

## CARRIER BATTLE GROUP TOOLBOOK

A Research Paper

Presented To

The Directorate of Research

Air Command and Staff College

DISTRIBUTION STATEMENT A

Approved for public release;  
Distribution Unlimited

In Partial Fulfillment of the Graduation Requirements of ACSC

by

LCDR Bruce W. Schneider  
LCDR C.F. Drummond  
LCDR Gerald L. Nyberg  
Maj R. M. Palmisano, USAF  
LCDR Peter A. Tomczak

LCDR Charles E. Sanford  
LCDR Kevin R Johnson  
MAJ Alva L. Pace, USA  
LCDR Alton E. Ross  
LCDR Randall D. Tweet

LCDR Gary M. Wilson

19971118 010

April 1996

DRIC QUALITY INSPECTED 8

New Text Document.txt

14 NOVEMBER 1997

This paper was downloaded from the Internet.

Distribution Statement A: Approved for public release;  
distribution is unlimited.

POC: AIR WAR COLLEGE.  
AIR COMMAND AND STAFF COLLEGE  
MAXWELL AFB, AL 36112



## **Disclaimer**

The views expressed in this academic research paper are those of the authors and do not reflect the official policy or position of the US Government or the Department of Defense.

## *Contents*

	<i>Page</i>
DISCLAIMER.....	ii
PREFACE .....	iv
ABSTRACT.....	v
INTRODUCTION.....	1
PLANNING.....	2
JOINT MISSIONS .....	4
Strike Warfare/Power Projection.....	4
Suppression Of Enemy Air Defenses (SEAD) .....	5
Command, Control, And Surveillance .....	5
Air Superiority .....	6
Anti-Air Warfare (AAW)/Cooperative Engagement Capability(CEC).....	7
Anti-Surface Warfare (ASUW).....	7
Anti-Submarine Warfare (ASW).....	8
ASSETS .....	9
CONCLUSIONS .....	11
APPENDIX A: CREDITS.....	12
BIBLIOGRAPHY .....	13

## *Preface*

Our goal and purpose in creating this multimedia ToolBook was to provide joint planners with an up-to-date guide to the Navy's premier force package, the carrier battle group. The ToolBook is designed to accommodate different familiarity levels, from a user without any previous knowledge of how a carrier battle group is composed or how it operates, to a person who simply wants to know more about one specific area, such as the complement of weapons a particular aircraft or ship employs. Mission descriptions and examples, tasking procedures, planning considerations, hardware descriptions, and command structures are all presented to help a planner reach our ultimate objective: provide a baseline knowledge level and direct the joint planner to the best Naval resource to accomplish the joint mission.

Gratefully acknowledged is the support and technical expertise of our faculty researcher advisor, LCDR Dave Guthrie, USN, and the sponsoring of the project by CAPT Mark Eubanks, USN.

### *Abstract*

Joint and multinational staffs are generally unfamiliar with US Navy capabilities and operations, leading to less than optimum naval integration in joint and multinational operations. The Carrier Battle Group employment ToolBook is a multimedia ToolBook on CD-ROM that focuses on carrier battle group (CVBG) assets, missions and planning factors, with the aim to better achieve joint objectives.

The ToolBook is broken down into three main categories, Planning, Assets, and Joint Missions, each of which address specific areas such as command structure, mission descriptions, platform descriptions and capabilities, tasking procedures and considerations. Text, graphics, and videos are hypermedia linked to logical destinations within the ToolBook so that the viewer could learn about naval operations from an organizational, functional, or task orientation. Included is a Navy–Air Force cross reference list for important service specific jargon. The overall objective of the ToolBook is to point joint planners in the right direction and direct them to the best Naval resource to accomplish the joint mission.

Research methodology includes unclassified source data from a wide variety of official and unofficial references, publications, current periodicals, and liaison with numerous Naval activities and subject matter experts. The research team members' own experiences contributed to the ToolBook: the team's collective experiences include

participation and operational level planning on virtually all major joint operations undertaken in the last ten years.

## **Chapter 1**

### **Introduction**

The Carrier Battle Group (CVBG) is the primary force package of the United States Navy. As an integral part of joint combat operations, the CVBG is often the first force sent to a designated area to support national security objectives and taskings of forward presence and immediate crisis response. Operating in the littoral, or “near land” region, the CVBG provides air power as well as surface and subsurface sea power to the joint commander. Specifically, the carrier’s air wing can be used in conjunction with land based air assets in overland warfare, and the ships and aircraft of the battle group can supplement the air defense taskings in a particular region. In addition, the CVBG and other naval forces may be required to open up the sea ports and sea lines of communication that are needed to allow entry of Army and Air Force assets.

