CHAPTER 6.5

Conventional Weapons Handling Procedures Afloat (CV and CVN)

6.5.1 General. This chapter provides information and promulgates standardized procedures that will facilitate safe, efficient handling of conventional aviation ordnance aboard CV and CVN class ships. This information, in conjunction with the individual ship's conventional ordnance safety and handling bill procedures and the CV Naval Air Training and Operating Procedures Standardization (NATOPS) manual, provides the direction necessary to establish a viable ordnance handling program.

6.5.2 Weapons Department Administrative and Operational Organization. The weapons department administrative and operational organizations are not standard and functional assignments may vary from ship to ship. The following charts are examples of typical CV and CVN Weapons Department Administrative and Operational Organization (see figure 6-5-1 and figure 6-5-2).

6.5.3 Responsibilities

6.5.3.1 Weapons Officer. The weapons officer is responsible to the commanding officer for the supervision, direction, proper requisitioning, safe procurement, handling, stowage, inventory accuracy, and issue of all ordnance and ammunition. Weapons officer duties, responsibilities, and authority are listed below:

a. Oversee the supervision of operation, care, and maintenance of the ship's armament magazines and ready service lockers.

b. Supervise and direct the procurement, handling, stowage, accounting, and issue of aviation ordnance, ammunition, and pyrotechnics.

c. Ensure periodic inspections of magazine sprinkler systems in accordance with NAVSHIPS 0348-077-1-1000 (NOTAL).

d. Maintain the physical security and integrity of magazines and ready service lockers, including the control of assigned keys.

e. Provide stowage for all ordnance and ammunition.

f. Ensure the training of all personnel assigned to the weapons department in the handling, stowage, characteristics, and safety precautions pertaining to all ordnance handled on board.

g. Provide required space for Explosive Ordnance Disposal (EOD) personnel, equipment, and publications and direct the EOD team when embarked.

h. Administer and monitor the Explosive Handling Personnel Qualification and Certification Program in accordance with OPNAVINST 8023.2C (NOTAL).

i. Perform such other duties as may be directed.

6.5.3.2 Planned Maintenance System and Maintenance Data System Coordinator. The planned maintenance system and maintenance data system coordinator is responsible to the weapons officer for the proper execution of the weapons department planned maintenance and data system program. His/her duties include:

a. Coordinate the efforts of the various divisions and work centers to achieve complete and accurate execution of the planned maintenance system and Maintenance and Material Management (3M) Programs.

b. Reduce and analyze 3M reports to provide meaningful information to the weapons officer regarding the maintenance efforts within the department.

c. Screen and control the issue of maintenance control numbers to the department and job control numbers for work requests.

d. Establish and conduct the department's planned maintenance system and 3M training program.

e. Maintain the department's master current ship's maintenance project.

f. Maintain the department's maintenance history report.

g. Maintain the department's work request discrepancy log.

h. Perform such other duties as may be assigned.

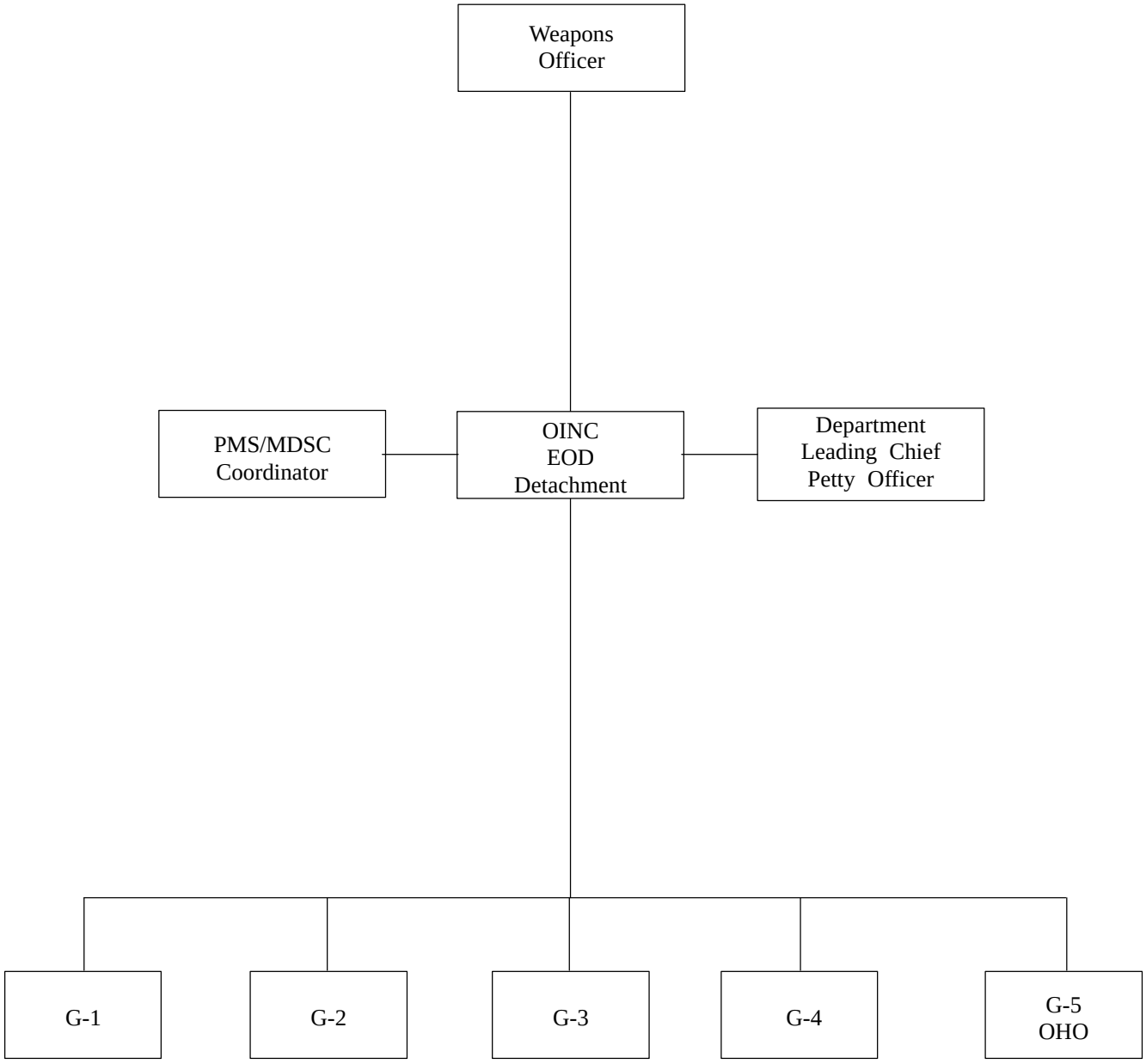

Figure 6-5-1. Typical CV/CVN Weapons Department Administrative Organization.

