[1] Milan Vego, "7: Operational Design," *Operational Warfare at Sea: Theory and Practice* (New York: Routledge, 2017), 141.

leveraged historically by joint force air component commanders (JFACCs) to project both operational and tactical fires.[2] Conversely, a CVN's sinking would create major operational ramifications for any maritime campaign in which it participated and would likely constitute a strategic setback for the United States. Its protection is an operational imperative. The CVN and CVW are tactical assets, but their available combat potential is highly important to operational commanders and staffs when designing operations.

The CVN/CVW team must reliably project offensive fires to be a critical strength in future conflicts.[3] The former commander of U.S. Indo-Pacific Command (INDOPACOM), Admiral Philip S. Davidson explained in 2021 that naval forces must project "highly survivable, precision-strike fires featuring…improved air and long-range naval fires capable of ranges over 500 km" to ensure U.S. freedom of action.[4] To facilitate the desire for such activity, the Navy has purchased the AGM-158C Long-Range Anti-Ship Missile (LRASM) and operational commanders have increased demand on CVWs for long-range maritime strike (LRMS) training.[5]

Maritime strikes with LRASM will likely be used by joint force maritime component commanders (JFMCCs) to project operational fires. As described in the *Naval Aviation Vision 2016-2025,* LRASM is intended "to play a significant role in ensuring military access to the ocean and littorals" via long-range engagements not directly tied to support of maneuver forces.[6] LRASM's predicted role and limited numbers mean that strikes will have to be thoroughly planned, concentrated and able to significantly impact the outcome of a campaign to justify its

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[2] Milan Vego, "Operation Fires," *Joint Operational Warfare Theory and Practice Reprint* (Newport: USNWC, 2009), VIII-59.
[3] Milan Vego, "7: Operational Design," *Operational Warfare at Sea: Theory and Practice* (New York: Routledge, 2017), 141.
[4] U.S. Indo-Pacific Command, "Statement of Admiral Philip S. Davidson, U.S. Navy, Commander, U.S. Indo-Pacific Command Before the Senate Armed Services Committee on U.S. Indo-Pacific Command Posture," Press Release, March 9, 2021, 7. https://www.armed-services.senate.gov/download/davidson_03-09-21.
[5] David Ingels-Thompson, "Rethinking SEAD for A2/AD," *Proceedings,* April 2021, https://www.usni.org/magazines/proceedings/2021/april/rethinking-sead-a2ad.
[6] Naval Aviation Enterprise, *Naval Aviation Vision 2016-2025* (Washington DC: Department of the Navy. 2016), 78; Milan Vego, "Operation Fires," *Joint Operational Warfare Theory and Practice Reprint* (Newport: USNWC, 2009), VIII-59.

employment.[7] While LRASM may be used as a tactical weapon, it is likely that operational planners will instead employ the missile to strike high value targets throughout an enemy's operational depth or logistical capabilities.

Tactical fires projected by the CVN/CVW will also directly impact the outcome of major air and maritime operations.[8] Advancing Chinese anti-access, area denial (A2AD) threats mean that robust joint suppression of enemy air defenses (SEAD) will be required to establish air superiority and enable friendly maneuver.[9] In this environment, SEAD projected by the CVW is not merely a tactical action planned and executed by supporting commanders. Rather, it dictates the ability of the JFACC to establish air superiority, which is in turn a prerequisite for establishment of sea control and subsequent amphibious operations by the JFMCC.[10] Development of the CVW's burgeoning peer-conflict SEAD capability is an operational imperative and should be a major concern for senior commanders.

CVW aircraft provide both tactical and operational protection of friendly naval forces within the theater. The Carrier Strike Group's (CSG's) area defense capability combines defensive counter-air (DCA) missions by CVW aircraft with surface-to-air missiles from surface combatants.[11] Tactically, area defense protects the naval force from anti-surface cruise missile attacks by enemy aircraft.[12] The same tactics may be applied for operational protection of non-military vessels or infrastructure.[13]

The CVW embarks with four VFA squadrons (one two seat F/A-18F, two single seat F/A-18E, one F-35C), and one Electronic Attack squadron of EA-18G Growlers as its fixed-

