United States General Accounting Office

GAO

Report to the Ranking Minority Member, Subcommittee on Readiness and Management Support, Committee on Armed Services, U.S. Senate

July 2001

MILITARY READINESS

Management of Naval Aviation Training Munitions Can Be Improved

GAO-01-840

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Accountability * Integrity * Reliability

United States General Accounting Office
Washington, DC 20548

July 27, 2001

The Honorable James Inhofe
Ranking Minority Member
Subcommittee on Readiness and Management Support
Committee on Armed Services
United States Senate

Over the past several years senior Navy officials have testified before Congress about the effects of shortages in training resource on the readiness of aviation units. At your request, we examined one of these resources—ordnance[1] for air-to-ground training—to assess the potential for enhancing Navy and Marine Corps tactical aviation[2] unit readiness by improving training ordnance management. This report analyzes (1) shortages in air-to-ground training ordnance required to meet training readiness requirements, (2) factors that account for the shortages, and (3) the effect of shortages on training and tactical aviation readiness. The scope and methodology of our work are described in appendix I.

Results in Brief

Navy and Marine tactical aviation units do not have enough of some key types of ordnance to meet their stated training and exercise requirements. Navy units are experiencing shortages in several types of advanced training ordnance, including inert laser guided training rounds and guided bombs. Marine units are experiencing extensive shortages of both advanced training ordnance and common ordnance, such as live bombs.

Factors that contribute to the Navy and Marine Corps' training ordnance shortages include a poor process for determining annual ordnance needs, the low funding priority the Navy has assigned to ordnance, and an allocation process that does not put the ordnance where it is needed for training. More specifically

- Many Navy and Marine ordnance requests submitted between fiscal year 1998 and 2001—particularly requests for inert laser-guided training

[1] The term ordnance, as used in this report, refers to the ammunition and expendable items used by tactical aviation units in air-to-ground operations, such as live bombs, inert bombs, cartridges, flares, and chaff (fibers spread by aircraft and used as decoys for enemy radar).

[2] Navy and Marine Corps tactical aviation squadrons are those that fly the F/A-18 Hornet, the F-14 Tomcat, or the AV-8 Harrier.

rounds and guided bombs—were well below training requirements. This occurs because Navy ordnance managers are not provided sufficient guidance to determine training ordnance requirements, including ordnance for Navy exercises.

- Training ordnance shortages also result from the low funding priority the Navy gives ordnance, which has resulted in Navy-wide inventory shortages of live ordnance and inert training ordnance. For some types of live ordnance, Navy stockpiles are currently at about 40 to 65 percent of the Navy's requirement.

- The Navy's training ordnance allocation process does not make the most efficient and effective use of available training ordnance. For example, Marine units normally maintain a higher year-round readiness than comparable Navy units and, thus, have higher training ordnance requirements. However, the Marine Corps is not allocated any additional ordnance to reflect this higher requirement. Additionally, we identified instances where the Atlantic Naval Air Forces received more ordnance than they needed to meet their training needs while the Pacific Naval Air Forces received less than they needed of the same ordnance to meet their training needs. These disparate allocations occur because fleet ordnance requests are not validated against training requirements at the Department of Navy level.

Training ordnance shortages limit the amount of training and exercises aircrews can carry out and reportedly affect their proficiency in certain tasks. The shortages also extend the period of time where units are at lower readiness levels and force them to make a last-minute "rush" to achieve readiness just before deployment. This increases the risk that units may not be sufficiently prepared if they suddenly are needed for an unexpected deployment.

We are making recommendations to help improve the Navy's process for determining training requirements and its ordnance procurement and allocation process. In written comments on a draft of this report, the Department of Defense agreed with most of our recommendations, but disagreed that the fleets need guidance and training for determining training ordnance requirements. As discussed in our evaluation of the Department's comments on page 19, we continue to believe that our recommendation has merit.

Background

In 1997, the Department of Defense (DOD) issued Instruction 3000.4, which sets forth policies, roles and responsibilities, time frames and

procedures to guide the services as they develop their ordnance requirements. This instruction is titled the Capabilities-Based Munitions Requirements Process and is the responsibility of the Under Secretary of Defense for Acquisition, Technology, and Logistics. The process is designed to ensure that the military departments establish ordnance requirements necessary to address the operational objectives of the commanders in chief of the combat commands and include those requirements in the planning, programming, and budgeting process. The Navy process that implements the Capabilities-Based Munitions Requirements Process is the Non-Nuclear Ordnance Requirements determination process. This process, which includes the Marine Corps' aviation ordnance requirements, identifies the Navy's war reserve ordnance requirements and training, testing, and current operations requirements. These two requirements, along with the Navy's ordnance maintenance requirement, constitute the Navy's total munitions requirement. The calculation of the total munitions requirement is not constrained by anticipated funding limitations. This requirement is input into the Navy's planning, programming, and budgeting process as the Navy's procurement objective.