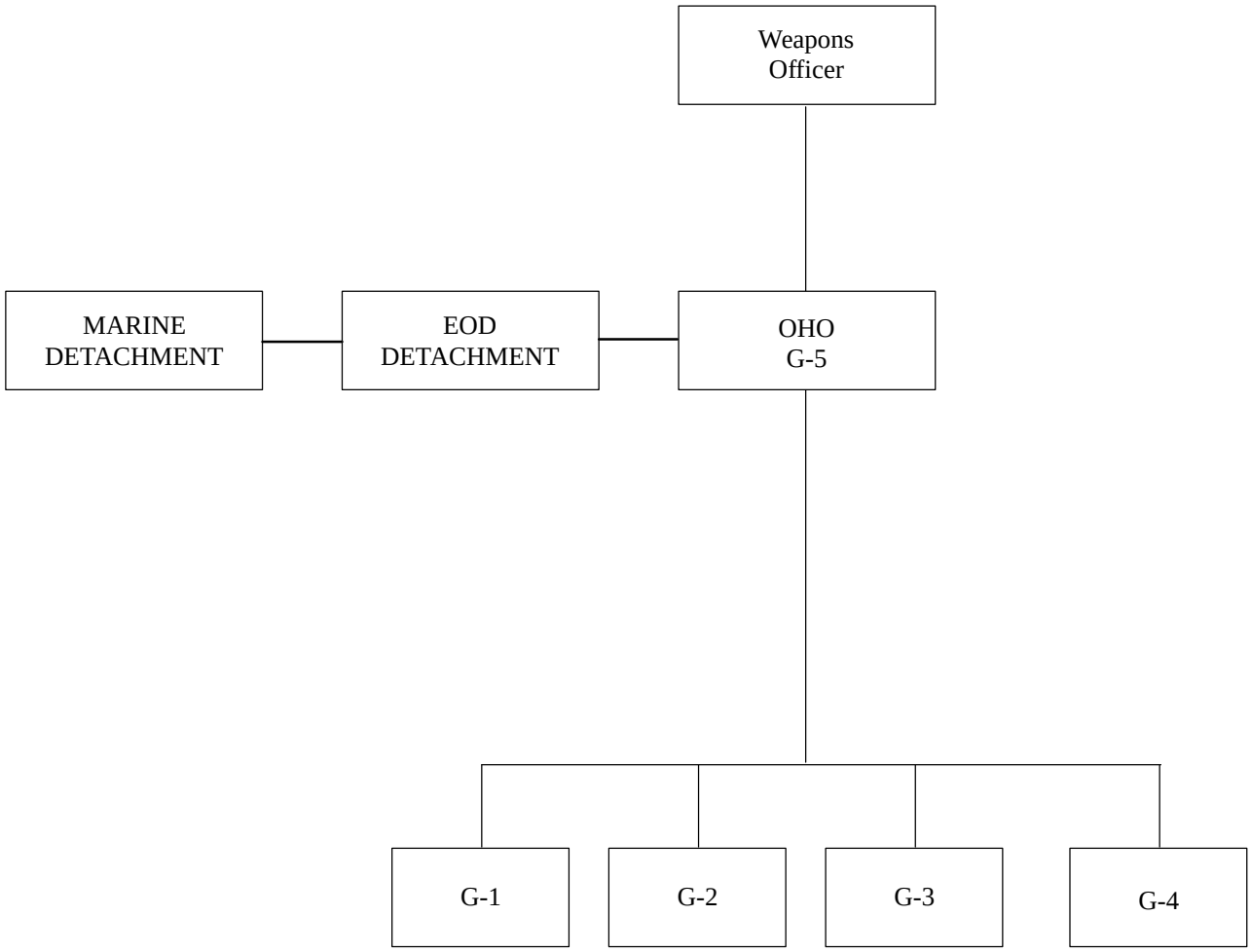

Figure 6-5-2. Typical CV/CVN Weapons Department Operational Organization.

6.5.3.3 EOD Officer. The EOD officer duties are outlined in chapter 6.1. To accomplish assigned tasks, the EOD officer shall ensure the following:

a. A training program is conducted for EOD personnel.

b. Prescribed safety precautions are observed.

c. Hazardous U.S. or foreign conventional ordnance are disposed of.

d. EOD personnel are qualified in accordance with current directives.

e. EOD personnel are properly stationed in flight deck control when flight operations involving live ordnance are in progress.

f. During general quarters and periods of ammunition handling and loading, the team is available to the ordnance handling officer.

g. Reports are submitted on all ordnance disposal or recovery operations.

h. All current publications concerning EOD and diving operations are on hand and are properly maintained.

i. The diving qualification expiration dates for EOD personnel are current.

j. Safe diving practices are followed and pertinent safety precautions are observed and posted.

k. The weapons officer, command duty officer, and the officer of the deck are notified upon commencement of diving operations.

l. The ship's chief engineer has the EOD divers at his disposal for screw, rudder, and hull inspection.

6.5.3.4 Ordnance Handling Officer (G-5 Division Officer). The ordnance handling officer is responsible for ensuring the efficient operation and maintenance of all magazines, sprinkler systems, bomb elevators, and associated handling equipment. Additionally, the ordnance handling officer is responsible for proper requisitioning, stowage, safe handling, assembly and disassembly, and issue of all conventional ordnance and explosives. The ordnance handling officer will normally:

a. Exercise operational control of all divisions within the weapons department through their respective division officers.

b. Coordinate and direct the movement of all ordnance in the ship including special weapons and bomb dearming units.

c. Ensure proper operating procedures and safety precautions are strictly followed in the assembly and movement of all conventional ordnance, including the arming and dearming of embarked aircraft.

d. Oversee the aviation ordnance divisions in the maintenance and security of magazines and ready service lockers.

e. Maintain liaison with the strike operations officer and the embarked air wing ordnance officer to ensure proper types and quantities of ordnance are available.

f. Ensure availability of training ordnance for shipboard and embarked airwing rearming drills.

g. Provide assistance, as may be required by the EOD officer, for rendering safe recovery and disposal of explosive ordnance which has been fired, dropped, or launched in such a manner as to constitute a hazard to operations, installations, personnel, or material.

h. Monitor the training program.

i. Exercise overall supervision of ammunition working parties and ensure all personnel have been instructed in pertinent safety precautions prior to conducting such evolutions.

j. Supervise the training of selected personnel to man the aviation weapons movement control station.

k. Notify the weapons officer of any ordnance casualty or other equipment failures which may reduce the department's effectiveness.

l. Frequently inspect assigned equipment to ensure compliance with operational, maintenance, and repair instructions. Review operational casualty reports.

m. Direct the requisitioning, safe handling, stowage, assembly, disassembly, maintenance, and issue of all conventional ordnance and components and ensure the proper records and reports are prepared, submitted, and maintained.

n. Ensure the Nonnuclear Explosive Ordnance Qualification and Certification Program is adhered to.

6.5.3.5 G-1 Division Officer (Air Gunner). The air gunner is responsible to the ordnance handling officer for the safe and efficient issue of ordnance and ammunition on the flight deck to embarked air wing ordnance personnel. The air gunner assists the CV ordnance officer to ensure the safe arming and dearming of embarked aircraft. Other duties of the air gunner are to:

a. Be responsible for the stowage and issue of pyrotechnics and ordnance and ammunition in all ready service lockers and staging areas. The air gunner will coordinate with the ordnance handling officer on the timely delivery of aviation ordnance to the embarked air wing in accordance with the ordnance load plan.

b. Ensure the security of assigned spaces.

c. Provides safety oversight for arming and dearming of embarked aircraft. Provide interface between the weapons department, air department, and air wing personnel.

d. Be responsible for posting cookoff times and observance of applicable safety precautions, operating instructions, and casualty procedures in assigned spaces.

e. Keep the ordnance handling officer informed of any conditions which might affect the safe and efficient operation of the department.

f. Ensure a dynamic, continuous aviation ordnance training program is in effect.

g. Ensure that an active Tool Control Program is in effect and that all equipment calibration and weight testing are accomplished.

h. Ensure accomplishment of the planned maintenance system.

i. Perform such other duties as may be assigned.

6.5.3.6 G-2 Division Officer (Ship's Gunner). The ship's gunner is responsible for the operation and maintenance of the magazines, magazine sprinkler systems, weapons elevators, and the ship's small arms. The ship's gunner will ensure periodic testing of magazine and weapons elevator sprinkler systems. The ship's gunner is responsible for stowing and safeguarding all assigned munitions, inspecting magazines, and maintaining proper logs.

6.5.3.7 G-3 Division Officer. The G-3 division officer is responsible for the stowage, breakout, assembly, and delivery to the hangar deck and is responsible for the movement, safe handling, and storage of all conventional ordnance, including air launched missiles, on the hangar deck. The G-3 division officer reports directly to the ordnance handling officer, and supervises the organizational maintenance on all munitions handling equipment, including electric forklifts. The G-3 division officer ensures all necessary intermediate maintenance (afloat) is performed on air launched missiles prior to packaging in containers. The responsibility of hangar deck ordnance movements and Armament Weapons Support Equipment Program (AWSEP) maintenance may be assigned to G-1 division at the discretion of the weapons officer. Ensure that an active Tool Control Program is in effect and that all equipment calibration and weight testing are accomplished. Ensure accomplishment of the planned maintenance system.

