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United States Government Accountability Office  
Washington, DC 20548

December 13, 2005

The Honorable Roscoe G. Bartlett  
Chairman, Subcommittee on Projection Forces  
Committee on Armed Services  
House of Representatives

Subject: *Issues Related to Navy Battleships*

Dear Mr. Chairman:

Until World War II U.S. Navy battleships provided an impressive show of force and outgunned and outmaneuvered their ocean-going enemies. From World War II until the Persian Gulf War in 1991, the Navy's *Iowa* class battleships provided Naval Surface Fire Support capabilities with their 16-inch guns. Naval Surface Fire Support, together with land- and air-based components, makes up the joint "fires triad", which is used to support Marine Corps amphibious assault operations. The last *Iowa* class battleship was decommissioned in 1992. In 1996, congressional authorizers became concerned that the Navy would not be able to produce a replacement Naval Surface Fire Support capability comparable to the battleships until well into the twenty-first century and directed the Secretary of the Navy to restore at least two *Iowa* class battleships to the naval vessel registry until the Secretary of the Navy certified that a capability had been developed equal to or greater than that provided by the battleships.<sup>1</sup> Two *Iowa* class battleships—the *U.S.S. Wisconsin* and the *U.S.S. Iowa*--remain on the naval vessel registry in inactive status. Both ships are considered "in reserve", meaning they are being retained for reactivation in case of full mobilization or future need.

Since 1995 we have reported several times on the status of battleships and their role in meeting future Naval Surface Fire Support requirements.<sup>2</sup> In November 2004, we reported that the Navy and Marine Corps had only recently begun the process to establish validated Naval Surface Fire Support requirements that address the overall capabilities needed, that the cost and schedule for reactivating and modernizing two

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<sup>1</sup> National Defense Authorization Act for Fiscal Year 1996, Pub. L. No. 104-106, Sec. 1011, H.R. Conf. Rep. No. 104-450, at 835 (1996).

<sup>2</sup> U.S. General Accounting Office, *DEFENSE ACQUISITIONS: Evaluation of the Navy's 1999 Naval Surface Fire Support Assessment*, GAO/NSIAD-99-225 (Washington, D.C.: Sept. 14, 1999); *FORCE STRUCTURE: Navy Is Complying with Battleship Readiness Requirements*, GAO/NSIAD-99-62 (Washington, D.C.: Apr. 12, 1999); *DEFENSE ACQUISITIONS: Naval Surface Fire Support Program Plans and Costs*, GAO/NSIAD-99-91 (Washington, D.C.: June 11, 1999); *PROGRAM STATUS: Naval Surface Fire Support*, GAO/NSIAD-97-179R (Washington, D.C.: Aug. 6, 1997).

*Iowa* class battleships had not been fully developed, and that fielding of a replacement Naval Surface Fire Support capability has been delayed.<sup>3</sup>

An issue confronting Congress in finalizing the National Defense Authorization bill for Fiscal Year 2006 is whether or not to allow the two remaining battleships to be removed from the naval registry and be donated. Decision makers have at least three alternatives to removing the two remaining battleships from the naval vessel registry. The Navy could (1) sustain the battleships in inactive status; (2) reactivate the battleships to their original warfighting capabilities, with some improvements to bring them up to current ship standards for habitability and interoperability; or (3) modernize the battleships, their fire support capabilities, and other supporting capabilities significantly beyond their original capabilities.

You requested that we review requirements for fire support and whether or not these requirements could be met with Navy battleships. We agreed to focus our work on two objectives. Specifically, we identified (1) mission requirements established by the Department of Defense (DOD) for fire support to expeditionary operations and how DOD officials view these needs and the ability of the battleships and current and planned capabilities to meet these requirements, and (2) cost factors that should be considered in evaluating whether to sustain, reactivate, modernize or delist the battleships. On November 10, 2005, we provided you with a briefing on our observations regarding battleships and fire support issues. This letter summarizes our observations and transmits the briefing slides as requested. (See enclosure I.)