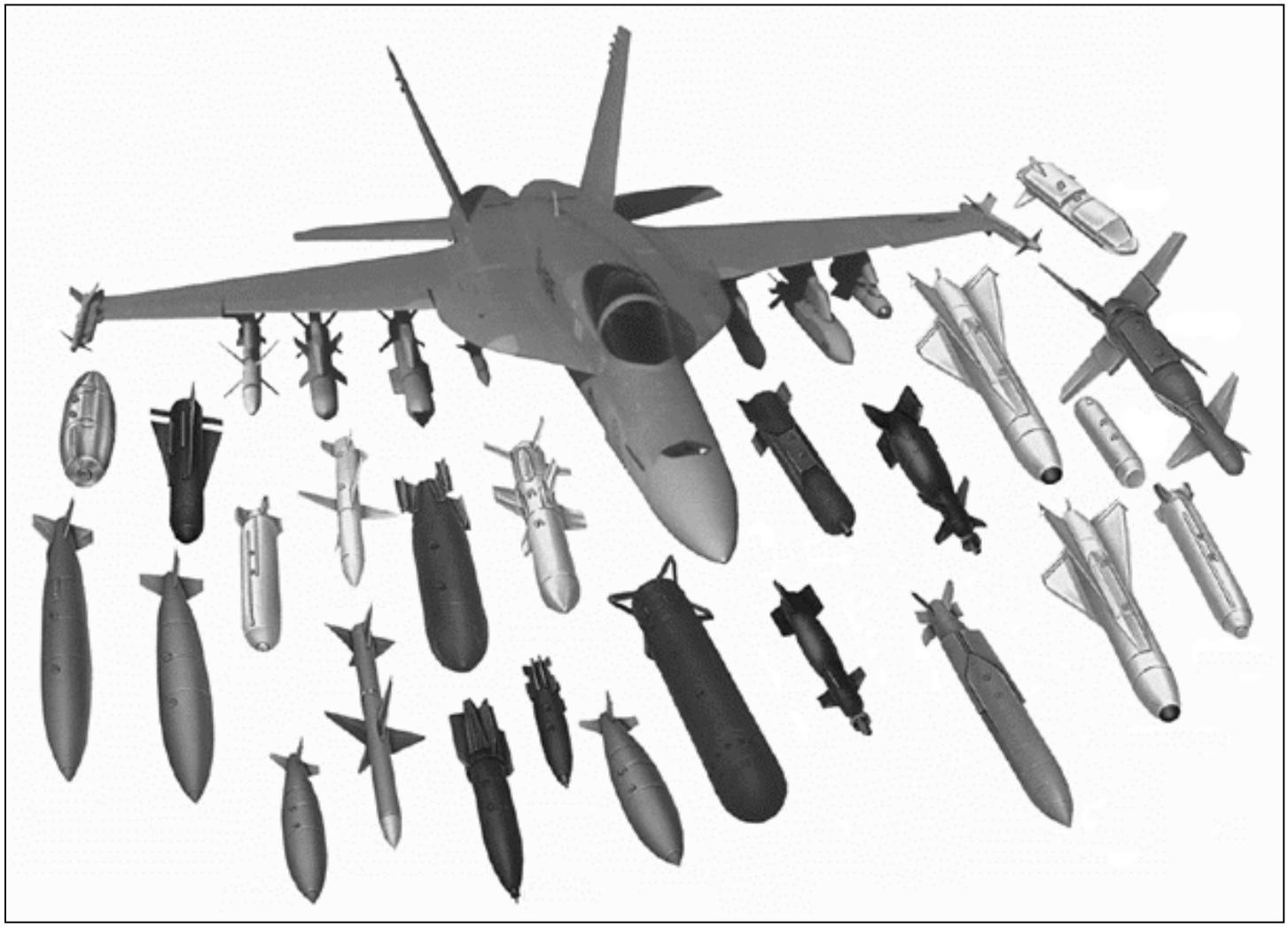
The training, testing, and current operations block of the Non-Nuclear Ordnance Requirements process determines the ordnance requirements for training. Each year, the Office of the Deputy Chief of Naval Operations for Resources, Warfare Requirements, and Assessments requests training, testing, and current operations data from 14 major claimants. Input for tactical aviation training principally comes from three of these claimants: the U.S. Pacific Fleet, the U.S. Atlantic Fleet, and the Naval Strike and Air Warfare Center.[3] Marine Force Pacific and Marine Force Atlantic aviation training requirements are included in the data submitted by their respective fleets. Even though the Navy refers to this as its training, testing, and current operations requirement, calculation procedures do not incorporate a Navy or Marine requirement for current operations.

Training ordnance includes a variety of live and practice non-guided general purpose bombs, live and practice precision-guided ordnance, cartridges, missiles, and other training expendable items managed by the Navy as ordnance, such as chaff and flares. The most common general-

[3] The Naval Strike and Air Warfare Center, Fallon, NV, provides advanced training for naval aviators whose missions are to attack enemy targets ashore, suppress enemy air defenses, or engage enemy aircraft in air-to-air combat. The Marine Aviation Weapons and Tactics Squadron provides comparable training to Marine aviators.

purpose bombs are the MK-80 series weapons, which weigh between 500 and 2000 pounds. General-purpose bombs were the type of ordnance most frequently employed in both the Gulf War in 1991 and Operation Allied Force in 1999. Precision-guided ordnance includes laser-guided bombs, in which the operator illuminates a target with a laser designator and then the munition is guided to a spot of laser energy reflected from the target; television-guided or infrared-guided systems, in which a data link in the bomb's tail section sends guidance updates to a control aircraft that enables the weapons system operator to guide the bomb by remote control to the target; and bombs that utilize the Global Positioning System for guidance to its target. While less than 10 percent of the weapons used in the Gulf War were precision ordnance, about one-third of the weapons employed by U.S. forces in Operation Allied Force consisted of this type of ordnance. Figure 1 shows the range of ordnance an F/A-18 aircrew must be trained to use.

Figure 1. F/A-18 Ordnance



Source: F/A-18E/F Super Hornet Ordnance Package.
http://www.chinfo.navy.mil/navypalib/allhands/ah0197/fa18ord.html.

Units Do Not Have Enough of Key Types of Ordnance Needed to Conduct Required Training and Exercises

In fiscal years 1998, 1999, 2000, and 2001, Navy and Marine Corps tactical aviation units did not receive sufficient quantities of some key types of ordnance they needed to conduct required training. The types and quantities of training ordnance required for aircrew training are defined in service training and readiness instructions for each aircraft model. We compared the minimum amount of ordnance that the training instructions said units needed to reach their readiness goals with the ordnance the units received in each of the 4 years and found that both services had persistent shortages. The shortages were actually greater than our analysis indicated because our analysis did not include the ordnance needed for Navy and Marine exercises, which are part of their training.

Specifically, Navy tactical aviation units had the severest shortages in advanced training ordnance such as laser-guided training rounds and guided bombs. The Marine Corps also had shortages of the same items, as well as the most common types of ordnance (live and inert bombs). Figure 2 shows that there was improvement in the allocation of five types of training ordnance in the Navy in fiscal years 1998-2001. Throughout the period, however, both the Atlantic and Pacific Naval Air Forces had shortages of laser-guided training rounds and guided bombs. While availability of the latter ordnance increased substantially during the period, availability of the former increased to only about half of the requirement. Guided bombs have been the preferred type of ordnance in recent operations, such as Operation Allied Force, and laser-guided training rounds are used to train for delivery of these weapons. Additional data on other types of ordnance received by Navy and Marine Corps units are in appendix III.

Figure 2: Percent of Required Training Ordnance Received by Navy Tactical Aviation Units in Fiscal Years 1998 to 2001