This ToolBook presents what the carrier battle group brings to joint warfighting. Operational capabilities as well as planning, tasking, and employment considerations of the carrier battle group are discussed. The topics are hyperlinked from one section to the next, and the ToolBook is designed so that the user may enter at any desired point. The following chapters describe the three main sections of the ToolBook, both in terms of content and concept in relation to joint planning.



## **Chapter 2**

### **Planning**

Although the ToolBook can be entered from any of the three main areas, depending on the interest or existing knowledge level of the viewer, the Planning section can be thought of as the doorway to the rest of the ToolBook. Brief overviews and discussions on force compositions, command structures, and terminology are intended to introduce the viewer to the basics of a CVBG.

The starting point for learning about a carrier battle group is the composition of the force. Typically, the “notional” CVBG includes an aircraft carrier and its air wing, two Ticonderoga class cruisers, a mix of one to three destroyers and frigates, one to two attack submarines, and an attached compliment of combat support (replenishment) ships. Specific ship availability, other taskings, and unique theater or mission considerations may alter somewhat the notional baseline, but it is a useful planning point from which to start.

With the ongoing retirement of A-6E all weather attack aircraft, the notional air wing composition is stabilizing to the following: one squadron of F-14 Tomcats (14 aircraft), three squadrons of the multi-role F/A-18 Hornet (12 aircraft per squadron), one squadron each of the EA-6B Prowler (4 aircraft), E-2C Hawkeye (4-5 aircraft), S-3B Viking (6-8 aircraft), SH-60/HH-60 Seahawk (8 aircraft), and two plane detachments of the ES-3 and

C-2A. This air wing composition totals 50 fighter/attack aircraft, with the remaining aircraft fulfilling various support roles. Missions, capabilities, weapons, and employment considerations are described in the other two sections of the ToolBook, and can be accessed through hyperlinks or by entering those main sections directly.

Naval command structure in regards to the CVBG is described at two levels. The first approach shows the overall operational command starting from the National Command Authority, to the CINC Unified Command, Naval Component Commander, operational fleet commander, and then to the battle group commander. This operational command generally follows the sister services big picture view. The second approach describes the command structure within the CVBG, the Composite Warfare Commander (CWC) structure, headed by the Officer in Tactical Command (OTC), who is the battle group admiral. The OTC has an Anti-Air Warfare Commander (AAW), Anti-Surface Commander (ASUW), an Anti-Submarine commander, and the Strike Warfare Commander (STWC). In addition, there is the C2W commander. The ToolBook describes the relationships, warfare area responsibilities, and assets controlled of the warfare commanders.

## **Chapter 3**

### **Joint Missions**

As mentioned in the introduction, virtually all carrier battle group missions are joint missions in joint operations, even if the primary or indeed only participant in the at-sea tasks is the Navy. The rationale is based that on any operation than possibly a short, one time strike, a theater's heavy lift requirements and long term sustainability are directly dependent on sea power and threat-free sea lines of communication. Missions traditionally thought of as "Navy only" missions, such as anti-surface warfare, are not necessarily so. Land based aircraft can provide needed strike and reconnaissance augmentation in littoral regions. However, the focus of this section of the ToolBook is on the capabilities that the Navy brings to the joint arena. Below are descriptions of the major missions of the CVBG. Each mission type has a one page word description and a one page map depiction in the ToolBook.

#### **Strike Warfare/Power Projection**

Strike warfare includes the specific missions of interdiction and close air support. Strike warfare is usually the mission area referred to when the Navy speaks of "power projection" in regards to the carrier air wing and implies overland missions. The air wing provides short term or sustained tactical air support with its approximately 50 fighter and

attack aircraft and over 20 support aircraft. Overland power projection missions can be stand alone naval operations or the air wing can be seamlessly integrated into joint air operations under the Joint Force Air Component Commander (JFACC). The F/A-18 Hornet is the primary attack aircraft, and is capable of delivering guided and unguided bombs; it is a short to medium range platform. F-14 Tomcats are being modified to deliver bombs, but will normally fly air superiority missions. Included under strike warfare is the Tomahawk missile, which can be launched from surface ships and from submarines.

### **Suppression Of Enemy Air Defenses (SEAD)**

SEAD encompasses both “soft” and “hard” kill capabilities that can temporarily disrupt or permanently destroy enemy air defense systems. Typically, SEAD missions are conducted prior to and in conjunction with interdiction and other missions that require penetrating into enemy airspace. Jamming of enemy radars is accomplished by the EA-6B Prowler. Prowlers and Hornets employ the High Speed Anti-radiation Missile (HARM) against threat system radars, and Hornets and Tomcats can be tasked for protection of the SEAD package. Command and control is provided by the E-2C and/or USAF or NATO E-3s. With the retirement of the USAF F-4G and phaseout of the EF-111, the CVBG may provide the only in-theater SEAD capability.