To determine DOD requirements for fire support for expeditionary operations in the littorals, we reviewed DOD requirements documents and identified current and planned capabilities. We also held discussions with officials from the Office of the Secretary of Defense, Joint Staff, Chief, Naval Operations, Marine Corps Combat Development Command, the Navy's Inactive Ships Management Office, and the U.S. Joint Forces Command to obtain their views on existing and planned joint fires capabilities, the adequacy of these plans, and the ability of battleships to perform the fire support mission. In addition, we obtained combatant command views on the sufficiency of DOD fire support capabilities to carry out operational plans from officials at the U.S. Central Command and the U.S. Pacific Command. We also toured the battleship *U.S.S. Wisconsin* to observe its current condition. While on board, we discussed the ship's maintenance schedule, inspection procedures, annual funding, and cost factors for options to sustain, reactivate, and modernize the battleships. We also discussed these issues with Navy officials and determined whether they have completed any recent analysis on the cost of reactivating or modernizing the battleships. We did not assess the cost-effectiveness of options to reactivate or upgrade battleships because the Navy has not determined what enhancements would be required for these options or developed cost estimates. We performed our work from July through October 2005 in accordance with generally accepted government auditing standards.

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<sup>3</sup> U.S. Government Accountability Office, *Information on Options for Naval Surface Fire Support*, GAO-05-39R (Washington, D.C.: Nov. 9, 2004).

## Observations

DOD is in the process of reviewing a draft joint fires requirements document for expeditionary operations in the littorals<sup>4</sup> which was developed primarily by the Marine Corps in May 2005. The draft requirements document shows that planned capabilities will help to mitigate existing gaps in joint fires capabilities if programs such as the advanced gun system for the new DD(X) destroyer and the extended-range munitions for existing DDG destroyers are implemented as currently planned. However, current and planned DOD capabilities for joint fires will not fully meet DOD's needs because they will not provide sufficient capabilities such as engaging moving targets in restricted weather conditions or providing a sufficient quantity of fires over a short period of time. DOD officials believe that although some gaps in joint fires capabilities exist now and will continue to exist in the future, the risk associated with these gaps is acceptable and will not significantly affect the combatant commanders' ability to execute war plans. Moreover, they do not believe that keeping or modernizing battleships would be cost effective nor would the modernized battleships significantly reduce the risk in comparison with other planned capabilities that DOD is funding.

While the Navy maintains annual costs to sustain these battleships, the Navy has not developed any specific cost estimates for reactivating battleships to their original warfighting capabilities or for modernizing them beyond these capabilities. Numerous cost factors would have to be considered to assess such options including the cost of personnel to operate the ship, materials and labor to improve operating systems and habitability, and restoration or improvement of munitions and their delivery systems. Moreover, the capabilities and costs of reactivating or upgrading battleships would need to be compared to those of other ongoing DOD programs to enhance fire support capabilities such as the DD(X) program. Our prior work has shown that decisions on acquisition alternatives should be based on analyses of total ownership costs during a system's lifecycle, which include the costs to research, develop, acquire, own, and operate systems.<sup>5</sup>

### DOD is reviewing joint requirements for fire support for expeditionary operations in the littorals

Since May 2005 when the Marine Corps Combat Development Command submitted a draft requirements document for Joint Staff review, Naval Surface Fire Support requirements have become part of joint fires requirements and are currently being reviewed by DOD.<sup>6</sup> Joint fires include a system of weapons delivered from two or more components—aircraft, ships/submarines, and ground assets—toward a common objective. In order to comply with DOD's new Joint Capabilities Integration and Development System process, the Joint Staff directed the Marine Corps to submit the draft Initial Capabilities Document to determine joint fires requirements in support of

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<sup>4</sup> The littoral includes an area extending from a transition point from open ocean, e.g., the sea base, to more constrictive and shallower waters, to the shore, and onward to those inland areas that can be attacked, supported and defended from the sea.

<sup>5</sup> U.S. Government Accountability Office, *Best Practices: Setting Requirements Differently Could Reduce Weapon Systems' Total Ownership Costs*, GAO-03-57 (Washington, D.C. Feb. 11, 2003).

<sup>6</sup> Marine Corps Combat Development Command, *Initial Capabilities Document for Joint Fires in Support of Expeditionary Operations in the Littorals*, May 31, 2005.

expeditionary operations in coastal areas. The Initial Capabilities Document identified four gaps in existing and planned joint fires capabilities: (1) integrated joint command and control are not well-defined, (2) existing and future acquisition systems do not provide sufficient capability to engage moving targets under restricted weather conditions, (3) existing and future acquisition systems do not provide sufficient capability to limit collateral damage, and (4) existing and planned systems do not deliver a sufficient volume of fires on multiple targets simultaneously or over a short period of time. The draft document is in the process of being reviewed by subject matter experts within DOD. Prior to the development of this joint requirements document, the Marine Corps had established requirements in a document titled "Naval Surface Fire Support Requirements for Expeditionary Maneuver Warfare" in March 2002. This document established specific near-term, mid-term and far-term requirements for factors such as system response time, accuracy and precision, and range.