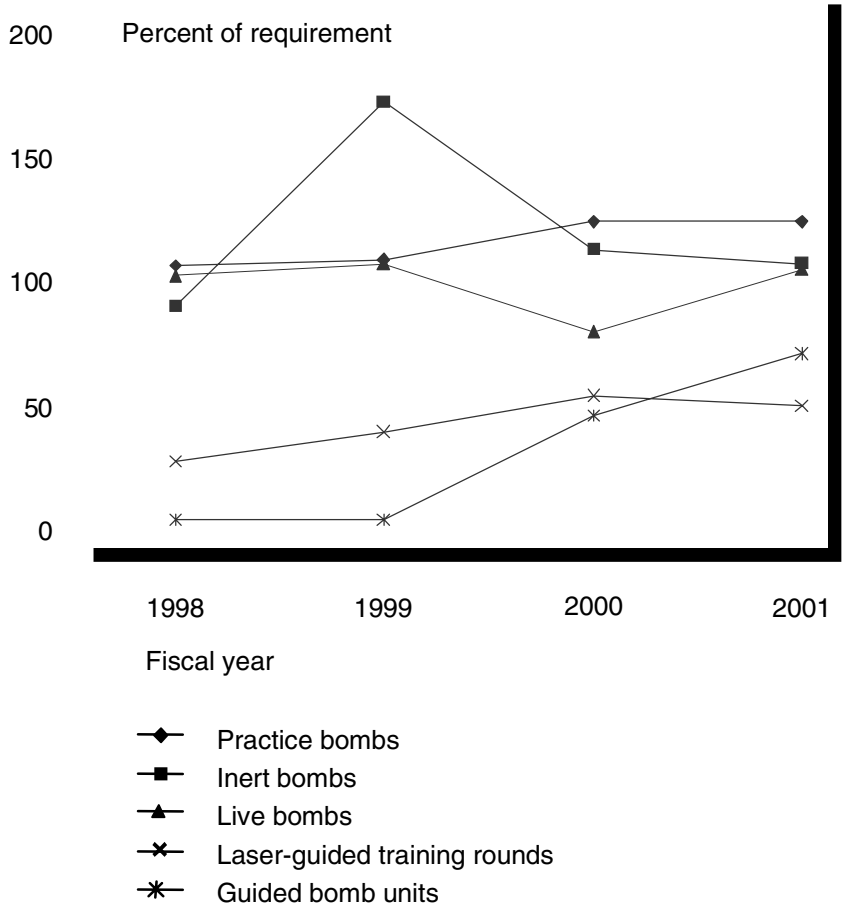


Figure 2 only shows that the regional air forces received less ordnance than required by the Navy's training instruction. The actual shortages were more severe because the Navy conducts training exercises that have ordnance requirements that are not included in the instructions. Several of these exercises are relatively large, such as training at the Naval Strike and Air Warfare Center, and the Composite Training Unit Exercise. For example, a training officer estimated that one carrier air wing needs 126 laser-guided training rounds for the Naval Strike and Air Warfare Center detachment and another 128 for the Composite Training Unit Exercise. However, the Navy's training instruction shows that one carrier air wing needs only about 54 to 56 laser guided training rounds during the period it

goes to the Naval Strike and Air Warfare Center and about 15 to 19 laser-guided training rounds during the period it conducts its Composite Training Unit Exercise.[4]

Figure 3 shows the percentage of required training ordnance received by Marine tactical aviation units for the same 5 items. The data again show improvement but also that Marine aircrews still were not receiving the required amounts of two types of ordnance--live bombs remained at 14 to 20 percent of requirements, and laser-guided training rounds were at about 75 percent of requirement in fiscal year 2001.

[4] The number varies based on the composition of a wing. Some wings have one F-14 squadron and three F-18 squadrons, and some have two F-14 squadrons and two F-18 squadrons.

Figure 3: Percent of Required Training Ordnance Received by Marine Tactical Aviation Units in Fiscal Years 1998 to 2001

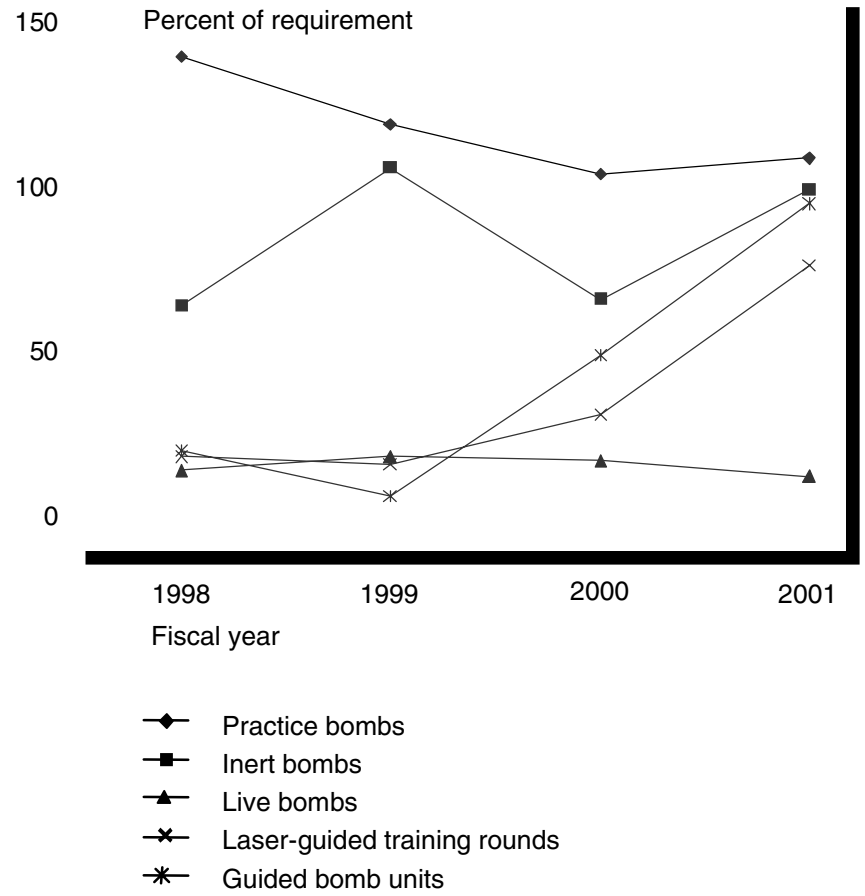


Figure 3 shows the shortages we identified using the Marine Corps training instructions. The actual shortages could be more severe, because like the Navy, Marine Corps units also participate in exercises, known as Combined Arms Exercises, requiring ordnance that is not included in the training instructions. Unlike the Navy, the Marines have identified a standard Combined Arms Exercise ordnance requirement. Units are aware of the requirement and are instructed to incorporate this requirement into their requests. The data in figure 3, however, show that the amounts received do not support the training instruction requirements alone, without considering these additional exercise requirements.

Our calculations do not include the training ordnance made available to units or pilots through participation in certain training events or the service weapons schools. Like the fleets, the weapons schools receive training ordnance allocations. The ordnance used by units or pilots attending the training events and weapons schools is in addition to the ordnance available to units from fleet allocations. For example, the Naval Strike and Air Warfare Center provides some ordnance to support units during their training there. Therefore, it is possible that portions of the shortages identified are offset by ordnance received from other claimants.

Causes of Training Ordnance Shortages

Factors contributing to shortages include (1) units do not ask for sufficient amounts of ordnance to support their training and exercise needs; (2) the Navy has given munitions a low funding priority, which has resulted in low ordnance stockpile-levels of live munitions and shortages of inert training munitions; and (3) the Navy has poorly allocated available ordnance.