6.5.3.8 G-4 Division Officer. The G-4 division officer is responsible for the operation and maintenance of the ship's weapons elevators and the training and licensing of the elevator operators; pneumatic, electric, and manual overhead hoists; and the training and licensing of the elevator operators. Ensure that an active Tool Control Program is in effect and all equipment calibration and weight testing are accomplished. Ensure accomplishment of the planned maintenance system.

6.5.3.9 Weapons Department Leading Chief Petty Officer. The weapons department leading chief assists the weapons officer and acts in an advisory capacity for all matters pertinent to the welfare, job satisfaction, motivation, utilization, and training of weapons department enlisted personnel. The weapons department leading chief assigns section leaders, approves watch bills, and observes the work effort for all conventional ordnance evolutions.

6.5.4 Safety

6.5.4.1 It is difficult to cover every possible situation which may arise and which, unless properly handled, may have serious results. Carelessness, noncompliance with procedures, disorganization, uncalled for haste, ignorance, complacency, and lack of effective leadership are some of the most significant causes of ordnance accidents.

6.5.4.2 It has been said that ordnance safety precautions are written in blood. This is basically true, as most ordnance safety precautions now in existence have come about as the result of accidents in which men have been killed or injured. Printed precautions alone cannot prevent accidents. Safe operating procedures must be explained in detail by those who know to those who do not. Safety consciousness must be instilled by constant supervision, instruction, and training, for safety is both the result and reflection of good training, and the two are inseparable. The contents of NAVSEA OP 3347 (Ordnance Safety Precaution) (NOTAL) should be common knowledge to all personnel engaged in the handling of explosive devices.

6.5.5 Ordnance and Ammunition Requisitioning and Issue

6.5.5.1 All ordnance and ammunition necessary to support the ship's fill allowance, mission load, and air wing training requirements will be ordered by the weapons department. The weapons officer shall ensure timely submission of ordnance and ammunition requisitions to meet planned operations. The weapons officer shall submit requisitions as provided in the current revisions of NAVORDCENINST 8010.2A (NOTAL) and CINCPACFLTINST 8010.12 (NOTAL). All requisitions for conventional ordnance and ammunition, not to be filled from in-theater assets, shall be sent to the Ships Parts Control Center. Include the inventory manager as an information addressee in requisitions for non-fleet assets sent via naval message.

6.5.5.2 No ordnance and ammunition will be issued to embarked units without prior authorization of the ordnance handling officer. All ordnance and ammunition listed on the daily ordnance load plan shall be issued to support flight operations. Ordnance and ammunition not included on the load plan (cartridge actuated devices, small arms, etc.) will be issued in the following manner: the requisitioning squadron or department shall submit a standard DD form 1348, signed by the air wing ordnance officer, to the weapons department, indicating the type, naval ammunition logistics code, quantity, and desired issue time. Upon arrival, the ordnance and ammunition may be picked up at a designated delivery point, depending on the type and quantity of ordnance and ammunition. Personnel picking up the ordnance and ammunition shall be qualified and certified in accordance with applicable instructions and sign for the material delivered. The air wing commander will provide a listing of these certified personnel to the aviation weapons movement control station immediately upon embarkation of the air wing.

6.5.6 Ordnance and Ammunition Upload and Backload

6.5.6.1 General. The ordnance and ammunition necessary for supply and resupply of the ship's mission load and shipfill allowance is normally loaded or backloaded during underway periods. Therefore, a plan for the expeditious but safe accomplishment of the evolution is an absolute necessity to reduce alongside time. It is imperative that each individual involved know exactly what will be expected of him. An uploaded and backloaded plan will be published prior to each evolution. The plan (CV/CVN Notice 8023.1) will assign responsibilities and provide specific procedures or instructions to be followed during the upload or backload.

6.5.6.2 Air Launched Missile Presentencing. All air launched missiles and 8E cognizance materials must undergo a missile presentencing inspection prior to download for the purpose of determining those assets that require retest and recertification and those that are ready-for-issue to other activities. The inspection is performed under the cognizance of the Naval Air Warfare Center Weapons Division, Point Mugu, Fleet Weapons Support Team or by the off loading ships Intermediate Level personnel. The ship shall provide the following to assist in the inspection

a. DD 1348 shipping documents.

b. Serial numbers of all 8E cognizance material on board.

c. Identification by serial number of those missiles which have been used for ready service, or captive carried.

6.5.6.3 Packaging and Handling Team. Prior to download, all weapons must be palletized in fleet issue unit loads in accordance with applicable MIL-STD-1323 (WR54). Naval Weapons Handling Center Earle provides personnel to assist in this effort. The Naval Weapons Handling Center will provide the ship with the latest edition of MIL-STD-1323 (WR54) (NOTAL) and a list of required material (banding, wood, etc.) if provided with a list of weapons by type and quantity to be downloaded. The team's services can be requested by message to the applicable type commander.

6.5.6.4 Assignment of Responsibilities

6.5.6.4.1 Weapons Officer

a. Exercise overall responsibility for the execution of ammunition handling evolutions.

b. Keep the commanding officer, executive officer, and the officer of the deck informed regarding programs and estimated time of completion of the evolution.

6.5.6.4.2 Ordnance Handling Officer

a. Supervise the evolution under the direction of the weapons officer.

b. Inform the officer of the deck or the navigator when the weapons department is manned and ready for underway replenishment or Vertical Replenishment (VERTREP) of ammunition.

c. Ensure that safety precautions are promulgated and that all personnel involved are properly indoctrinated.

d. Ensure proper stowage of all ammunition.

e. Ensure proper accounting and reporting.

f. Direct the movement of ammunition.

6.5.6.4.3 Air Officer

a. Ensure required aircraft elevators are manned.

b. Ensure conflagration stations are manned.

c. Ensure twin-agent units and MB-5 fire truck are manned.

d. Ensure flight and hangar decks are properly spotted in accordance with the onload or offload plan.

e. Provide landing signal personnel for VERTREP.

f. Ensure primary flight control is manned.

g. Conduct VERTREP.

h. Provide the aviation weapons movement control station and officer of the deck with an up-to-date VERTREP count.

6.5.6.4.4 Navigator

a. Ensure the officer of the deck is briefed not to conduct any drills during ordnance handling evolution.

b. Keep the ordnance handling officer advised of any adverse weather conditions.

6.5.6.4.5 Safety Officer. Ensure adequate safety observers are available.

6.5.6.4.6 Aircraft Intermediate Maintenance Department Officer

a. Ensure all available forklifts are ready for use and certified for explosive handling in accordance with NAVSEA OP 4098.

b. Ensure qualified forklift maintenance personnel are available.

c. Ensure qualified forklift operators are available.

6.5.6.4.7 Supply Officer

a. Provide refreshments during evolution.

b. Provide box lunches as required.

6.5.6.4.8 Chief Engineer

a. Ensure pump rooms and aqueous film forming foam stations are manned as applicable.

b. Provide support and maintenance personnel for weapons elevators and communication systems.

c. Ensure that the ship has no more than a 3 degree list and that no unauthorized hot work is in progress during the evolution.

6.5.6.4.9 Medical Officer

a. Provide corpsmen as per load plan.

b. Ensure ship's dispensary is prepared to receive possible casualties.

6.5.6.4.10 Deck Officer

a. Ensure preparation and manning of convention replenishment stations for ammunition transfer.

b. Provide weapons department and the officer of the deck updated with transfer lift count.

6.5.6.4.11 Marine Detachment

a. Provide security personnel during evolution.

b. Provide working party personnel in accordance with load plan.

6.5.6.4.12 Officer of the Deck. When notified by the ordnance handling officer, set emission control conditions, smoking condition, and ensure bravo flag is hoisted.