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[7] Pacific Air Forces Public Affairs, "B-1Bs Conduct Joint, Bilateral Training with Koku-Jieitai, US Navy in Indo-Pacific," news release, October 2, 2020, https://www.pacaf.af.mil/News/Article-Display/Article/2370947/b-1bs-conduct-joint-bilateral-training-with-koku-jieitai-us-navy-in-indo-pacific/; Vego, *Operational Warfare at Sea: Theory and Practice,* 44.
[8] Vego, *Operational Warfare at Sea: Theory and Practice,* 68-69.
[9] Sean M. Zeigler & Co, *Aligning Roles and Missions for Future Multidomain Warfare* (Santa Monica: RAND Corporation, 2021), 30.
[10] Milan Vego, *Operational Warfare at Sea: Theory and Practice,* (New York: Routledge, 2017), 51.
[11] Wayne P. Hughes Jr. & Robert P. Girrier, *Fleet Tactics and Naval Operations* (Annapolis: Naval Institute Press, 2018), 280.
[12] James Dobbins & Co., *Conflict with China Revisited* (Santa Monic: RAND Corporation, 2017), 10; United States Air Force, *Air Force Doctrine Publication 3-01: Counterair Operations* (Maxwell Air Force Base: Curtis E. Lemay Center for Doctrine Development and Education, 2019), 8-10.
[13] Vego, "Operational Protection," *Joint Operational Warfare Theory and Practice*, VIII-95

wing strike contingent. The missions described above manifest as three categories of tactical training for F/A-18 aircrews: maritime strike, air-to-surface (A/S), and A/A.[14] Maritime strike involves attacking enemy naval vessels with a growing assortment of sophisticated weapons. A/S includes pre-planned strikes, SEAD, close air support (CAS) and basic proficiency with a large assortment of munitions. A/A is divided into two major subcategories: DCA, which provides the protection described above and offensive counter-air (OCA) tactics use to achieve air superiority.[15]

Large-force employments (LFEs) combine these efforts to accomplish major tactical or operational objectives. These missions require extensive mission planning and coordination with other naval or joint assets. When projected organically from the CVN, LFEs require a commitment of approximately eight to ten of the CVW's 34 to 36 Super Hornets to the tanker role, which negatively impacts the force by reducing the number of combat aircraft and experienced aviators available.[16]

Additionally, deployed squadrons must provide assets for theater presence operations and contingencies. Examples of these commitments include combat air patrols (CAPS), alerts, and support of joint operations like Operations Iraqi Freedom and Inherent Resolve. Finally, significant available combat potential is lost by maintaining at least six F/A-18s as tankers for normal cyclic operations.[17]

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[14] "Topgun: Edge of Aviation," U.S. Department of Defense, accessed April 27, 2022, https://www.defense.gov/Multimedia/Experience/Top-Gun-The-Edge-of-Aviation/.
[15] United States Air Force, *Air Force Doctrine Publication 3-01: Counterair Operations*, 8-10.
[16] Kyle Mizokami, "The Long Road to Long-Range Strike," *Proceedings,* September 2020, https://www.usni.org/magazines/proceedings/2020/september/long-road-long-range-strike.
[17] Fletcher Vynne, "Stop Routine Organic Tanking in the Persian Gulf," *Proceedings,* October 2019, https://www.usni.org/magazines/proceedings/2019/october/stop-routine-organic-tanking-persian-gulf.

I: Time-Force Limitations Reduce the CVW's Available Combat Potential

The current portfolio of missions is too large to be effectively executed by the CVW's VFA force with the time constraints it encounters, creating a considerable disparity between its available and design combat potential. The CVW does not possess what preeminent maritime theorist Dr. Milan Vego describes as the "capability of a force to accomplish assigned missions against a specific designed threat."[18] The CVW's maritime strike and SEAD capabilities are particularly degraded due to this phenomenon.