Units Do Not Ask for Required Ordnance

We reviewed Navy and Marine aviation training ordnance requests submitted in fiscal years 1998 through 2001 for 10 types of air-to-ground training ordnance. We compared the amounts requested to that required by the units as defined by their training instructions and found that requests were frequently for less ordnance than needed to support the training identified in the instruction. Our calculations did not include exercise requirements, which would make the disparity even greater.

Overall, Naval Air Forces Atlantic requested less ordnance than required to meet its training instruction requirements for 25 percent of its requests during the period. Most notably, it requested less than 50 percent of its required laser-guided training rounds and less than 15 percent of its flare requirement in fiscal years 1998 to 2000. Data on Naval Air Forces Pacific requests were not available for fiscal year 2000, but in the other 3 years its requests were less than its training instruction requirements for about 40 percent of the items reviewed. Its requests for laser-guided rounds were less than requirements in all 3 years and its request for guided bombs was less than requirements in 2 of the 3 years.

Marine Force Atlantic training ordnance requests during the period understated its training requirements for 78 percent of its requests, while Marine Force Pacific requested less than its requirements for 69 percent of its requests. Again, Marine Force Atlantic requested less than 50 percent of its laser-guided training round requirement in 3 of the 4 years, and Marine Force Pacific requested less than 50 percent of its requirements in all 4 years. For 4 of the 10 items reviewed, Marine Force Atlantic's request averaged less than 20 percent of the published requirement. One area

where requests tended to exceed requirements was heavy inert bombs. Marine officials told us that they requested these bombs to offset live bomb requirements, because there are few ranges where live bombs can be used. However, the Marine Force Atlantic's request for live and inert bombs combined was only between 34 and 43 percent of its total requirement.

Units we visited did not ask for the ordnance they needed to support their training for a variety of reasons. One explanation was that they did not know how to use the training instruction to determine their annual needs because the instruction does not provide sufficient guidance for identifying needs. As a result, rather than using a standard methodology to determine their annual training ordnance needs, units used a variety of processes. For example, some units used historical expenditure or allocation data, while other units based their requests on the training instructions and planned exercises. There were also units that understood the instructions but adjusted their requests based on anticipated aircraft and pilot availability, and instances where officials said they were instructed not to request certain ordnance because it would not be available. Other units told us there were times where they did not request ordnance because they believed it was either in short supply or because they were not confident that they could expend it during the year. The result was often the use of current and previous year's expenditures—which were usually well below requirements—as the basis for future year's requirements. For example, one carrier air wing requested 150 laser-guided training rounds while the instruction shows a need for 639, and 5,750 practice bombs when the instruction shows a requirement for 11,300. Another carrier air wing asked for 784 laser-guided training rounds when the instruction shows a requirement for 509, and 7,026 practice bombs when the instruction shows a requirement for 10,075.

The most significant shortcoming in the Navy's training instruction is that it does not include ordnance requirements for exercises and, as shown in appendix IV, requests often did not include the additional amounts needed to satisfy exercise requirements. Carrier air wings preparing for deployment participate in a number of exercises that require relatively large amounts of ordnance. With one exception,[5] the ordnance requirements for these exercises are not identified in any instruction or

[5] The Pacific Fleet's Carrier Group One has issued an instruction for its Composite Training Unit Exercise.

guidance. As a result, units cannot plan for them. Instead, the exercise sponsors identify shortly before the exercise the ordnance the carrier air wings should bring. Officials in the Office of the Chief of Naval Operations who are responsible for training ordnance agreed that all training ordnance requirements should be identified in the instructions. They were not aware that the fleets had imposed additional ordnance requirements for any exercises.

When we discussed the process for calculating and reviewing ordnance requests at the squadrons that we visited, Navy ordnance managers expressed their frustration with the uncertainty of the exercise requirements. They also said that they had received no training in the computation of ordnance requirements. Ordnance managers at higher command levels also said that they did not review the request data they received from subordinate units for accuracy. They generally did not know what the requirements were and thus had no basis for questioning requests from subordinate units. They only totaled the requests they received and passed them on to the next management level. Ordnance managers also cited a lack of written guidance to help them through the process of identifying training ordnance requirements. The only available guidance (OPNAV Instruction 8010.12F/MCO 8010.12) provides an overview of the Non-Nuclear Ordnance Requirements process—the Navy's input into DOD's Capabilities-Based Munitions Requirements process—but the instruction states only that naval commanders in chief are responsible for ensuring training requirements are submitted. The guidance contains no details on what this entails.

A Marine Corps headquarters official also told us they provided no guidance for how requests were to be calculated but expected the training and readiness instruction to be the basis for the requests. However, variances between requests and training instruction requirements still existed. A Marine Force Atlantic official, when asked to explain why requests varied greatly from year to year, stated that he did not know, but believed it may be due to the use of different methodologies from year to year and among different units.

While our work shows that weaknesses exist in the guidance, we are not advocating that ordnance requests be based solely on training instruction requirements. We recognize that training is sometimes affected by the availability of other resources including pilots, planes, parts, fuel, adversarial aircraft, ranges, and targeting systems, which can lower a unit's ordnance requirement needs. The units we visited were generally aware of the factors that impeded their training. Making these factors

explicit when training ordnance requests are submitted allows officials at higher levels to immediately recognize when a request is not "right" and to see the impact of these factors on the level and quality of training possible. Such an exception report could also serve to facilitate the development of alternative training strategies that maximize readiness within these resource constraints.

The Low Funding Priority Given Ordnance Contributes to Shortages

The Navy has one ordnance stockpile, which is used for both war reserve and training purposes. Replenishment of the stockpile has been given low funding priority, which has resulted in a depletion of the stockpile to the point that it is below the Navy's total requirement. In some cases Navy air-to-ground ordnance stockpiles are currently at about 40 to 65 percent of the Navy's total ordnance requirement. This condition is expected to continue. For example, documents provided by the Navy show that in fiscal year 2003 the Navy will have a live practice ordnance requirement of $267.2 million, but is procuring only $130.7 million of ordnance, a shortage of $136.5 million. This will keep the stockpile below requirements and force the Navy to either forego some training and accept lower training readiness, develop alternative training strategies, or accept the readiness risks attendant to using war reserve assets for training. According to officials in the Office of the Chief of Naval Operations, releasing war reserve ordnance for training is a subjective judgement that balances the value of training against the risk of not having the ordnance available in the event of war.

The Navy also has shortages of inert training ordnance. Inert training ordnance includes the laser-guided training round, and inert bombs. These items are not stockpiled and the Navy generally buys about a year's worth of inventory at a time. Navy data shows a total requirement of $72 million for inert ordnance in fiscal year 2003. However, funding is projected at $41 million, $31 million short of the total inert ordnance requirement. Additionally the Navy's $72 million requirement is based on fleet requests, many of which are understated. For example, in fiscal year 2001 the Pacific Naval Air Forces asked for only 700 laser-guided training rounds or approximately 28 percent of its actual requirement of 2,542.