6.5.6.4.13 Air Wing Commander. Provide squadron augmentee personnel as required

6.5.6.4.14 Chief Master-at-Arms. Provide master-at-arms as required.

6.5.6.4.15 EOD Officer. Ensure EOD personnel are properly positioned during entire evolution.

6.5.7 Aviation Weapons Movement Control Station or Aviation Ordnance Control Station. The aviation weapons movement control station, usually called "ordnance control," provides the centrally located control station and communication network necessary to coordinate and control all weapons movement on the carrier. The control station is manned by a select cadre of ordnance personnel under the supervision of the ordnance handling officer. The aviation weapons movement control station is the only location within the weapons department that has direct communication with damage control central, bridge strike operations, flight deck control, EOD, primary magazines and all ammunition transfer and staging areas. Additional functions of the aviation weapons movement control station are as follows:

a. Acts as primary contact point for emergencies involving explosive ordnance.

b. Maintains an accurate and current log of all significant events.

c. Maintains the location of all ordnance outside of magazines.

d. Maintains accurate records of breakout of ordnance in support of the daily ordnance load plan including any changes.

e. Monitors the issue and receipt of all ordnance and expenditures.

f. Distributes the daily air ordnance plan to departmental personnel.

g. Monitors and keeps cognizant personnel advised of any out-of-the ordinary occurrences, changes to load plan, accidents, incidents, system malfunctions, magazine floodings, high temperature alarms, etc.

6.5.8 Improved Rearming Rate System

6.5.8.1 As more complex aircraft with greater combat capabilities are developed, the ship's task in support of these aircraft becomes more demanding. The Improved Rearming Rate System (IRRS) was initiated to maximize the full capability of the carrier-based aircraft. It also improves airborne weapons handling and stowage capability throughout the logistic sequence, increases the survivability of an aircraft carrier in a combat environment by maximizing the amount of ordnance handled inside the protective armored envelope, and increases the volume of ordnance available for loading onto strike aircraft.

6.5.8.2 Objectives of the IRRS are to:

a. Optimize support equipment quantities and capabilities.

b. Optimize airborne weapons strikedown and strikeup.

c. Optimize methodology training for weapons personnel.

d. Minimize sortie recycle time.

e. Minimize alongside time during replenishment.

f. Enhance the efficiency of the carrier's conventional aviation ordnance evolution through advanced hardware design.

g. Minimize ordnance personnel peak demand.

6.5.8.3 Key Elements of the IRRS

6.5.8.3.1 The key elements of the IRRS are organizational structure, communications, load plans, support equipment, support spaces, elevators, assembly evolutions, ordnance flow routes, and the single hoist ordnance loading system.

6.5.8.3.2 To ease the burden and reduce the dangers of handling ordnance, many special items of handling equipment have been designed. This equipment is generally painted yellow (except for strongbacks, lifters, and some hoists). The gear includes fork trucks, pallet jacks, hoists, weapon skids, and skid adapters. Much of this equipment comes under the armament weapons support equipment program as discussed in volume II section 8.

6.5.8.4 System Support Equipment

6.5.8.4.1 Weapons carriers provide a quick means of attaching ordnance to a hoisting device. Using overhead rails, items can be moved from one area to another. In bomb assembly, they are used to lift the bombs from pallets to the bomb assembly stand and from the stand to a skid.

6.5.8.4.2 Bomb Assembly Stand A/F32K-1/1A has four trays on top of rollers. The rollers under each tray permit a 360-degree rotation of the bomb. The stand places the weapon at the optimum personnel work height and the individual sections collapse for ease of stowage. The stand supports bombs and other weapons during buildup to provide assembly line efficiency with reduced personnel fatigue.

6.5.8.4.3 The AERO 21 weapon skid is the main weapons support equipment item (along with its various adapters) used in carrier aviation ordnance support.

6.5.8.4.4 The AERO 12/C bomb skid, with adapters, provides a means of transporting ordnance in the assembly area and on the hangar and flight decks.

6.5.8.5 Storage and Handling Areas. Storage and handling areas are those spaces used in aviation ordnance evolutions. The key areas related to IRRS are magazines, assembly areas, staging and transfer areas, and other support areas.

a. Ready Service Magazines, Lockers, and Inert Stowage Spaces. Magazines, lockers, and stowage spaces are conveniently located spaces above the waterline used to stow a small amount of ready-for-issue ordnance items, including missiles.

6.5.8.5.1 Magazines. The term magazine, in reference to the storage of ordnance and ammunition aboard ship, means any compartment or locker which is used for the

storage of explosives or munitions pyrotechnics of any kind. Magazines are designed by the Naval Sea Systems Command (COMNAVSEASYSCOM). Specific design considerations are given to individual weapons peculiarities and the total explosive content of the weapons to be stowed. Types of weapons to be stowed in each class of naval vessel are determined by Chief of Naval Operations and are largely influenced by type commander and fleet commander in chief (threat scenario) inputs. When the quantity and type of weapons are determined, the Chief of Naval Operations directs COMNAVSEASYSCOM to produce a ship's technical manual for shipboard stowage and handling of airborne weapons. Concurrently, the Naval Inventory Control Point is tasked with producing a "COMNAVSEASYSCOM Shipfill and Mission Load Listing" for the individual ship involved. NAVSEA OP 4 is the weapons department authority regarding the handling and stowage of ammunition afloat (figure 6-5-3). The COMNAVSEASYSCOM magazine arrangement planning aide assists the weapons departments in determining the exact quantities of weapons that can be stowed in any particular magazine. NAVSEA OP 3347 gives the safety regulations governing weapons handling evolutions. Magazines onboard aircraft carriers are of two basic types: primary and ready service.

a. Primary Magazines. Primary (sometimes referred to as "deep stow" magazines) are designed to accommodate the ship's complete allowance of ammunition. They are located below the main deck and below the waterline within the armored envelope. They are equipped with high temperature alarms, flooding alarms, and automatic salt water sprinkler systems and have the capability of being securely locked.

b. Ready Service Magazines, Lockers, and Inert Stowage Spaces. Magazines, Lockers, and stowage spaces are conveniently located spaces above the water• line used to stow a small amount of ready• for• issue ordnance items, including missiles.

6.5.8.5.2 Assembly Areas. Assembly areas are controlled spaces below deck that are designated for assembly of conventional weapons. It is common on most aircraft carriers to have two assembly areas, one in the forward section of the ship and one in the aft section of the ship. The areas are located on the fourth or fifth deck, depending on the class of the carrier. The assembly area can also be used to load Multiple Ejector Racks (MER) or Triple Ejector Racks (TER). The mess deck can also be used as an alternate assembly area.

6.5.8.5.3 Staging and Transfer Areas. These are areas in which ordnance is temporarily accumulated or is transit. The transfer area will usually afford the safest and quickest route of travel from buildup to staging areas. Staging areas (flight deck, hangar deck, sponsors) are used to stow a ready supply of complete assembled weapons which is readily available to the air wing for loading. All weapons in staging areas shall:

a. Be on mobile trucks or skids.

b. Be convenient to jettison ramps.

c. Have two clear access routes covered by sprinkler systems or manned fire hoses.

d. Be located as far as practical from fueling stations and liquid oxygen carts.

e. Be manned and have provisions for physically securing the weapons.

6.5.8.6 Weapons Elevators. Weapons elevators are the "backbone" of the aircraft carrier's weapons handling system. They provide the means to vertically transfer weapons from the magazines to the required deck. All elevators are classified as either upper or lower stage. Upper stage elevators operate between the second deck and the main or flight deck. Lower stage elevators operate below the main deck. Elevator systems vary depending on the class of the carrier. Specific guidelines can be found in the particular carrier's operating instructions.

6.5.8.7 Preloading MERs and TERs. The techniques and hardware necessary to preload MERs and TERs were developed under IRRS to increase deliverable weapons tonnage and reduce aircraft rearming time. As a result, a more efficient and safer aircraft loading procedure has evolved which requires fewer personnel and less equipment on the flight deck. IRRS establishes a MER and TER preloading area below the deck where assembled bomb-type weapons, prepositioned on a skid, are attached to the MERs and TERs. The entire assembly (rack and weapons) is then transferred to the flight deck for loading onto embarked aircraft. Prior to IRRS, MERs and TERs remained on the aircraft and were manually loaded one by one.

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Figure 6-5-3. General Regulations for Ammunition

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4.	Return Of Ammunition Through Explosive Anchorages	6-23

Records and Reports

1.	Record of Ammunition Components	7-3
2.	Ammunition Data Card	7-4
3.	Magazine Temperature Log	7-5
4.	Special Reports	

Figure 6-5-3. General Regulations for Ammunition (Cont'd)

6.5.8.8 General Evolutions and Flow. Airborne weapons handling evolutions introduce a degree of risk in carrier operations that requires careful planning and preparation. The necessity to train for and to conduct combat operations requires the acceptance of certain risks which cannot be avoided in the handling of ordnance on board CVs and CVNs. The flow of weapons from or to magazines, assembly areas, and staging areas must be timely and safe.