All three F/A-18 squadrons train for the entire breadth of the mission sets listed above while operationally deployed. During such deployments, CSG commanders, often directed by JFMCCs, exercise their functional capabilities, including fires, protection, and command-and-control by rehearsing joint and organic LFEs. However, squadrons are still required to maintain service-mandated training & readiness (T&R) and qualification syllabi. These training requirements are intended to build combat readiness. Instead, attempts to train during deployment dilutes force capability as squadrons struggle to complete wide and varied T&R and syllabus requirements while meeting operational demands.[19] As an example, while deployed to U.S. Central Command in 2020-2021, USS Nimitz concurrently supported Operation Inherent Resolve, multi-national exercises, CAPs near Iran, Strike Fighter Weapons and Tactics (SFWT) syllabi, T&R unit level training (ULT), and LFE rehearsals.[20] There is simply not enough time for the force to accomplish these missions and develop sufficient lethality in all areas of high-end

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[18] Vego, "The Factor of Force," *Joint Operational Warfare Theory and Practice*, III-33.
[19] Jeff Zeberlein, "Can-Do Is Not Working: A Continuously High Operational Tempo Hinders Readiness," *Proceedings*, December 2021, https://www.usni.org/magazines/proceedings/2021/december/can-do-not-working.
[20] Commander, U.S. 3rd Fleet Public Affairs, "Nimitz Carrier Strike Group Returns from Deployment," news release February 26, 2021, https://www.navy.mil/Press-Office/News-Stories/Article/2517997/nimitz-carrier-strike-group-returns-from-deployment/;

combat. The resulting available combat potential does not equal the CVW's design combat potential.

VFA squadrons are expending resources without directly increasing their value to operational commanders. SFWT, T&R, and LFE tasks have not evolved uniformly with advancements in warfighting capabilities and are now poorly aligned. Incoherence between those three lines of effort forces squadrons to expend excessive sorties to meet their wide ranging and often outdated ULT obligations and operational requirements.[21] The force is developing broad, shallow, and redundant capabilities rather than expertise tailored for the demands of high-end combat.

Additional human and organizational factors further reduce available combat potential. Squadrons suffer from a long-predicted exodus of mid-career officers and aircraft availability-related training delays which slashed pilot production by 50% over the last several years.[22] Squadrons are sometimes unable to fully staff pilot department head billets, leaving them critically low on qualified flight leads.[23] Furthermore, the requirement for senior aviators to fly tankers and alerts increases the overall workload on the few flight leads available. Training syllabi require that aviators complete extensive graded flight requirements to achieve various qualifications.[24] Each of these missions must be instructed by a senior aviator and consumes significant resources.

At first glance, these seem to be service issues related to manning and training the force. However, the greatest contributor to time shortages and expanded training requirements is the

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[21] Jeff Zeberlein, "Can-Do Is Not Working: A Continuously High Operational Tempo Hinders Readiness," *Proceedings*, December 2021, https://www.usni.org/magazines/proceedings/2021/december/can-do-not-working.
[22] Guy M. Snodgrass, "Keep a Weather Eye on the Horizon: A Navy Officer Retention Study," *Naval War College Review*: Vol. 67: No. 4, Article 7 (Autumn, 2014), https://digital-commons.usnwc.edu/nwc-review/vol67/iss4/7; Zeberlein, "Can-Do Is Not Working: A Continuously High Operational Tempo Hinders Readiness," 2021.
[23] Tony Kochanski, "The Road to Retention is Paved with Good Intentions," *Proceedings,* March 2018, https://www.usni.org/magazines/proceedings/2018/march/road-retention-paved-good-intentions.
[24] J. Ryan McLaughlin, *Optimizing Adversary Training and the Structure of the Navy Adversary Fleet* (Monterey: Naval Postgraduate School, 2013), 3-4.

decades-long demand for extended or indefinite force presence by operational commanders.[25] High operational demand prevents F/A-18 squadrons from building readiness for eventual peer combat. Reduced demand for CVN presence by combatant commanders would ease the time-force problem but is unlikely in the current strategic environment.

II. Focus on A/A Exacerbates Time-Force Problem

High investment in A/A training by the entire VFA force exacerbates the time-force problem. No squadron is consistently solidifying the institutional knowledge necessary to reliably provide short-notice offensive A/S or maritime strikes. Hughes and Girrier, in *Fleet Tactics and Naval Operations,* emphasize the importance that units reduce "laborious planning" and develop a series of pre-crafted plans to "practice and train with before they are assigned specific missions."[26] Over-emphasis on A/A precludes such preparedness. Instead, all three squadrons simultaneously and reactively cease A/A training and initiate the mission planning process when assigned an LFE or LRMS by CSG commanders. VFA planners then evenly divide LFE roles in mixed elements, with representatives from all three squadrons attempting to employ complex stand-off or net-enabled A/S and maritime strike weapons with which they are largely unfamiliar. The current model risks introducing extended planning processes, reduced proficiency, and employment errors. Napoleon's assertion that "the loss of time is irreparable in war . . . .operations only fail through delays" conveys the importance of a specialized combat force that can act decisively at a moment's notice.[27]