### **Command, Control, And Surveillance**

The E-2C Hawkeye is the air wing’s command and control platform. Operating with only three air controllers/directors, the E-2C provides airborne early warning and surveillance to the battle group and to joint forces. It is similar in capabilities to the much

larger E-3 AWACS, and is capable of tracking targets over land as well as over water. In many operations the E-2C will alternate with or provide backup coverage for US/NATO E-3s, and both platforms can transfer data between them. In certain scenarios, the E-2 will be the check-in platform for CAS assets. As an adjunct to command and control, several air wing assets, including the ES-3, EA-6B, S-3B and the E-2, provide passive electronic surveillance to the battle group. This information can then be forwarded to the JFACC or appropriate theater intelligence activity. In addition, the above aircraft can provide real time threat warning based on electronic surveillance to all theater joint air assets. Airborne tracking and electronic surveillance can also be provided by several surface ships, the Ticonderoga and Arleigh Burke class ships being the most capable (being Ageis equipped). This capability is dependent on ship positioning.

### **Air Superiority**

Carrier based F/A-18s and F-14s can provide Offensive Counter Air (OCA) and Defensive Counter Air (DCA) requirements to the JFACC. F/A-18s, designed from the outset as a multi-role "strike fighter" platform, can easily fulfill air to air missions as well as air to ground missions. The F-14 although designed expressly for the outer air battle against threats to the carrier battle group, maintains a substantial air to ground capability as well. The Hornet's long range weapon is the AIM-120, while the Tomcat's is the AIM-54 Phoenix. A planning or tasking consideration is that in the zero sum game of carrier aviation, Hornets apportioned to air superiority missions allow fewer Hornets (the preferred strike platform) for strike missions.

## **Anti-Air Warfare (AAW)/Cooperative Engagement Capability(CEC)**

Anti-air warfare has traditionally been viewed as a naval specific mission designed to protect the CVBG, but with the shift to conducting littoral operations, AAW has become part of the larger joint battle picture. An example is in a restricted water scenario such as the Arabian Gulf, where the CVBG can in effect protect the flanks of the shore based forces. A recent development (since 1988) in this area is the situational-awareness system known as the CEC. A fusing of many sensor systems, primarily of ship systems but also of air and ground systems (when operating in littoral regions), the CEC allows over the horizon targeting by the sharing of sensor track data. CEC will improve theater self protection in a scenario just described above (e.g.; a ship sensor track could provide targeting data to a Patriot battery).

## **Anti-Surface Warfare (ASUW)**

ASUW is directed against hostile ships. While this mission is traditionally thought of as a Navy specific mission, in most scenarios it is really a joint mission, for the vast majority of US military equipment is delivered by sea. Control of the sea lanes and ports is necessary for the sealift that delivers heavy equipment and force sustainment to joint operations. Essentially all air wing assets can be tasked with this mission. The S-3B is perhaps the key player in most ASUW scenarios; tasking of S-3s for these missions will have little impact on joint air operations over land. All CVBG ships except for the carrier could be involved in ASUW.

## **Anti-Submarine Warfare (ASW)**

Similar in concept to ASUW, ASW is fairly self descriptive. In addition to providing protection for the CVBG, ASW also has the primary task of ensuring open sea lanes. The air wing assets charged with this mission are the S-3 and SH-60B/ F. ASW tasking will have little impact upon over land joint air operations with the possible exceptions of movement of the carrier and a loss of organic (i.e., carrier based) tanking capability (which is conducted by the S-3). The battlegroup's destroyers, frigates and attack submarines all are charged with ASW.

## Chapter 4

### Assets

The Asset section of the ToolBook describes individual ship and aircraft platforms, their capabilities, weapons and mission employment. Viewers have the options of selecting “Platforms,” “Mission,” or “Weapons;” all three areas are hyperlinked to each other. This allows great viewer flexibility; for example, a user can learn more about a specific mission or weapon system by clicking on highlighted hot words while viewing “Platforms.”

“Platforms” describe the following ships: aircraft carriers (nuclear and conventional powered), Ticonderoga class cruisers, Arleigh Burke class guided missile destroyers, Spruance class destroyers, and Los Angeles class attack submarines. The air wing’s aircraft are also described, along with three land based Naval aircraft that may be employed in support of a CVBG in littoral regions.

Ship and aircraft specific missions, as opposed to the overall mission descriptions listed in chapter one, are presented through written explanations linked to platforms, and are further explained visually by the linked mission maps that depict aircraft movement and stationing. The intent of this section is to provide sufficient written information in conjunction with visual information to allow a quick, but fairly complete, understanding of CVBG assets and employment. Many of the platform and weapon pages have linked



video clips to help in this regard. "Weapons" describes surface ship, submarine, and aircraft launched weapons, and can easily be entered from any page within this section of the ToolBook.