6.5.8.8.1 Breakout. Breakout involves the physical removal of ammunition from magazines. Breakout is accomplished by various means, such as palletized loads using forklifts and low lift pallet trucks. Containerized weapons are decanned utilizing overhead hoists, and weapon components are broken out manually (i.e., fuzes, booster, fins, pyrotechnics, etc.). Weapons are broken out under the direction of the ordnance handling officer in accordance with the daily load plan. The breakout crew records type, quantity, and lot number and passes the information to the aviation weapons movement control station.

6.5.8.8.2 Assembly. Assembly takes place in one of the designated bomb assembly areas. Components broken out from stowage are assembled by the bomb assembly crew which is under the direction of the G-3 division officer. The assembled weapons are placed on weapons skids and transferred by weapons department personnel to the staging area.

6.5.8.8.3 Aircraft Loading. This is accomplished by air wing ordnance personnel in accordance with applicable directives and is the end product of the IRRS. The ordnance that may be carried varies with the performance and structural design of the aircraft and the characteristics of the ordnance items.

6.5.8.9 IRRS Rates

6.5.8.9.1 Strikeup Rate. The time frame goal for the transportation of weapons from the magazine to the hangar or flight deck is 49 tons in 22 minutes. This goal is being achieved on CV-59 and newer ships. On the older carriers, the rate is 40 tons in 30 minutes.

6.5.8.9.2 Strikedown Rates. The time frame goal for transportation of weapons, staged on the flight and hangar deck, to the magazines is 200 tons per hour. This goal is achievable on CV-59 and newer ships.

6.5.8.9.3 Alongside Time. The alongside times for initial and resupply evaluations has been reduced by approximately 60 percent. Initial supply time has dropped from 32 hours to 10 hours and resupply times has been reduced from 10 hours to 4 hours.

6.5.9 Aircraft Loading, Arming, Dearming, Rearming, and Downloading

6.5.9.1 Weapons handling evolutions in support of and by the embarked air wing introduce an ever increasing degree of risk in carrier operations. To minimize the degree of risk involved, standardized procedures as set forth in the CV/CVN NATOPS manual and the applicable Naval Air Systems Command (COMNAVAIRSYSCOM) conventional weapons loading manuals and checklists shall be followed. These publications provide the best available operating instructions for most circumstances; however, no manual is a substitute for sound judgment and effective supervision. It is incumbent on all personnel to stop any ordnance handling evolution which appears to be unsafe and to report the circumstances to any ship or air wing officer immediately.

6.5.9.2 Responsibilities

6.5.9.2.1 The air officer shall ensure that:

a. All hangar deck conflagration stations are manned.

b. There are clear access routes to weapons elevators. If flight deck weapons elevators are inaccessible, provide for an aircraft elevator as an alternate.

c. Recommendations are made pertaining to recovery of aircraft with hung ordnance in accordance with the CV/CVN NATOPS manual (see figure 9-5-4). Announcements of hung or unexpended ordnance are passed to flight deck personnel.

d. Clear dearming areas are available during recovery of forward firing ordnance.

e. Proper fire stations and equipment are manned.

6.5.9.2.2 The weapons officer shall ensure that:

a. There is a breakout of the proper types and quantities of ordnance to fulfill the requirement set forth in the conventional ordnance load plan.

b. Ordnance is assembled into approved, complete configurations, except for final fuzing and arming and thorough quality control checks are completed prior to leaving assembly area.

c. Proper hazards of electromagnetic radiation to ordnance conditions are set prior to moving aircraft ordnance into susceptible areas.

d. Delivery of aircraft ordnance is made to the loading or ready ordnance staging areas.

e. Qualified supervision is provided for all loading, arming, dearming downloading or rearming and that strict compliance with safety instructions is enforced.

f. Qualified EOD personnel are available.

g. A flight deck crew is maintained to receive weapons on the flight deck for issue to squadron personnel and to act as ship's ordnance safety observers with appropriate authority.

h. Recommendations are made pertaining to the recovery of aircraft with hung ordnance, as delineated in the CV/CVN NATOPS manual.

i. All ordnance asset and expenditure reports are prepared and submitted in a timely manner.

6.5.9.2.3 The aircraft intermediate maintenance department officer shall ensure properly trained test and check out crews are provided for recycling MERs and TERs in support of the IRRS.

6.5.9.2.4 The air wing commander shall ensure:

a. That air wing personnel are properly trained and adhere to the ship's ordnance safety requirements.

b. Through squadron ordnance officers, that assigned aircraft are properly configured to receive ordnance, and are loaded, in accordance with the conventional ordnance load plan, utilizing the aircraft's COMNAVAIRSYSCOM weapons loading manual and checklist.

c. That all aircraft loading, downloading, arming, and dearming evolutions are properly supervised.

d. That the integrated arming and dearming teams are available and properly trained.

6.5.9.3 Aircraft Loading and Downloading

6.5.9.3.1 The preferred method of loading and downloading weapons is through the use of the single hoist ordnance loading system, which consists of the HLU-196 bomb hoist unit, various adapters, and stores trolleys. Each individual loading checklist contains the single hoist ordnance loading system equipment requirements. This system eliminates the excessive amount of manpower required when utilizing the manual loading and downloading method. Additionally, it reduces personnel fatigue and potential injury factors.

6.5.9.3.2 Air wing ordnance personnel, utilizing the COMNAVAIRSYSCOM release and control checklist for the applicable aircraft, shall verify the condition of the aircraft's weapon system prior to loading weapons.

6.5.9.3.3 Aircraft loading and downloading is accomplished by air wing ordnance personnel in accordance with the appropriate COMNAVAIRSYSCOM conventional weapons loading manual and checklist. The procedures outlined in these publications are mandatory and ensure safe, effective ordnance evolutions. Each task follows a set sequence of events which complements and supports the total evolution. Safety and reliability are key elements in all loading procedures.

6.5.9.4 Aircraft Arming and Dearming

6.5.9.4.1 In most instances, aircraft carriers employ the use of an air wing integrated arming and dearming team. This team is comprised of a safety supervisor or team leader and two arming and dearming personnel. There is usually one team assigned to each catapult. The teams are highly trained, qualified, and certified personnel drawn from the embarked squadrons. The air wing ordnance officer directs their efforts and is responsible for their training.

6.5.9.4.2 Arming and dearming shall be conducted in the approved areas in accordance with the procedures outlined in the loading checklist utilizing the hand signals contained in the CV/CVN NATOPS manual and figure 6-1-1 of this instruction.

6.5.9.4.3 Under no circumstances shall unauthorized personnel participate in the arming or dearming of aircraft. When an aircraft returns from its flight, or the flight is cancelled, the aircraft shall be downloaded as soon as possible unless it is scheduled to fly on the next launch or is placed in an alert status.

6.5.9.5 General and Specific Safety Precautions. Safety precautions, warnings, and notices are contained in the CV/CVN NATOPS manual, loading manuals, checklists, and the ship's 8020.1 instructions. Figure 6-5-5 is a checklist of flight and hangar deck aircraft ordnance handling procedures.

6.5.9.6 Weapons Cookoff. Explosives handled on the flight or hangar decks are subjected to an environment of hot jet or starting unit exhausts and the ever present possibility of a fuel or aircraft fire. Catastrophic consequences can and have resulted from the prolonged exposure of ordnance to extreme temperatures. Therefore, it is incumbent upon all hands to ensure that hot exhausts are not permitted to impinge upon explosive items. Figures 6-5-6 through 6-5-8 provide cookoff times for ammunition normally handled on board the carrier.