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[25] Robert O. Work, "A Slavish Devotion to Forward Presence Has Nearly Broken the U.S. Navy," *Proceedings,* December 2021, https://www.usni.org/magazines/proceedings/2021/december/slavish-devotion-forward-presence-has-nearly-broken-us-navy.
[26] Wayne P. Hughes Jr. & Robert P. Girrier, *Fleet Tactics and Naval Operations* (Annapolis: Naval Institute Press, 2018), 298-299.
[27] Vego, "Operational Fires," *Joint Operational Warfare Theory and Practice*, III-19.

Training syllabi developed internally by VFA tacticians place more emphasis on A/A skills development than any other mission due to the high difficulty and increasing threats inherent to the A/A battlespace. Of the 12 flights which comprise the Strike Fighter Advanced Readiness Program (SFARP), the first stage of pre-deployment workups, seven flights are A/A specific, with four DCA flights. Conversely, there are only five A/S flights, with only two focused on SEAD. Maritime strike is represented by a single simulator event and no flights.[28] CVW Fallon, a later work-up stage, focuses heavily on LFE and LRMS, but includes heavy emphasis on A/A training which contributes to the broad but shallow tactical development of the VFA force. This construct yields three identical squadrons which spend at least 60% of their training resources on A/A employment and 33% specifically on fleet defense. Each is spending almost no time on LRMS and only 17% on SEAD. This is an increase in the proportion of A/A events from previous decades, reflecting the tendency of the VFA community to focus on advances in A/A threats at the expense of A/S and maritime strike.[29]

In all offensive LFEs, single and two-seat Super Hornets are employed identically, with A/S, maritime strike, and A/A tasks distributed evenly across the CVW's three squadrons. Using the two-seat F/A-18F in the same capacity as the F/A-18E exacerbates the time-force problem even further. The CVW is not leveraging the expanded size of F/A-18F squadrons, which feature approximately 30 aircrew rather than the F/A-18E's 12 to 15, to focus on more planning-intensive A/S missions. CVW's are not using F/A-18F Weapons Systems Officers (WSOs) to achieve specialized expertise in efficiently and reliably employing boutique A/S and LRMS weapons. The CVW's time-force mismanagement carries serious implications for JFMCCs or

[28] Commander, Naval Aviation Warfighting Development Center, *NAVAVNWARDEVCENINST 3500.3L: Strike Fighter Advanced Readiness Program,* (Fallon: Naval Aviation Warfare Development Center, 2020), enclosure 5.
[29] Graham Scarbro, "Improve F/A-18 Super Hornet Training and Readiness with More Missiles and Fewer Missions," *War on the Rocks,* November 5, 2019, https://warontherocks.com/2019/11/improve-super-hornet-training-and-readiness-with-more-missiles-and-fewer-missions/.

JFACCs who face denial of a potential time advantage due to reactive and delayed mission planning when the time comes for a real LFE or LRMS.[30]

III: Space-Force Challenges Require Specialization

Loss of superiority to emerging threat technologies makes the potential battlespace increasingly dangerous and the time-force problem even more acute. As Vego explains, "The factor of space must be controlled with the available forces to such a degree that the ultimate objectives of a campaign or major operation are accomplished."[31] The CVW's Super Hornet contingent is a critical strength for this end but may soon become a critical weakness.[32] The Navy has acknowledged that the Super Hornet will have decreased viability against emerging threats in the coming decades.[33] This drastically diminishes the CVW's potency in ever-expanding maritime battlespaces.

Specialization is necessary to overcome the limitations of the F/A-18 and its weapons systems. The flexible, multi-role fighter/attack concept which produced the F/A-18 and current CVW model of VFA homogony developed while U.S. aircrews held a significant A/A advantage over adversaries.[34] During that time, the advancement of precision guided munitions and the permissive battlespace of the post-Cold War era allowed U.S. aircrews to employ A/S weapons with little stand-off or opposition.[35] Maritime strike was largely ignored.