New capabilities being developed will enhance DOD's joint fires capabilities for expeditionary warfare, but some gaps will remain

Current capabilities to provide joint fires in support of expeditionary operations in the littorals include the 5-inch 54- or 62-caliber guns for the DDG destroyers and cruisers with 5-inch 54-caliber guns. The two battleships in inactive reserve, if reactivated, would provide 16-inch 50-caliber guns. Other joint fires capabilities include tactical aviation, surface-to-surface rocket systems, and Army and Marine Corps 105 millimeter and 155 millimeter artillery. Planned capabilities such as weapons systems and/or ships currently under development are expected to largely meet near- and mid-term requirements and partially mitigate multiple capabilities gaps if implemented as planned. Planned capabilities include the DD(X) destroyers with an advanced gun system firing long range land attack projectiles. Another planned capability is extended-range guided munitions for existing DDG destroyers. The DDG with extended-range guided munitions largely meets near- and mid-term Naval Surface Fire Support requirements, while the DD(X) meets mid-term requirements and may meet far-term requirements depending on the ultimate range of the projectiles. However, neither of these capabilities may be available until early next decade. As we have reported, both the DD(X) and extended-range guided munitions programs have experienced some technical and funding challenges.<sup>7</sup> In addition, neither current nor planned Naval Surface Fire Support capabilities fully mitigate joint fires gaps identified in the Initial Capabilities Document such as the ability to engage moving targets in restricted weather conditions and the ability to provide a sufficient quantity of fires over a short period of time. However, the DD(X) with the advanced gun system could mitigate those gaps and the DDG firing extended-range guided munitions somewhat addresses them. Land- and air-based systems, such as long-range bombers, may also help to mitigate these gaps.

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<sup>7</sup> U.S. Government Accountability Office, *DEFENSE ACQUISITIONS: Progress and Challenges Facing the DD(X) Surface Combatant Program*, GAO-05-924T (Washington, D.C.: July 19, 2005); U.S. Government Accountability Office, *DEFENSE ACQUISITIONS: Assessments of Selected Major Weapon Programs*, GAO-05-301 (Washington, D.C.: March 31, 2005).

DOD officials believe risk associated with current and planned capabilities is acceptable if programs are implemented as planned

DOD officials believe the level of risk associated with current fire support capabilities is acceptable given that other joint capabilities such as tactical aviation and long-range bombers could also contribute to providing joint fires to support theater commanders' war plans. For example, combatant command representatives told us they would be able to execute war plans with acceptable risk using current fires support capabilities. Also, DOD officials from the joint staff, combatant commands, Navy, and Marine Corps do not believe that reactivating battleships would be cost effective nor would the modernized battleships significantly reduce those risks or provide the best means to meet long-term joint fires capability requirements. Navy officials stated that the battleships would be expensive to operate, have munitions that lack accuracy, and are manpower intensive. Both Navy and Marine Corps officials stated that planned capabilities, including the DD(X) destroyers with the advanced gun system firing long-range land attack projectiles and extended-range guided munitions for existing DDGs, will help to mitigate existing joint fires gaps if executed as planned. However, Marine Corps officials support purchasing a larger number of DD(X) ships than are included in current Navy plans.

Analysis of battleship alternatives would need to consider many types of costs

Decision makers have at least three alternatives to removing the two remaining battleships from the naval vessel registry. The Navy could (1) sustain the battleships in inactive status; (2) reactivate the battleships to their original warfighting capabilities, with some improvements to bring them up to current ship standards for habitability and interoperability; or (3) modernize the battleships, their fire support capabilities, and other supporting capabilities significantly beyond their original capabilities. In addition to weighing the military capabilities associated with these alternatives, numerous cost factors would need to be considered for each option including the extent to which DOD would incur costs for

- mechanical and/or technological systems such as the propulsion system or communications systems;
- weapons and munitions such as fire control systems and ordnance and propellant safety; and
- personnel to operate the battleships (e.g., military personnel or contractor support), and training required to operate the various types of systems.