Weapon	Hangar Deck		Recovery (8)	
	Load	Strikedown/ Download	Unexpended	Hung
General Purpose Bombs/Guided Bomb Units	YES (1) (6)	YES (7)	YES (2)	YES (2)
DST (all series)	YES (5)	YES (7)	YES (2)	YES (2)
MK 77 Fire Bomb (all series)	NO	NO	NO	NO
2.75/5.00-inch Rocket Launchers (all series)	NO	NO (3)	YES	YES
Aircraft Parachute Flare (MK 45)	NO	NO	NO	NO
Aircraft Parachute Flare (LUU-2B/B)	YES (12)	YES (12)	YES (12)	YES (12)
Tube Loaded Flare Dispenser (loaded with MK 45 Flare)	NO	NO	YES	YES
Tube Loaded Flare Dispenser (loaded with LUU-2 B/B)	YES (12)	YES (12)	YES (12)	YES (12)
20-MM Guns(8) (13)	YES	YES (8) (13)	YES	YES
ROCKEYE II	YES (6)	YES (7)	YES	YES
AMRAAM (all series)	NO (3) (4) (5)	YES (6)	YES	YES
SIDEWINDER (all series)	NO (5)	YES	YES	YES
SPARROW III (all series)	NO (5) (6)	YES (7)	YES	YES
WALLEYE Weapon (all series)	YES (6)	YES (7)	YES	YES
PHOENIX AIM-54 (all series)	NO (5)	YES (7)	YES	YES
MAVERICK (all series)	NO (4)	YES	YES	YES
HARPOON AGM-84/SLAM AGM-84E/SLAM ER AGM-84H	NO (5) (6)	YES (7)	YES	YES
Decoy Flare (all series)	NO	NO	YES	YES
Mines (all series)	YES (6)	YES (7)	YES	YES
Torpedoes (all series)	YES (6)	YES (7)	YES	YES
SUS Charge MK 64	YES	YES	YES	YES
Photoflash Cartridges	NO	NO	YES	YES
Marine Marker (all series)	YES	YES	YES	YES
Practice Bombs (all series)	YES (6)	YES (7)	YES	YES
JAU-1B and JAU-22/B	YES	YES (10) (11)	YES	YES
JSOW AGM-154 (all series)	YES(6)	YES(7)	YES	YES
25-MM Gun GAU-12	YES	YES (13)	YES	YES
Chaff (w/Cartridge)	YES	YES	YES	YES
PENGUIN AGM-119B	NO	NO	YES	YES

Figure 6-5-4. Weapons Loading/Strikedown/Downloading and Recovery Guide

Notes

1. No mechanical nose fuzes shall be installed on the hangar deck.
2. Arming wires and safety clips intact.
3. Authorization to perform a maintenance action is listed on this figure.
4. CVs with centerline elevators may lower aircraft to hangar deck only if downloading on the flight deck will delay the launch. Hangar deck downloading shall be performed immediately after the aircraft is in spot and tied down.
5. Air launched missiles shall not normally be loaded on the hangar deck except when operational commitments so dictate. Commanding officers may authorize loading of missiles on the hangar deck only up to the point of mechanical attachment of the weapon to the launcher and rack in accordance with the procedures prescribed in the appropriate COMNAVAIRSYSCOM weapons and stores loading checklists/stores reliability cards.
6. Ejector cartridges shall not be installed on the hangar deck. Installation of ejector or jettison cartridges in the BRU-9/10/11/32 ejector bomb rack is authorized provided the rack is electrically disconnected, and either the mechanical safety pin is installed or the inflight operable bomb rack lock mechanism is locked.
7. In the event of strikedown of a loaded aircraft to the hangar deck, the nose fuzes (as applicable) and ejector or jettison cartridges shall be removed immediately after the aircraft is in spot and tied down. Ejector or jettison cartridges may remain in the BRU-9/10/11 ejector bomb rack provided the rack is electrically disconnected, and either the mechanical safety pin is installed or the inflight operable bomb rack lock mechanism is locked.
8. The M61A1 gun ammunition is exempt from downloading requirements for up aircraft temporarily spotted in the hangar decks and aircraft undergoing limited maintenance, that is, turnaround maintenance, providing compliance with all gun dearming procedures of the airborne weapons and stores loading manual, associated checklists, and stores reliability card have been accomplished.
9. Guidance provided in this figure is subject to individual aircraft tactical manual limitations.
10. Maintenance on loaded aircraft applies.
11. Sonobuoy chutes shall be downloaded immediately after aircraft is in spot and tied down.
12. Impulse cartridges must be removed from LUU-2 and dispenser with LUU-2.
13. Strikedown/download of aircraft with jammed 20-MM/25-MM guns and gun pods is prohibited.

Figure 6-5-4. Weapons Loading/Strikedown/Downloading and Recovery Guide (Cont'd)

6.5.10 Ammunition Transaction Reporting. Timely and accurate reporting of all ammunition transactions into the Conventional Ammunition Integrated Management System (CAIMS) is the responsibility of each reporting activity. All CAIMS users have an obligation to pursue apparent errors in the CAIMS data base and ensure their reconciliation. Detailed information regarding the implementation and operation of this system is contained in the implementing directive, OPNAVINST 8015.2 (NOTAL) and NAVORDCENINST 8010.2A (NOTAL) Questions relating to NAVICP fleet reporting should be referred to the NAVORDCEN IMSD Mechanicsburg PA.

Reference: CV NATOPS

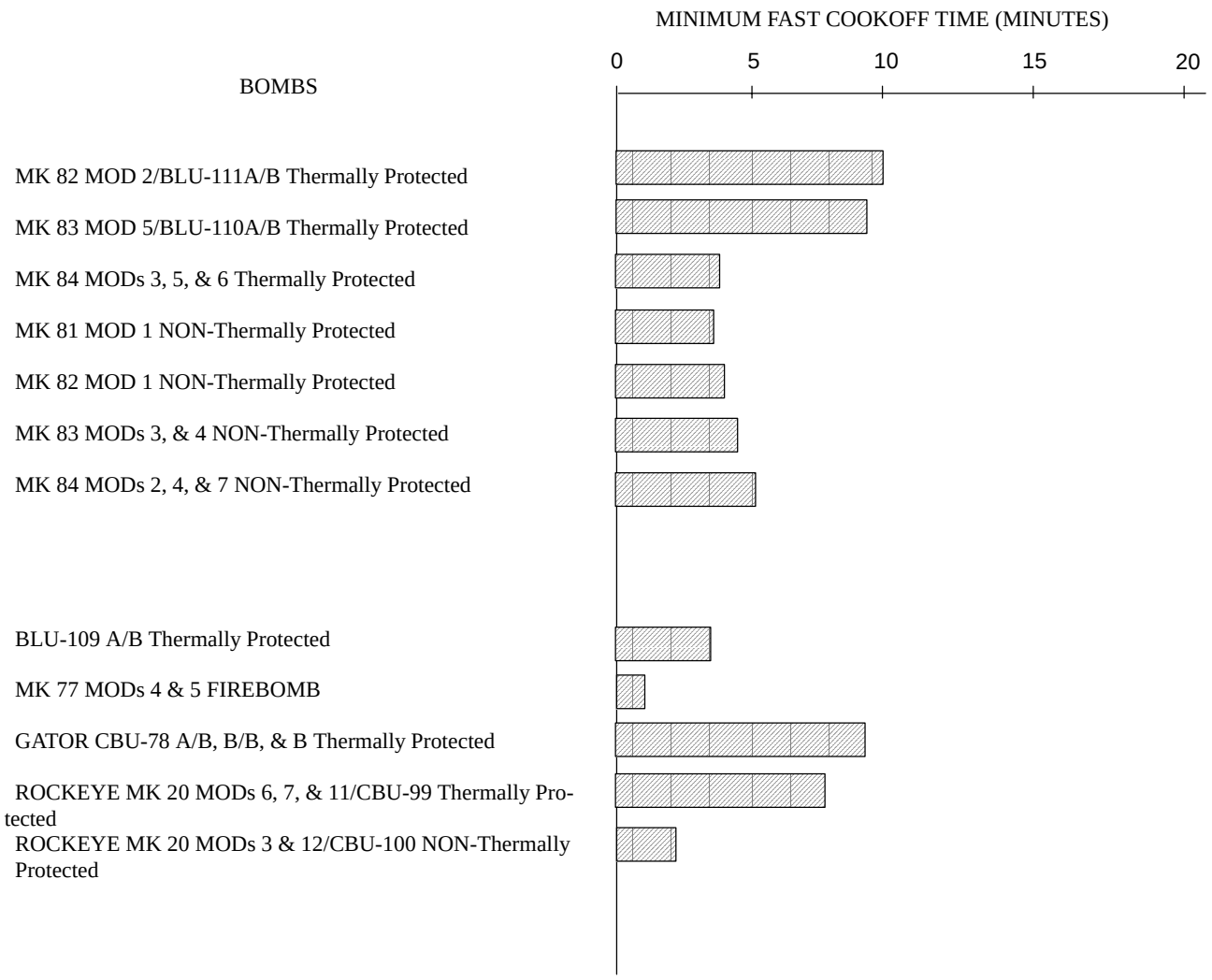
Item		Page
1.	Strike operations shall prepare the ordnance load plan. No changes authorized unless approved by strike operations officer.	2-2
2.	Authorized flight deck clothing and proper markings.	2-3
3.	Standard signal wands for arming and dearming for supervisor and crew.	2-4
4.	Air wing ordnance officer or designated representative shall visually inspect each ordnance loaded aircraft.	4-1
5.	Hot exhaust from aircraft or aircraft starting units a hazard to weapons.	4-2
6.	Aircraft carrying ordnance arming procedures.	4-5
7.	All weapons dearmed prior to push-back on catapult.	4-8
8.	EOD representative immediately available at flight deck level during launch and recovery of ordnance loaded aircraft.	5-21
9.	EOD officer, air gunner and air wing weapons officer equipped with SRC-22 (or equivalent) radio.	5-21
10.	Emergency drills during ordnance handling evolutions.	6-6
11.	Fire fighting equipment during ordnance handling evolutions.	6-7
12.	Electrical power applied during aircraft loading and downloading.	6-7
13.	Announced drills during ammunition replenishment.	6-7
14.	Ordnance jettison ramps exercised daily prior to flight.	6-8
15.	Aircraft elevators may be used to supplement weapons elevators.	6-8
16.	Simultaneous fueling and loading of aircraft.	6-8
17.	Loaded aircraft on hangar deck.	6-8
18.	Mechanical latching of ordnance to aircraft racks and launchers prior to starting engines.	6-9
19.	Inert ordnance shall be treated as live.	6-9
20.	Pilot notify ship at Marshal and when calling “Ball” of hung or unexpended weapons except for those routinely received aboard, i.e., air-to-air missiles.	6-9