Inventory shortages raise the question of whether accurate fleet ordnance requests would have resulted in the Atlantic and Pacific Naval Air Forces receiving sufficient quantities of ordnance to support their training. As mentioned, stocks of some munitions are short and priority is given to war reserve stocks, making it unlikely that training requirements for all munitions would have been met, regardless of what the fleets requested. However, planned ordnance procurements are based on the requirements

received from the various claimants. When requirements are understated, it becomes less likely that future stockpiles will meet future requirements. The Navy's understating of its training requirements during each of the 4 years in our review would indicate that this has contributed in part to the stockpile shortages.

The Navy's annual ordnance procurement budget request submitted to Congress includes aggregated war reserve ordnance and training ordnance requirements making it impossible for Congress to understand how funding decisions affect training readiness. Identifying the amount of the Navy's and Marine Corps' ordnance procurement request that is for war reserve and the amount that is for training would make the impact on training more readily apparent.

Allocation Problems Cause Some Shortages

Misallocation of available resources also contributes to the problem. Appendix III shows examples where the Naval Air Forces Atlantic received ordnance in excess of the requirements identified while Naval Air Forces Pacific received less than its requirement for the same type of ordnance. For example, in fiscal year 2000 Naval Air Force Atlantic received 137 percent of its inert bomb requirement while Naval Air Forces Pacific received 91 percent. Even in situations where neither fleets' full requirements were met, there are examples of inequitably distributed assets. For example, in fiscal year 2001 Naval Air Forces Atlantic received 85 percent of their guided bomb requirement while Naval Air Forces Pacific received only 61 percent.

According to Navy officials responsible for making ordnance allocation decisions, the decisions are based on the requests received from the regional air forces. As mentioned, they do not analyze the requests but try to satisfy as much of each claimant's request as possible with the inventory available for distribution. If a fleet asks for more than it needs, it could result in that fleet receiving more than its share.

Furthermore, the way ordnance is allocated to Navy and Marine Corps units shortchanges the Marine Corps, which expects its units to remain at higher readiness levels and has higher ordnance requirements for live ordnance than the Navy does. The Marine Corps' requests are combined with the Navy's requests for the Atlantic and Pacific Fleets, allowing no visibility for Marine-specific requirements. When the fleet receives ordnance, it is allocated between the Navy and the Marine Corps on the basis of pilot population, not per pilot requirements. The amount of training ordnance allocated to a Marine Corps F/A-18 pilot is, therefore, the same as for a Navy pilot, even though certain Marine Corps

requirements exceed Navy requirements. For example, the order shows that a Marine Corps F/A-18 crew requires 80 live MK-80 series bombs per year, while a Navy F/A-18 crew requires only 12 live MK-80 series bombs to maintain the same readiness level. Marine requirements are higher because in some cases its training instruction calls for more and Marine units are expected to maintain a higher year-round readiness level than Navy units. For the years examined, both Atlantic and Pacific Marine Corps forces typically received less than 20 percent of their live bomb requirement and 10 percent or less of their Maverick missile requirement. Conversely, the Navy usually received much higher percentages of its requirement than the Marine Corps received—sometimes in excess of their calculated requirement—for the same types of munitions.

Both Navy and Marine Corps officials questioned the amounts of live ordnance required by the Marine Corps' training order. The officials stated that there are mission differences between the Marine Corps and Navy that may explain some of the difference, but they believe that these differences are not significant enough to explain the entire difference. The Marine Corps is in the process of updating its training and readiness instruction.

Shortages Lower Aircrew Proficiency and Squadron Readiness

Training ordnance shortages impact units in a several ways. Foremost, they lower the training readiness of tactical aviation units, they extend the periods where units experience low readiness levels, and they compress a considerable amount of predeployment training into the weeks immediately prior to deployment. As a result, should units have to prepare rapidly for deployment, they may embark at lower readiness levels than prescribed. Shortages also reduce the amount of practice aircrews receive with weapons and affect pilot proficiency in attacking ground targets.

Both the Navy and Marine Corps have directly linked the accomplishment of training tasks to reported training readiness through the DOD's Global Status of Readiness and Training System. In this system, training readiness is reported in one of four categories, T-1 through T-4. A T-1 unit is trained to undertake the full wartime mission for which it is organized and designed. A T-4 unit is at the lowest readiness level and needs additional training to undertake its wartime mission.

Aircrews earn points through the completion of training tasks that allow them to progress into higher training readiness categories. Without ordnance, aircrews cannot fully complete many of their training tasks. For Navy units, this reduces the number of training tasks that can be applied toward training readiness. The Marine Corps is less stringent. For

example, the Navy requires aircrews to have the required ordnance to earn the points associated with a training task. Since about 64 percent of the Navy's F-14 training tasks and 58 percent of its F/A-18 training tasks require ordnance, ordnance availability directly affects individual aircrew readiness in Navy tactical aviation units. The Marine Corps permits aircrews to conduct training events with less than the required ordnance. According to Marine officials, Marine pilots can use less than the required quantity of ordnance or substitute ordnance and still earn points. Thus, ordnance shortages do not affect individual aviator readiness in Marine units as significantly. Marine officials told us that they do not view a strict by-the-book calculation of readiness as reflective of the true capabilities of the squadron.

Ordnance shortages also extend the period in which units report low readiness. Each training task has a currency period, which is the amount of days after a training event is completed before the qualification expires. Squadron and wing representatives told us when sufficient ordnance is not available to support all training, units conserve their available ordnance so they can achieve currency near their deployment date. For example, the currency period for one of the Navy's precision guided ordnance training tasks is 90 days. Since the Navy does not have enough laser-guided training rounds to support all required training, units generally only train with the round in the months before deployment in order to be ready on their deployment date rather than year round as envisioned by the training instruction. Such practices can place aircrews in a degraded state of readiness for much of the year as the currency periods for tasks expire and are not renewed. It could be difficult for such units to respond quickly and effectively to unexpected mission needs.

Several of the units we visited reported that the lack of training affects pilot proficiency in attacking ground targets. Ordnance shortages also reduce ground crew training, which impacts aircrew success. For example, one squadron that had recently returned from Operation Southern Watch in Iraq reported that during the deployment it dropped 18 precision weapons on targets in 1 day and all 18 failed to detonate. They attributed the failures to ground crew inexperience in loading and wiring the weapons. Because both the risk and cost of errors is great, squadron and air wing officials told us they spend an inordinate amount of time briefing ground ordnance and aircrews on the safe handling of live ordnance prior to a training event or deployment where the use of live ordnance is anticipated.