However, the capabilities and costs associated with these options would also need to be weighed and compared to those of DOD's other programs to enhance fire support capabilities, such as the DD(X) program with the advanced gun system and extended-range guided munitions for existing DDGs. Moreover, our past work has shown that an effective comparison of costs should focus on total ownership costs during a system's lifecycle. Total ownership costs include estimated operations and support cost in addition to research, development and procurement costs. The cost of a ship's crew is generally the single largest expense incurred over a ship's lifecycle.<sup>8</sup>

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<sup>8</sup> U.S. Government Accountability Office, *MILITARY PERSONNEL: Navy Actions Needed to Optimize Ship Crew Size and Reduce Total Ownership Costs*, GAO-03-520 (Washington, D.C.: June 9, 2003).

Cost factors involved in sustaining the battleships in inactive ship status include the cost of contractor support to maintain the ships for such things as preservation painting, interior dehumidification, and maintaining the fire and flood alarm systems. The Navy currently incurs expenses of about \$1.5 million per year to sustain both battleships in inactive status. Of this amount, about \$1 million covers additional annual preservation maintenance and ongoing paint preservation work on the *Wisconsin*. The ships are inspected twice a year to document electrical, safety, hull and general ship conditions. In addition, the deck of the *Iowa* must be repaired to ensure its safety. According to Navy officials, this would cost about \$1.6 million spread over two fiscal years.

Costs to reactivate the battleships to their original warfighting capabilities with some enhancements for habitability and interoperability would include costs to bring the battleships up to current ship standards. For example, the Navy would have to replace the analog communications system with digital systems so that they will be interoperable with other ships; improve the propulsion system, and update chemical and biological protection capabilities, and improve personnel habitability with additions such as sit-up berthing and accommodations for women at sea. Moreover, Navy officials estimate they would need about 1,500 military personnel to operate a reactivated battleship. The fire control system would need to be improved and the propellant powder bags for the 16-inch guns, stored off the ships, would need to be replaced due to age and deterioration. In addition, the damaged number two gun turret on the *Iowa* would need to be repaired.

Cost factors that would need to be considered to modernize and reactivate the battleships beyond their original warfighting capabilities could include replacing the propulsion system with a gas turbine system and developing guided munitions that could be launched from the battleships. Ultimately, the costs and time to modernize and reactivate the battleships would depend upon the specific missions and capabilities desired. However, in addition to the cost of more modern munitions, numerous enhancements to upgrade communications, the ship's deck, mechanics, chemical biological protection capabilities, living quarters, and other systems would also be required.

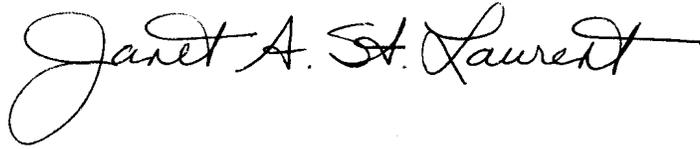
### **Agency Comments**

We received technical comments from DOD which we incorporated as appropriate.

If you or your staff has any questions about this report, please contact me at (202) 512-4402 or [stlaurentj@gao.gov](mailto:stlaurentj@gao.gov). Contact information for our offices of

Congressional Relations and Public Affairs can be found on the last page of this report. Key contributors to this report were Richard Payne, Susan Ditto, David Marroni, Brian Mateja, Donna Rogers, and Malvern Saavedra.

Sincerely yours,

A handwritten signature in black ink that reads "Janet A. St. Laurent". The signature is written in a cursive style with a long horizontal stroke at the end.

Janet A. St. Laurent  
Director, Defense Capabilities and Management

Enclosure

## Battleships and Naval Surface Fire Support



*U.S.S. Iowa*

Source: Navy Office of Information



*U.S.S. Wisconsin*

Source: NAVSEA Inactive Ships

## Objectives

- Naval Surface Fire Support (NSFS) requirements and how DOD officials view these needs and the battleships' ability to perform the mission
- Cost factors that should be considered in evaluating whether to sustain, reactivate, and/or modernize battleships