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[30] Vego, "Operational Fires," *Joint Operational Warfare Theory and Practice*, III-19.
[31] Vego, "The Factors of Space, Time, and Force," *Joint Operational Warfare Theory and Practice*, III-52.
[32] Milan Vego, "7: Operational Design," *Operational Warfare at Sea: Theory and Practice* (New York: Routledge, 2017), 141.
[33] Megan Eckstein, "Spending Bill Would Add Five Ships, 12 Super Hornets to Navy Acquisition Plans," *Defense News,* March 9, 2022, https://www.defensenews.com/naval/2022/03/09/spending-bill-would-add-five-ships-12-super-hornets-to-navy-acquisition-plans/#:~:text=The%20Navy%20had%20planned%20to,in%20remaining%20gaps%20by%202025; Mallory Shelbourne, "Navy Questions Future Viability of Super Hornets: Recommends Against New Buy," *USNI News,* August 3, 2021, https://news.usni.org/2021/08/03/navy-questions-future-viability-of-super-hornets-recommends-against-new-buy.
[34] Christopher Papaioanu & Brad Elward, "TOPGUN's Impact," *Proceedings,* September 2019, https://www.usni.org/magazines/proceedings/2019/september/topguns-impact.
[35] Sean M. Zeigler & Co, *Aligning Roles and Missions for Future Multidomain Warfare* (Santa Monica: RAND Corporation, 2021), 30.

None of these conditions are applicable to the modern battlespace. The International Institute for Strategic Studies reports that "the scale and quality of the [Chinese] air force's re-equipment programme [*sic*] is…making it a credible peer-level threat to US forces."[36] As former U.S. Navy Fighter Weapons School (TOPGUN) commander, CDR Christopher "Pops" Papaioanu explains, "The Navy's current combat systems are relatively equal to those of our peer adversaries, so fighter tactics have become more complex to ensure they remain effective."[37] Likewise, as discussed previously, advanced enemy air defense systems preclude permissive projection of operational or tactical fires and require that aircrews employ standoff weapons to avoid unacceptable losses.[38]

Requirements for standoff and complex tactics undermine the advantage of high sortie generation, which is the nominal benefit of the CVW's current construct to operational commanders. High sortie generation by a CVN allows CSG commanders to rapidly field many low-duration missions in quick succession.[39] During the post-Cold War era and Global War on Terror, CVN/CVW teams participated in several operations in which they provided operational fires for JFACCs by launching a high quantity of strike missions into permissive spaces.[40]

LFEs and maritime strikes against peer adversaries are not benefitted by CVW homogeny nor high sortie generation. The long duration of LRMS missions means that CSG commanders will oversee a smaller quantity of highly concentrated large-force strikes against operationally significant targets in support of the JFMCC.[41] In a 2010 exercise, CVW-1 launched 41 aircraft simultaneously - almost the entire compliment of its aircraft - to support just two LFEs.[42] Multi-role flexibility is useful for generation of a large quantity of successive, permissive missions.

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[36] James Hackett, "Editor's Introduction to The Military Balance 2022," In *The Military Balance,* edited by The International Institute for Strategic Studies February 15, 2022, https://www.iiss.org/blogs/analysis/2022/02/military-balance-2022-introduction.
[37] Papaioanu & Elward, "TOPGUN's Impact," 2019.
[38] Zeigler & Co, *Aligning Roles and Missions for Future Multidomain Warfare,* 2021, 30.
[39] Bradley Martin & Michael E. McMahon, *Future Aircraft Carrier Options* (Santa Monica: RAND Corporation, 2017), 42.
[40] Vego, "Operational Fires," *Joint Operational Warfare Theory and Practice*, VIII-59.
[41] Martin & McMahon, *Future Aircraft Carrier Options*, 42.
[42] Alex R. Forster, "Enterprise Carrier Strike Group Completes JTFEX," in *Future Aircraft Carrier Options*, 41.

Flexibility is far less useful for concentrated projection of an LFE package which features strike, SEAD, offensive A/A, and reserve protective A/A components operating together. Instead, the CSG commander would benefit from a CVW force able to launch together as a team to expertly perform their specialized roles simultaneously in an expansive battlespace against non-permissive threats.