A July 2000 report from the Navy Inspector General cited shortages of training ordnance as a contributing factor to low initial air wing success in the delivery of precision ordnance at major exercises and in contingency operations. It found that 98 percent of combat operations since Desert Storm have involved the employment of laser-guided bombs, but fewer than 30 percent of Navy aviators had employed a live laser-guided bomb in training or combat. The Navy Inspector General recommended that training ordnance allocations be reassessed in order to ensure that all aircrew are fully trained and qualified prior to deployment. We could find no documented evidence of how severely units are impacted by the shortages. However, clearly aircrews are not receiving all of the training repetitions envisioned by the operators, education specialists, and training system analysts who wrote the Navy and Marine Corps training instructions.

Conclusions

The availability of Navy and Marine training ordnance depends on an accurate requirements determination process, a procurement program that supports identified needs, and an allocation process that puts the right amount of ordnance where it is needed for training. The Navy program has problems with all three of these elements. Neither the Navy nor Marine Corps provides request data that reflects the training needs identified in its training instruction. While both services have linked their ordnance requirements to readiness in their training instructions, neither services' request indicates that its instruction serves as the basis for identifying its needs. Moreover, the Navy's failure to fully identify its exercise requirements, justify them in its training instruction, and develop a process for including these requirements in its training ordnance requests, makes it near impossible for ordnance officials to effectively plan ordnance needs. We recognize that there are many other factors that impact each service's ability to fully execute its training plans. However, we believe each service has the knowledge and ability to develop more accurate and justifiable training ordnance requirements. Guidance that details how units should go about this process would greatly aid units in developing their requests. A well-justified training program linked to readiness would also aid in developing and supporting a procurement program that meets its needs. Better allocation of available ordnance to units also would improve training readiness. We recognize that erroneous data from units contributes to this problem. However, the practice of allocating ordnance to the Marine Corps on a per-pilot basis rather than a training order requirement basis creates additional readiness problems for the Marines. If the Navy and Marine Corps believe that the ordnance requirements identified in the Marine training order cannot be justified, they have the responsibility to change the order.

Navy and Marine aviation training readiness depends on the completion of training tasks identified in their respective training instructions. Between 41 and 64 percent of these training tasks require ordnance. Yet, despite this direct link to training readiness, the Navy's ordnance procurement budget request, which combines both its war time requirements and its training requirements, has been less than its training requirement alone. This forces the Navy and Marine Corps to forego the training and accept lower training readiness, to develop alternative training strategies, or to accept the readiness risks attendant to using war reserve assets for training. Further, unless the Navy separately identifies its training ordnance needs in its budget request, the impact of funding decisions on training readiness will not be apparent.

Recommendations for Executive Action

To improve the availability of training ordnance in tactical aviation units, we recommend that the Secretary of Defense direct the Secretary of the Navy to take the following actions:

- Update the Navy and Marine Corps training and readiness instructions so that they are comprehensive and identify the ordnance needed for regularly scheduled pre-deployment exercises.
- Develop guidance for fleet use that provides a standardized methodology for determining training ordnance requirements and train the appropriate personnel in the use of that guidance to help ensure that accurate and reliable data are submitted by units in the ordnance requirements determination process.
- Require Marine and carrier air wings to include, along with their training ordnance request, an exception report detailing the reason(s) for requests that differ substantially from the ordnance requirements identified in the training instructions.
- Allocate ordnance on the basis of the documented training requirements identified in the Navy and Marine Corps training instructions.
- Designate the Marine Forces-Atlantic and Marine Forces-Pacific as major claimants in the ordnance requirements determination process to increase the visibility of Marine requirements.
- Direct the Navy and Marine Corps to identify the amount of its ordnance procurement request that is for the war reserve stockpile and the amount that is for training. If the amount requested for training is less than the training requirement, the services should explain how training readiness will be maintained without the required training ordnance.

Agency Comments and Our Evaluation

In written comments on a draft of this report, DOD agreed with most of our recommendations. However, it did not agree that the fleets need guidance and training to help ensure accurate and reliable data are submitted in the ordnance requirement determination process. DOD stated that additional guidance would be counterproductive because the Navy's current training and readiness instruction is already perhaps the best DOD example of a well-defined event based training program and provides a basis for establishing funding requirements. We disagree with DOD and continue to believe that our recommendation has merit and would not be counterproductive. As discussed in this report, carrier and Marine air wing officials we met with largely did not know how to use the training and readiness instruction to determine their ordnance requirements. The 4-year pattern of understated ordnance requests submitted by the wings also supports the need for some guidance and training in determining requirements. Appendix II contains the full text of DOD's comments. DOD also provided technical comments, which we incorporated as appropriate.

We are sending copies of this report to the appropriate congressional committees; the Honorable Donald Rumsfeld, Secretary of Defense; the Honorable Gordon R. England, Secretary of the Navy; and the Honorable Mitchell E. Daniels, Jr., Director, Office of Management and Budget.

Please contact me at (757) 552-8100 if you or your staff have any questions concerning this report. Major contributors to this report are listed in appendix V.

Sincerely yours,

Neal P. Curtin, Director
Defense Capabilities and Management

Appendix I: Scope and Methodology

To assess shortages in Navy and Marine Corps air-to-ground training ordnance required to meet training readiness requirements, we reviewed the Navy and Marine Corps' training, testing, and current operations submissions, and ordnance allocations for the Naval Air Forces in the Atlantic and Pacific Fleets, and Marine Forces Atlantic and Pacific. We reviewed this data for fiscal years 1998 through 2001. We compared the Navy requests and allocations to a GAO-calculated squadron training and readiness ordnance requirement based on Commander Naval Air Pacific Instruction 3500.67E and Commander Naval Air Atlantic Instruction 3500.63E. We compared the Marines' requests and allocations to a GAO-calculated squadron training and readiness requirement based on Marine Order P3500.15. Officials within the Offices of the Navy Deputy Chief of Naval Operations for Resources, Warfare Requirements, and Assessments, and Headquarters Marine Corps, Deputy Commandant for Aviation, Washington, D.C., validated the appropriateness of these models. We did not question the validity of the ordnance requirements identified in either instruction. Our Navy calculation is based on the minimum ordnance required for squadrons to train to the readiness level appropriate to their place in their inter-deployment training cycle. Our Marine calculation is based on the annual requirements identified in its training order. We also reviewed Department of Defense Instruction 3000.4, Capabilities-Based Munitions Requirements Process, to ascertain roles and oversight responsibilities and to identify required inputs to the process. We reviewed the Defense Planning Guidance for fiscal years 2000-2005 and the update for fiscal years 2001-2005 to find out the instruction the Department provided to guide the services as they determine their ordnance requirements. We visited officials responsible for training and training ordnance at the Naval Air Forces Atlantic and Pacific and Marine Force Atlantic to discuss the guidance they provided. We obtained similar information from Marine Force Pacific officials. Afterward, we visited a sample of Navy carrier air wings and squadrons and Marine Corps air wings and squadrons to obtain explanations of their training ordnance determination processes.