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## Scope & Methodology

- 
- Reviewed NSFS requirements and subsequent Joint Fires gaps identified by Draft Initial Capabilities Document
  - Reviewed current and programmed capabilities
  - Obtained DOD officials' views from
    - Office of Secretary of Defense
    - Joint Staff
    - Office of the Chief, Naval Operations (N76—Surface Warfare)
    - Marine Corps Combat Development Command
    - Navy Inactive Ships Program Office
    - U.S. Joint Forces Command and U.S. Central Command
  - Toured battleship *USS Wisconsin* to observe current condition
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## GAO Observations

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- NSFS requirements have been subsumed in Joint Fires Draft Initial Capabilities Document (as of May 2005)
  - Current capabilities do not fully meet NSFS or Joint Fires requirements
  - Programmed capabilities are expected to partially mitigate multiple capabilities gaps if implemented as planned
  - DOD officials believe level of risk is acceptable given other Joint Fires capabilities and that battleships will not reduce risk
  - Numerous cost factors would need to be addressed to sustain, reactivate, or modernize battleships; however, the Navy maintains only costs to sustain the battleships in inactive ship status
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## **Requirements: Key Naval Surface Fire Support Documents**

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- Marine Corps' "Operational Maneuver from the Sea" (1996)
  - Marine Corps' "Naval Surface Fire Support Requirements for Expeditionary Maneuver Warfare" (March 2002)
  - "Initial Capabilities Document for Joint Fires in Support of Expeditionary Operations in the Littorals" (draft May 2005)
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## **Requirements: Marine Corps' "Operational Maneuver from the Sea" (1996)**

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- Operational concepts drive fire support requirements that can be met only by complementary, overlapping, and redundant fire support systems: aviation, naval surface, and ground-based fires
  - Naval surface weapons will provide long-range, accurate fires from over the horizon, supporting maneuver units with high-volume, suppressive, neutralizing, and destructive fires
  - Fire support will be capable of providing a range of effects appropriate for the situation
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**Requirements: Marine Corps’ “Naval Surface Fire Support Requirements for Expeditionary Maneuver Warfare” (2002)**

Requirement	Near Term (2004-2005)	Mid Term (2006-2009)	Far Term (2010-2019)
System Response <sup>1</sup>	2.5 minutes or less	2.5 minutes or less	2.5 minutes or less
Range <sup>2</sup>	41-63 nautical miles	63-97 nautical miles	≥ 97 nautical miles
Accuracy/ Precision <sup>3</sup>	50 meters-desired threshold 20 meters-optimum threshold	50 meters-desired threshold 20 meters-optimum threshold	50 meters-desired threshold 20 meters-optimum threshold
Target Acquisition <sup>4</sup>	50-63 nautical miles	63-97 nautical miles	≥ 97 nautical miles

Source: Marine Corps’ Naval Surface Fire Support Requirements for Expeditionary Maneuver Warfare

<sup>1</sup> System Response is the time elapsed from call for fire until ordnance fired or launched.  
<sup>2</sup> Range is the distance from shooter to target. Ranges listed include 25 nautical mile standoff from the shoreline  
<sup>3</sup> Accuracy is the distance between point of impact to target. Precision is the ability to place ordnance on point of impact.  
<sup>4</sup> Target Acquisition includes detection, location, tracking, identification, and battle damage assessment.



**Requirements: “Initial Capabilities Document for Joint Fires in Support of Expeditionary Operations in the Littorals” (2005-Draft)**

Marine Corps requirements now captured in this draft document.  
 Document identifies four Joint Fires capabilities gaps:

- **Joint environment**—Integrated Fires command and control is not well defined
- **Weather restrictions**—Existing and future target acquisition systems do not provide sufficient capability to engage moving targets under restricted weather conditions
- **Collateral damage**—Existing and future target acquisition systems do not provide sufficient capability to engage targets when friendly forces are in close contact or when causing collateral damage is a concern
- **Fires volume**—Insufficiency in existing capability to deliver a large quantity of fires on multiple targets simultaneously or over a short period of time



## Requirements: Current Joint Fires Capabilities

- **Ships**
    - 30 DDGs with 5" 54-caliber guns
    - 15 DDGs with 5" 62-caliber guns
    - 22 Cruisers with two 5" 54-caliber guns
- } Currently use same munitions
- 2 Battleships (*Iowa* and *Wisconsin*) with nine 16" 50-caliber guns. In inactive status; would require time and incur cost to reactivate
- **Joint Fires Capabilities**
    - Tactical aviation
    - Surface-to-surface rocket systems (HIMARS, MLRS, ATACMS, Tactical Tomahawks)
    - Artillery: 105 mm & 155 mm—Army and Marine Corps