Figure 6-5-5. Flight and Hangar Deck Safety Checklist

Reference: CV NATOPS (Cont'd)

Item		Page
21.	Air officer to announce over 5 MC of hung or unexpended ordnance returning aboard.	6-9
22.	Dearming or downloading of returned hung or unexpended ordnance.	6-9
23.	Maintenance on loaded aircraft.	6-9
24.	Ejector cartridges on bomb racks on the hangar deck.	6-10
25.	Operations officer responsible for setting HERO.	3-3
26.	Weapons staging area requirements for jettison, access and fire fighting.	6-7
27.	Catapult slot seals in place on bow cats during recovery.	5-20
28.	Area immediately ahead and behind aircraft clear during arming.	6-1

Figure 6-5-5. Flight and Hangar Deck Safety Checklist (Cont'd)



WARNING

ENSURE THAT AFFF IS CONTINUOUSLY APPLIED TO ALL WEAPONS EXPOSED TO FIRE. WATER HOSE LINES SHOULD NOT BE USED FOR ORDNANCE COOLING UNTIL AFTER THE FIRE IS EXTINGUISHED. THE USE OF WATER FOR ORDNANCE COOLING MAY DELAY EXTINGUISHMENT BY DILUTING OR WASHING AWAY THE AFFF BLANKET. POSTFIRE ORDNANCE COOLING (AFFF OR WATER) SHALL CONTINUE FOR A MINIMUM OF 15 MINUTES TO ALLOW THE WEAPONS CASES TO RETURN TO SAFE AMBIENT TEMPERATURES. POST AIRCRAFT FIRE OVERHAUL/SALVAGE EVENTS SHALL NOT BEGIN UNTIL ALL WEAPONS HAVE BEEN DETERMINED SAFE OR REMOVED BY EXPLOSIVE ORDNANCE PERSONNEL.

WEAPONS WITH SUBMUNITIONS (I.E. ROCKEYE, GATOR, TOMAHAWK BGM-109D, AND APAM), WHEN EXPOSED TO FIRE, DISBURSE UNREACTED BOMBLETS/MINES TO DISTANCES GREATER THAN 1/4 MILE. LOOSE BOMBLETS/MINES MAY BE ARMED AND ARE EXTREMELY DANGEROUS AND SHOULD BE DISPOSED OF BY EOD PERSONNEL ONLY.

Figure 6-5-6. Bomb Cookoff Time Summary

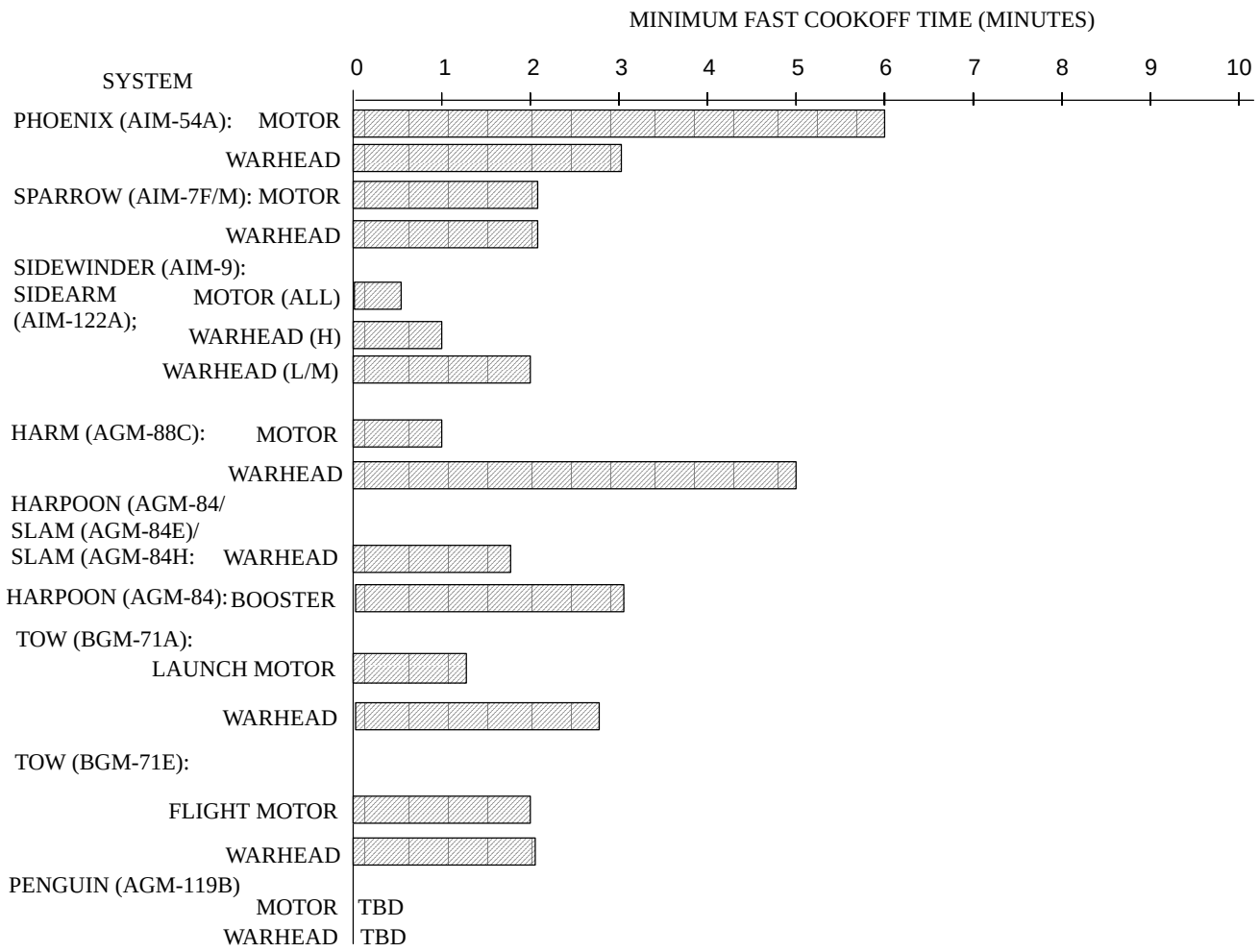


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Figure 6-5-7. Air Launched Missile Cookoff Time Summary