To establish the reasons for ordnance shortages in units and their impacts on units, we met with Department and service officials to obtain their views on training ordnance problems. We met with senior officials and performed work at the Office of the Navy Deputy Chief of Naval Operations for Resources, Warfare Requirements, and Assessments, and Headquarters Marine Corps, Deputy Commandant for Aviation, Washington, D.C.; the U.S. Atlantic Fleet, Norfolk, Virginia; Naval Air Forces Atlantic, Norfolk, Virginia; the U.S. Pacific Fleet, Honolulu, Hawaii; Naval Air Forces Pacific, San Diego, California; Marine Force Atlantic,

Norfolk, Virginia; Naval Ammunition Logistics Center, Mechanicsburg, Pennsylvania; Carrier Air Wing 9, Lemoore Naval Air Station, California; Strike Fighter Wing Pacific, Lemoore Naval Air Station, California; Carrier Air Wing 8, Oceana Naval Air Station, Virginia; Marine Corps Training and Education Command, Quantico Marine Corps Station, Virginia; 2d Marine Air Wing, Cherry Point Marine Corps Air Station, North Carolina; Marine Air Group 14, Cherry Point Marine Corps Air Station, North Carolina; Marine Air Group 31, Beaufort Marine Corps Air Station, South Carolina; and Navy and Marine fighter squadrons in both the Atlantic and Pacific Fleets.

We performed our review from January through April 2001 in accordance with generally accepted government auditing standards.

Appendix II: Comments From the Department of Defense

OFFICE OF THE UNDER SECRETARY OF DEFENSE
4000 DEFENSE PENTAGON
WASHINGTON, D.C. 20301-4000

PERSONNEL AND
READINESS

JUL 13 2001

Mr. Neal P. Curtin
Director, Defense Capabilities and Management
U. S. General Accounting Office
Washington, D.C. 20548

Dear Mr. Curtin:

This is the Department of Defense response to the General Accounting Office draft report, "MILITARY READINESS: Management of Naval Aviation Training Munitions Can Be Improved," June 13, 2001 (GAO Code 350030/OSD Case 4016).

We have reviewed the draft report and our comments to the GAO's draft recommendations are enclosed. Recommended technical corrections have been discussed separately with your auditors. We appreciate the opportunity to review and comment on this report.

Sincerely,

Joseph J. Angello, Jr.
Acting Deputy Under Secretary of Defense
(Readiness)

Enclosure: as stated

GAO DRAFT REPORT – DATED JUNE 13, 2001
GAO CODE 350030/OSD CASE 4016
"MILITARY READINESS: MANAGEMENT OF NAVAL AVIATION TRAINING MUNITIONS CAN BE IMPROVED"

DEPARTMENT OF DEFENSE COMMENTS TO THE RECOMMENDATIONS

RECOMMENDATION 1: *The GAO recommended that the Secretary of Defense direct the Secretary of the Navy to update the Navy and Marine Corps training and readiness instructions so that they are comprehensive and identify the ordnance needed for regularly scheduled pre-deployment exercises.*

DOD RESPONSE: We concur in part with this recommendation. We agree that Navy and Marine Corps total ordnance requirement should include ordnance needed for "typical" pre-deployment collective training exercises. However, since each battle group and readiness group has a unique training cycle, there must be sufficient flexibility in the exercise ordnance requirement determination and allocation process to preclude perpetual revision of training instructions.

RECOMMENDATION 2: *The GAO recommended that the Secretary of Defense direct the Secretary of the Navy to develop guidance for fleet use that provides a standardized methodology for determining training ordnance requirements and train the appropriate personnel in the use of that guidance to help ensure that accurate and reliable data are submitted by units in the ordnance requirements determination process.*

DOD RESPONSE: We do not concur with this recommendation. The Navy and Marine Corps training and readiness instructions provide perhaps the best examples in the Department of Defense of well-defined event based training programs. These instructions include training ordnance requirements that are fleet driven, and validated by Fleet Type Commanders. Since the Department of the Navy is now using these training programs as the basis for establishing funding requirements, providing a separate guidance outside of the training and readiness instructions would be counterproductive.

RECOMMENDATION 3: *The GAO recommended that the Secretary of Defense direct the Secretary of the Navy to require Marine and carrier air wings to include, along with their training ordnance request, an exception report detailing the reason(s) for requests that differ substantially from the ordnance requirements identified in the training instructions.*

DOD RESPONSE: We concur with this recommendation. Efforts to more accurately measure the readiness of Marine Corps air wings/groups and Navy battle groups across the Inter-Deployment Training Cycle (IDTC) are already underway. As the Department of the Navy

progresses with this initiative, one expected outcome is better visibility into the unique training and resource requirements for each Marine Corps air wing/group and Navy battle group through the IDTC.

RECOMMENDATION 4: *The GAO recommended that the Secretary of Defense direct the Secretary of the Navy to allocate ordnance on the basis of the documented training requirements identified in the Navy and Marine Corps training instructions.*

DOD RESPONSE: We concur with this recommendation. The Department of the Navy is now using the requirements as determined in the training and readiness instructions as the basis for ordnance funding decisions. Under this new taxonomy, training ordnance is a quantifiable subset of the Navy's total ordnance requirement.

RECOMMENDATION 5: *The GAO recommended that the Secretary of Defense direct the Secretary of the Navy to designate the Marine Forces –Atlantic and Marine Forces-Pacific as major claimants in the ordnance requirements determination process to increase visibility of Marine requirements.*

DOD RESPONSE: We concur with this recommendation. The Department of the Navy's approach to requirements determination explicitly considers training munitions in its overall ordnance requirement model and provides sufficient visibility into the training munitions requirements of both the Navy and Marine Corps.

RECOMMENDATION 6: *The GAO recommended that the Secretary of Defense direct the Secretary of the Navy to direct the Navy and Marine Corps to identify the amount of its ordnance procurement request that is for the war reserve stockpile and the amount that is for training. If the amount requested for training is less than the training requirement, the Services should explain how training readiness will be maintained without the required training ordnance.*

DOD RESPONSE: We concur with this recommendation. Including ordnance required for regularly scheduled training exercises in the total training ordnance requirement meets the objective of this recommendation. Having the ability to compare Navy funding for training ordnance with the stated requirement will provide Congress and the Secretary of Defense with a clear picture of training munitions funding adequacy within the Department of the Navy.