Counterarguments

Some may argue that the loss of operational and tactical flexibility incurred by specialization would needlessly reduce the CVW's available combat potential by reducing the number of crews and aircraft able to perform certain missions. Assigning just one squadron for A/S attack and maritime strike assumes that a single squadron can alone provide salvo sizes sufficient for effects on operationally relevant targets. This is what Hughes and Girrier identify as "a propensity in peacetime to overestimate one's own striking power."[43] Further exacerbating the CVN/CVW team's inadequate offensive capability would hasten its slide from critical strength to weakness.[44] The lack of tactical flexibility will prevent sufficient massing of forces for SEAD, LRMS, and DCA by stripping these skills from 33%-66% of the force. The reduction of these capabilities would have negative operational implications for component commanders in multiple domains.

Others may argue that specialization is irrelevant because of the CVN's presumed low survivability in peer combat. The CVN is a critical vulnerability, is non-essential for victory in peer combat, and will be unable to affect relevant operational fires regardless of CVW

[43] Hughes & Girrier, *Fleet Tactics and Naval Operations*, 285.
[44] Milan Vego, "7: Operational Design," 141.

configuration.[45] Operational designs for a major maritime campaign in INDOPACOM will focus on Distributed Maritime Operations (DMO). SEAD and maritime strike will be accomplished by unmanned systems, Marine Corps expeditionary advanced base operations, and assorted surface-launched missile systems.[46] The CVN/CVW team should maintain its current model, which is useful for crisis response and limited contingency operations.[47]

Rebuttal

Specialization will maximize the CVN/CVW team's available combat potential and the conversion of that potential into combat power. The increased warfighting capabilities of specialized squadrons make the loss of operational flexibility worthwhile.[48] The flexible, homogonous F/A-18-based CVW promised a cost-effective alternative to aging and expensive platforms during the uniquely unipolar moment of the 1990s. It was never intended for peer combat.[49] Using the larger F/A-18F squadron to focus on both A/S and LRMS, which are highly similar and leverage the same fundamental skill sets, provides sufficient time for that force component to establish the pre-planned "playbook" prescribed by Hughes and Girrier. Maintenance of secondary and tertiary specialization skill sets will enable redundancy for missions requiring an especially heavy allocation for one warfare area or for high-sortie, permissive limited contingency operations. Primary, secondary, and tertiary specializations

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[45] Loren Thompson, "Claims of Aircraft Carrier Vulnerability are False, But the Versatility is Real," *Forbes,* June 9, 2020, https://www.forbes.com/sites/lorenthompson/2020/06/09/claims-of-aircraft-carrier-vulnerability-are-false-but-the-versatility-is-real/?sh=1a202d39591a.
[46] Zeigler & Co, *Aligning Roles and Missions for Future Multidomain Warfare*, 24.
[47] U.S. Office of the Chairman, Joint Chiefs of Staff, "Chapter V: Joint Operations Across the Range of Military Operations," *Doctrine for the Armed Forces of the United States, Joint Operations.* Joint Publication 3-0 (Washington D.C.: CJCS, 2017), V-2
[48] Vego, "The Factor of Force," *Joint Operational Warfare Theory and Practice*, III-34.
[49] William Hamblet, "All Strike Fighters for the Air Wing," *Proceedings,* February 1993, *https://www.usni.org/magazines/proceedings/1993/february/all-strike-fighters-air-wing*.

provide the force the necessary skills for functioning as a DCA reserve or concentrated LFE offense when necessary. [50]

The CVN/CVW team will be a critical strength in maritime operations for many years to come. A RAND study examining future CVN alternatives asserts that "aircraft carriers will contribute significantly, and perhaps increasingly, to the most-stressing warfighting scenarios far into the future."[51] The high demand for LFE and LRMS training by combatant, component, and CSG commanders signals that CVN-projected maritime strike is a critical capability for U.S. forces in INDOPACOM and will factor into future operational designs. Specialization will provide operational commanders with a more capable CVW force in the shortest possible time.

Conclusion

The CVW's F/A-18 squadrons must be specialized to solve the VFA time-force problem with the weapons and aircraft on-hand. The warfighting capabilities desired by supported commanders require expertise which cannot be achieved with the current mission allocation. The requirement for VFA squadrons to fulfill poorly synchronized operational and T&R obligations precludes development of deep expertise in critical warfighting areas. The attempt by all F/A-18 squadrons to achieve their highest proficiencies in the A/A mission leaves the CVW's A/S strike and LRMS institutional knowledge base grossly inadequate. Using the larger F/A-18F squadron for specialization in A/S and maritime strike mission sets will develop strike proficiency while allowing F/A-18E squadrons to practice highly challenging and dynamic A/A missions more intensively.