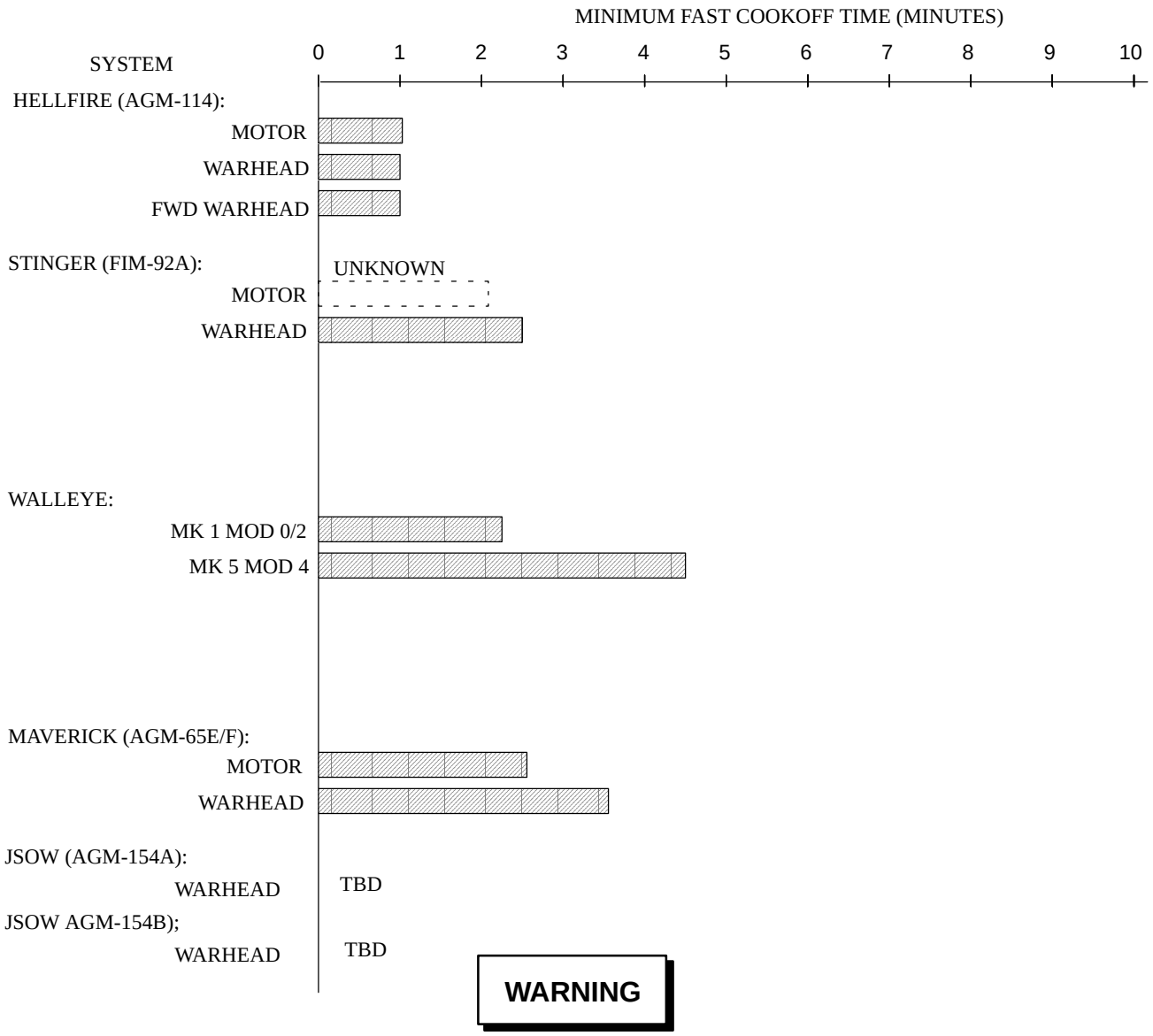

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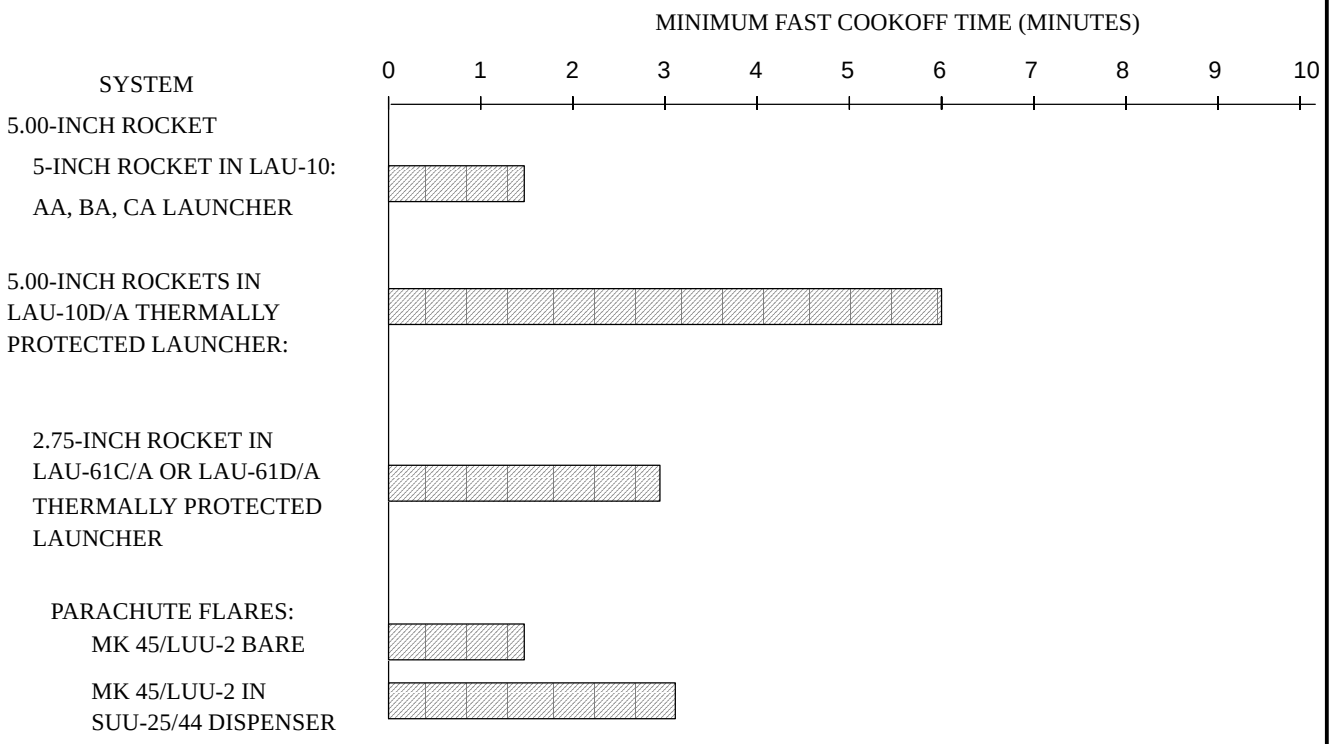
Figure 6-5-7. Air Launched Missile Cookoff Time Summary (Cont'd)



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WEAPONS WITH SUBMUNITIONS (I.E. ROCKEYE, GATOR, TOMAHAWK BGM-109D, AND APAM), WHEN EXPOSED TO FIRE, DISBURSE UNREACTED BOMBLETS/MINES TO DISTANCES GREATER THAN 1/4 MILE. LOOSE BOMBLETS/MINES MAY BE ARMED AND ARE EXTREMELY DANGEROUS AND SHOULD BE DISPOSED OF BY EOD PERSONNEL ONLY.

Figure 6-5-8. Rocket Cookoff Time Summary