## Requirements: Comparison of Current Capabilities—5-inch guns and 16-inch guns

Near Term Requirement <sup>1</sup> (2004-2005)	5-inch gun with current munitions	16-inch gun with standard round <sup>2</sup>
<b>System Response</b> <i>2.5 minutes or less</i>	1 to 3 minutes	2 to 5 minutes after first shot to adjust fire
<b>Range</b> <i>41-63 nautical miles</i>	13 nautical miles	24 nautical miles
<b>Accuracy/Precision</b> <i>50 meters-desired threshold</i> <i>20 meters- optimum threshold</i>	150 meters over or short; 50 meters left or right at maximum range	Up to 900 meters long or short; up to 400 meters left or right at maximum range
<b>Target Acquisition</b> <i>50-63 nautical miles</i>	Not solely a ship function	Not solely a ship function

Sources: Marine Corps' Naval Surface Fire Support Requirements for Expeditionary Maneuver Warfare, Naval Gunfire Spotter Handbook (1991), Letter of Promulgation for Naval Gunfire Spotters Handbook (1990), Fleet Marine Force Manual (1991), and Navy officials

<sup>1</sup>Even if reactivated, the battleships and their 16-inch guns would not be available to support near- or mid-term requirements.  
<sup>2</sup>Battleship capabilities are based on technologies that existed on the ships at deactivation (1992). There are proposals to improve technologies that could extend range and accuracy, but such proposals are not part of DOD plans for joint fires.



## Requirements: Programmed Capabilities

- **For DD(X) and its munitions**

- Estimated cost: \$3.3 billion for first ship, less for subsequent ships
- Initial Operational Capability 2014 (as of Nov. 23, 2005); Full Fielding has yet to be determined
- Navy's fiscal year 2006-2011 Future Years Defense Plan identifies funding for one ship per year from fiscal years 2007 to 2011 for a total of 5 ships; as of Dec. 1, 2005, Navy plans to build 8-12 DD(X)
- Advanced Gun System (AGS) - 155 mm gun system designed for DD(X); uses Long Range Land Attack Projectile (LRLAP)
- DD(X) will provide responsive fires in support of forces ashore and pre-planned fires as well as Counter-Battery capability

- **For DDG and its munitions**

- Extended Range Munitions (ERM) - long range and precise global positioning system targeting capability
- Under development since 1996; Initial Operational Capability 2011

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## Requirements: Comparison of Marine Corps' Requirements to DDG and DD(X) Programmed Capability and Munitions Goals

Requirement	Near Term Requirement (2004-2005)	Mid Term Requirement (2006-2009)	Long Term Requirement (2010-2019)	DDG with 5"62-caliber gun firing ERM	DD(X) with AGS firing LRLAP
<b>System Response</b>	2.5 minutes or less	2.5 minutes or less	2.5 minutes or less	2.5 minutes	1 to 2.5 minutes
<b>Range</b>	41-63 nautical miles	63-97 nautical miles	≥ 97 nautical miles	63 nautical miles	83 nautical miles <sup>1</sup>
<b>Accuracy/Precision</b>	50 meter desired threshold 20 meter optimum threshold	50 meter desired threshold 20 meter optimum threshold	50 meter desired threshold 20 meter optimum threshold	GPS; 10-20 meters	GPS- Classified
<b>Target Acquisition</b>	50-63 nautical miles	63-97 nautical miles	≥ 97 nautical miles	Not Solely a Ship Function	Not Solely a Ship Function

Sources: Marine Corps' Naval Surface Fire Support Requirements for Expeditionary Maneuver Warfare, Navy officials

<sup>1</sup>LRLAP has successfully demonstrated in testing to 63 nautical miles. The DD(X) requirement threshold range is 63 nautical miles with an objective range of 100 nautical miles.