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[50] Hughes & Girrier, *Fleet Tactics and Naval Operations*, 285.
[51] Martin & McMahon, *Future Aircraft Carrier Options*, 63.

Commanders seek to increase the readiness of the carrier force for high-end combat but do not demonstrate willingness to move away from the 1990s model of flexibility. Such unwillingness will hinder operations across the vast and non-permissive battlespace of a modern peer-conflict. Specialization will help solve the VFA time-force problem quickly and will provide commanders a more potent weapon for use in future operations.

Recommendation: Specialize F/A-18 Squadrons

Each F/A-18 squadron should have a warfighting specialty it applies to LFE or LRMS missions. Each should have a secondary proficiency to provide a degree of redundancy. Finally, each should have a clearly delineated tertiary role for operational protection or tactical fires. Each F/A-18 squadron should be assigned by CVW commanders to a specialization "pipeline" at the beginning of the pre-deployment work-up cycle.[52] This would incur no personnel or materiel costs and require no new acquisitions.

Specialization would mitigate the time-force problem by trimming and aligning syllabus, T&R, and LFE/LRMS requirements.[53] Squadrons would construct deep expertise about a warfighting area critical to operational commanders' objectives. They would be better prepared to plan, brief, and apply their heavily practiced specialization rapidly and lethally as part of an LFE or LRMS. Specialization would also free senior aviators to fulfill leadership roles critical to available combat potential by reducing the number of syllabus flights requiring their instruction and strengthening baseline knowledge in their specialized warfighting area. These changes

[52] Scarbro, "Improve F/A-18 Super Hornet Training and Readiness with More Missiles and Fewer Missions," 2019.
[53] Scarbro, "Improve F/A-18 Super Hornet Training and Readiness with More Missiles and Fewer Missions," 2019; D.J. Harris, "Jack of All Trades, Master of None," *Proceedings,* March 2002, https://www.usni.org/magazines/proceedings/2002/march/jack-all-trades-master-none.

would benefit operational commanders by narrowing of the gap between the CVW's design and available combat potential.[54]

The F/A-18F squadron would specialize in stand-off and net-enabled weapons and would brief and lead LFE A/S attack and maritime strike elements. Reliance on WSOs to plan and program complex weapons employments capitalizes on the F/A-18F's larger squadrons, tandem cockpit configuration and excellent A/S tactical crew coordination standards.[55] SEAD elements would be briefed and lead by EA-18G mission commanders and supported by F/A-18F aircrews. These elements would be composed of F/A-18F aircraft whenever possible and supplemented with F/A-18E by exception. F/A-18F crews would maintain secondary specialization in CAS and tertiary proficiency in DCA to assist with force protection.

F/A-18E squadrons would focus on A/A employment. Both would train to the full spectrum of A/A, but one would brief and lead DCAs while the other would brief and lead OCAs. The higher fuel capacity of the F/A-18E, single-pilot-friendly radar ergonomics, and fewer mission planning requirements make smaller single-seat squadrons ideal for A/A.[56] A/A elements will be composed of F/A-18E aircraft whenever possible and supplemented with F/A-18F by exception. F/A-18E squadrons would reduce A/S and maritime strike T&R, syllabus, and planning requirements while maintaining the current allotment of A/A events. F/A-18E pilots would maintain secondary specialization in SEAD to augment missions with heavy A/S attack requirements. They would maintain tertiary proficiency in CAS to assist with tactical fires. All F/A-18 squadrons would equally share the burden of aerial refueling until relieved by MQ-25 acquisition.

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[54] Vego, "The Factor of Force," *Joint Operational Warfare Theory and Practice*, III-33.
[55] Walsh, "Maximize the Two-seat Super Hornet for the Peer Fight," 2019.
[56] Harris, "Jack of All Trades, Master of None," 2002.

Specialization would provide an immediate increase to CVW available combat potential. Implementation of the model prescribed above will alleviate time constraints placed on the force. Providing bandwidth for squadrons to reliably and repeatably execute high-end warfighting capabilities will increase the CVN/CVW team's value to senior commanders in both the air and sea domains.

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