Appendix III: Training Ordnance Received by Navy and Marine Corps Tactical Aviation Units

Percent of Required Training Ordnance Received by Navy Tactical Aviation Units in Fiscal Years 1998 to 2001

Description	Fleet	FY98	FY99	FY00	FY01	4-year average
MK-76/BDU-48 practice bombs	Naval Air Forces-Atlantic	132	129	147	141	137
	Naval Air Forces-Pacific	82	93	102	110	97
MK-80/BDU-45 inert bombs	Naval Air Forces-Atlantic	89	208	137	116	138
	Naval Air Forces-Pacific	93	141	91	100	106
MK-80 series live bombs	Naval Air Forces-Atlantic	122	130	104	129	121
	Naval Air Forces-Pacific	85	88	58	83	79
Cluster bombs	Naval Air Forces-Atlantic	333	364	398	344	360
	Naval Air Forces-Pacific	235	256	301	374	292
Laser-guided training rounds	Naval Air Forces-Atlantic	25	44	66	45	45
	Naval Air Forces-Pacific	31	36	44	56	42
Chaff	Naval Air Forces-Atlantic	57	105	74	90	82
	Naval Air Forces-Pacific	68	70	59	87	71
Flares	Naval Air Forces-Atlantic	37	53	73	49	53
	Naval Air Forces-Pacific	No data	62	57	40	53
Guided bomb units	Naval Air Forces-Atlantic	5	5	59	85	39
	Naval Air Forces-Pacific	4	6	35	61	27
Infrared-guided Maverick missile	Naval Air Forces-Atlantic	100	118	64	191	118
	Naval Air Forces-Pacific	65	81	71	94	78
Laser-guided Maverick missile	Naval Air Forces-Atlantic	86	64	64	145	90
	Naval Air Forces-Pacific	No data	50	59	88	66

Source: Navy F-14 and F/A-18 requirements were calculated based on a unit's place in the inter-deployment cycle using the per squadron requirements contained in COMNAVAIRPACINST 3500.67E and COMNAVAIRLANTINST 3500.63E.

Percent of Required Training Ordnance Received by Marine Corps Tactical Aviation Units in Fiscal Years 1998 to 2001

Description	Fleet	FY98	FY99	FY00	FY01	4-year average
MK-76/BDU-48 practice bombs	Marine Forces-Atlantic	115	84	72	137	102
	Marine Forces-Pacific	158	145	128	89	130
MK-80/BDU-45 inert bombs	Marine Forces-Atlantic	51	101	54	127	83
	Marine Forces-Pacific	74	109	74	79	84
MK-80 series live bombs	Marine Forces-Atlantic	13	10	14	16	13
	Marine Forces-Pacific	16	23	19	10	17
Cluster bombs	Marine Forces-Atlantic	No requirement, but this ordnance is requested and allocated annually.				
	Marine Forces-Pacific					
Laser-guided training rounds	Marine Forces-Atlantic	25	13	28	90	39
	Marine Forces-Pacific	12	18	34	65	32
Chaff	Marine Forces-Atlantic	11	11	11	No data	11
	Marine Forces-Pacific	23	25	11	No data	20
Flares	Marine Forces-Atlantic	13	9	17	No data	13
	Marine Forces-Pacific	25	18	26	No data	23
Guided bomb units	Marine Forces-Atlantic	26	6	47	121	50
	Marine Forces-Pacific	16	6	51	75	37
Infrared-guided Maverick missile	Marine Forces-Atlantic	6	10	19	15	13
	Marine Forces-Pacific	9	9	7	9	9
Laser-guided Maverick missile	Marine Forces-Atlantic	5	10	14	9	10
	Marine Forces-Pacific	8	9	8	5	8

Source: Marine Corps AV-8B and F/A-18 requirements were calculated using the per crew expendable ordnance requirements contained in the applicable T&R Volume II, MCO 3500.15. In calculating the amounts required by units, we assumed that units are fully manned. Total requirements were calculated by multiplying the squadron requirements times the appropriate number of squadrons.

Appendix IV: Training Ordnance Requested by Navy and Marine Corps Tactical Aviation Units

Percent of Required Training Ordnance Requested by Navy Tactical Aviation Units in Fiscal Years 1998 to 2001

Description	Fleet	FY98	FY99	FY00	FY01
MK-76/BDU-48 practice bombs	Naval Air Forces-Atlantic	158	181	158	166
	Naval Air Forces-Pacific	91	193	No data	84
MK-80/BDU-45 inert bombs	Naval Air Forces-Atlantic	243	278	243	290
	Naval Air Forces-Pacific	138	209	No data	158
MK-80 series live bombs	Naval Air Forces-Atlantic	168	171	168	118
	Naval Air Forces-Pacific	108	159	No data	89
Cluster bombs	Naval Air Forces-Atlantic	142	157	142	551
	Naval Air Forces-Pacific	663	435	No data	288
Laser-guided training rounds	Naval Air Forces-Atlantic	38	47	38	112
	Naval Air Forces-Pacific	77	65	No data	28
Chaff	Naval Air Forces-Atlantic	94	102	94	171
	Naval Air Forces-Pacific	No data	No data	No data	72
Flares	Naval Air Forces-Atlantic	13	14	13	126
	Naval Air Forces-Pacific	No data	No data	No data	64
Guided bomb units	Naval Air Forces-Atlantic	98	109	98	111
	Naval Air Forces-Pacific	70	238	No data	0
Infrared-guided Maverick missile	Naval Air Forces-Atlantic	169	200	169	109
	Naval Air Forces-Pacific	141	281	No data	138
Laser-guided Maverick missile	Naval Air Forces-Atlantic	129	164	138	109
	Naval Air Forces-Pacific	No data	156	No data	150

Percent of Required Training Ordnance Requested by Marine Corps Tactical Aviation Units in Fiscal Years 1998 to 2001

Description	Fleet	FY98	FY99	FY00	FY01
MK-76/BDU-48 practice bombs	Marine Forces-Atlantic	140	138	90	106
	Marine Forces-Pacific	335	136	131	131
MK-80/BDU-45 inert bombs	Marine Forces-Atlantic	187	159	128	166
	Marine Forces-Pacific	669	206	197	197
MK-80 series live bombs	Marine Forces-Atlantic	23	21	20	21
	Marine Forces-Pacific	34	58	56	56
Cluster bombs	Marine Forces-Atlantic	No requirement, but this ordnance is requested and allocated annually.			
	Marine Forces-Pacific				
Laser-guided training rounds	Marine Forces-Atlantic	29	33	68	24
	Marine Forces-Pacific	22	39	39	39
Chaff	Marine Forces-Atlantic	27	16	15	17
	Marine Forces-Pacific	128	95	92	92
Flares	Marine Forces-Atlantic	18	21	15	15
	Marine Forces-Pacific	54	42	42	42
Guided bomb units	Marine Forces-Atlantic	21	42	38	119
	Marine Forces-Pacific	258	100	94	94
Infrared-guided Maverick missile	Marine Forces-Atlantic	14	14	28	11
	Marine Forces-Pacific	44	23	23	23
Laser-guided Maverick missile	Marine Forces-Atlantic	11	21	16	11
	Marine Forces-Pacific	28	9	9	9

Appendix V: GAO Contact and Staff Acknowledgment

GAO Contact

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