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## Requirements: Ability of Current and Programmed Capabilities and Battleships to Mitigate Joint Fires Capabilities Gaps

Current Joint Fires Capabilities Gaps <sup>1</sup>	DDG with 5" gun firing current munitions	BB with 16" gun firing standard round	DDG with 5"62-caliber gun firing ERM	DD(X) with AGS firing LRLAP
Joint Environment	Does Not Mitigate	Does Not Mitigate	Does Not Mitigate	Partially Mitigates <sup>2</sup>
Weather Restrictions	Partially Mitigates	Partially Mitigates	Partially Mitigates	Partially Mitigates
Collateral Damage	Does Not Mitigate	Does Not Mitigate	Partially Mitigates	Partially Mitigates
Fires Volume	Partially Mitigates (within range)	Partially Mitigates (within range)	Partially Mitigates	Partially Mitigates

Sources: Marine Corps and Navy officials

<sup>1</sup>As identified in the draft "Initial Capabilities Document for Joint Fires in Support of Expeditionary Operations in the Littorals"  
<sup>2</sup>No single system fully mitigates a joint fires gap; at least two independent capabilities would be needed to fully mitigate gaps



## Requirements: OSD, Joint Staff, Navy, and Marine Corps Officials' Views on Urgency to Provide Joint Fires Capabilities

DOD officials generally stated current capabilities are adequate with an acceptable level of risk and that battleships will not reduce existing joint fires gaps

- **OSD Position**
  - Interim measures are adequate to meet current requirements with acceptable risk
  - Does not consider reactivating and modernizing battleships as cost-effective; would not result in reduced risk in current Joint Fires gaps
  - Advanced Gun System will provide Joint Fires capabilities that could not be accomplished effectively by 16-inch guns on reactivated battleships; new precision round could be built for 16-inch gun but would not be available until after AGS is deployed
- **Joint Staff Position (J8)**
  - Identified and emerging capability gaps are being addressed to an acceptable level of risk with current Joint Fires capability; planned programs will further mitigate capability gaps and risk



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**Requirements: OSD, Joint Staff, Navy, and Marine Corps Officials' Views on Urgency to Provide Joint Fires Capabilities (cont.)**

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- **Navy Position (CNO—OPNAV N76)**
  - Recognizes need to provide Joint Fires capabilities but believes level of risk is acceptable; plans to analyze alternatives such as extended range munitions and long range land attack projectiles to address capabilities gaps
  - Does not support reactivation of battleships because the battleships will not fully address gaps identified in Initial Capabilities Document
  
- **Marine Corps Position (MROC)**
  - Need 24 DD(X) to fully support a major combat operation within desired timeframes; could accomplish mission with fewer than 24 ships at risk of added time to operation and hitting fewer targets
  - Supports Navy efforts to delist battleships because battleships will not meet long-term Joint Fires capability requirements



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**Requirements: Combatant Command Views on Urgency to Provide Joint Fires Capabilities**

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- Current NSFS capabilities sufficient for Joint Fires requirements
  
- Commands able to carry out OPLANS with current Joint Fires capabilities
  
- Capability is the key, ship platform does not matter



## Cost Factors: To Sustain, Reactivate, and/or Modernize Battleships

Decision makers have three alternatives to delisting the two battleships:

- 1) Sustain battleships in current inactive ship status
- 2) Reactivate battleships to current ship standards
- 3) Modernize battleships

Each alternative has different cost factors



## Cost Factors: To Sustain, Reactivate, and/or Modernize Battleships

Cost factors	Sustain Inactive ship status	Reactivate Current ship standards	Modernize
<b>Mechanical/ Technological</b>	Repair <i>Iowa's</i> Deck  Maintain Propulsion System  Maintain C4I	Repair <i>Iowa's</i> Deck Repair <i>Iowa's</i> gun turret Improve Propulsion System  Replace C4I analog with digital Improve Chem/Bio Protection Improve Personnel Habitability	Repair <i>Iowa's</i> Deck Repair <i>Iowa's</i> gun turret Replace Propulsion System with Gas Turbine Replace C4I analog with digital Improve Chem/Bio Protection Improve Personnel Habitability
<b>Personnel</b>	Contractor Support	Military Manning Military Training	Military Manning Military Training
<b>Weapons/ Munitions</b>	Existing stocks and spares	Improve Fire Control Ordnance Propellant	Improve Fire Control Ordnance Propellant Develop guided munitions



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## **Cost Factors: To Sustain, Reactivate, and/or Modernize Battleships**

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- Navy has been spending \$250,000 per ship, per year to sustain two battleships in inactive ship status
- Regardless of decision to sustain, reactivate, or modernize, the deck of the *Iowa* will need to be repaired at a cost of about \$1.34 million unless it is delisted
- Navy has not developed plans or cost estimates to reactivate or modernize battleships

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