## **Chapter 5**

### **Conclusions**

The carrier battle group is a formidable force package that can rapidly deploy to any theater in support of US national objectives. This ToolBook is designed to inform the joint planner about the assets and capabilities of the CVBG, with the result being an optimum employment of a CVBG's capabilities in a joint environment. Visually interesting with numerous photographs, line drawings and video clips, the ToolBook provides an informative, entertaining and educational presentation on the Navy's carrier battle group.

## Appendix A

### Credits

The majority of the photographs incorporated into the ToolBook are official public affairs from the Department of Defense and Department of the Navy. Official USN photos were also obtained from the USS George Washington, USS Dwight D. Eisenhower, and the USS Inchon. Official photos with individual credit and personal photo contributions are listed below. Aircraft clipart came from Federal Clip Art © 1995 with courtesy from One Mile Up, Inc.

LCDR Dave Parsons	F-14 Overview, F-14 TARPS, AIM 7/9/54
MR Bob Lawson	F-14 Air Superiority
MR Bruce Tombecky	F-14 FAC(A)
LCDR K.R Johnson	C-2
LCDR G.M. Wilson	S-3Bs
LCDR C.F. Drummond	F-18 Strike, SH-60F, HARM, Jamming pods
LCDR S. Degozzaldi	VBSS
LT Hal Okey	SEAL, SAR, SEAL Insertion

## *Bibliography*

- Bearden, Bill. *The BlueJacket's Manual*. Annapolis: United States Naval Institute Press, 1990.
- Boorda, J.M. *Force 2001: A Program Guide to the U.S. Navy*. Washington DC: Deputy Chief of Naval Operations, 1995.
- Borik, Frank. "Sub Tzu & the Art of Submarine Warfare." *United States Naval Institute Proceedings* (Nov. 1995) : 64-69.
- Clancy, Tom. *Submarine*. New York: Berkley Publishing Group, 1993.
- Clinton, William. *A National Security Strategy of Engagement and Enlargement*. Washington DC: Government Printing Office, 1995.
- Hill, Richard. *Anti-Submarine Warfare*. Annapolis: Naval Institute Press, 1989.
- "Iran tests new Chinese missile." *Navy Times* (February 1996): 26.
- Jackson, Paul, ed. *Jane's All the World's Aircraft 1995-96*. Surrey, United Kingdom: Jane's Information Group Limited, 1995.
- Jane's Strategic Weapon Systems*. Surrey, United Kingdom: Jane's Information Group Limited, 1992.
- Kelso, Frank. *Naval Doctrine Publication 1: Naval Warfare*. Philadelphia: Navy Publications, 1994.
- Lennox, Duncan, and Arthur Rees, ed. *Jane's Air-launched Weapons*. Surrey, United Kingdom: Jane's Information Group Limited, 1992.
- Lewis, John, and Sue Litai. *China's Strategic Seapower*. Stanford: Stanford University Press, 1994.
- Linder, Bruce. "The Future of Joint ASW." *United States Naval Institute Proceedings* (September 1995): 66-70.
- Lum, Zachary. "US Navy's CEC Makes Successful Over-the-Horizon Intercepts." *Journal of Electronic Defense* (March 1996): 25.
- Mathews, Carey. "Anti-sub warfare calls for 2 Russian diesels." *Navy Times* (Feb. 1996): 33.
- Polmar, Norman. *The Ships and Aircraft of the U.S. Fleet* 14th ed. Annapolis: Naval Institute Press, 1987.
- Sams, Monroe. *The Joint Staff Officer's Guide*. Washington DC: Government Printing Office, 1993.
- Sartor, Doris. *Employment of Navy and Marine Forces*. Maxwell Air Force Base: Air University Press, 1994.
- Sharpe, Richard, ed. *Jane's Fighting Ships 1995*. Surrey, United Kingdom: Jane's Information Group Limited, 1995.
- Slade, Carole, William Giles Campbell, and Stephen Vaughan Ballou. *Form and Style*. Boston: Houghton Mifflin Company, 1994.

- Spick, Mike. *Modern Fighting Aircraft, Vol. VII*. New York: Bernard Fitzsimmons. ARCO Publishing Co., 1984.
- Suttie, Richard. *Reconstitution: A Strategic Policy Assessment With Case Application of the Maritime Patrol Force*. Alexandria, Virginia: Defense Technical Information Center, 1995.
- The Chicago Manual of Style*. 14<sup>th</sup> ed. Chicago: The University of Chicago Press, 1993.
- Wright, James. "Submarine Design for the Littorals." *United States Naval Institute Proceedings* (Dec. 1995): 39-41.