

Working Paper Series
Congressional Budget Office
Washington, DC

Implications of the Department of Defense Readiness Reporting System

R. Derek Trunkey
Congressional Budget Office
derek.trunkey@cbo.gov

May 2013

Working Paper 2013-03

To enhance the transparency of the work of the Congressional Budget Office (CBO) and to encourage external review of that work, CBO's working paper series includes papers that provide technical descriptions of official CBO analyses as well as papers that represent independent research by CBO analysts. Working papers are not subject to CBO's regular review and editing process. Papers in this series are available at <http://go.usa.gov/ULE>.

The author is grateful to Matthew Goldberg, Bernard Kempinski, Bill Ma, David Mosher, and Jeanine Rees for helpful comments and suggestions.

Abstract

The Department of Defense (DoD) is developing the DoD Readiness Reporting System (DRRS) to improve on readiness reporting relative to what occurs under the older Status of Resources and Training System (SORTS). The additions and improvements to SORTS are substantial, including the ways in which commanders assess units' readiness for individual missions, automation of resource and training calculations, and the enhanced ability of associated units to report their combined or separate readiness. DoD's current plans call for DRRS to be fully implemented by 2014. At present, very little of the improved readiness information contained in DRRS is carried over to the Quarterly Readiness Report to Congress—a report that Congressional oversight committees rely on to assess the readiness of U.S. armed forces. CBO examined potential changes to the Quarterly Readiness Report, including displaying SORTS scores and mission assessments by unit type and deployment status, linking levels of readiness to the amount of available resources, creating readiness summaries for aircraft carrier strike groups, and improving the ways in which unit and personnel rotation are displayed.

Contents

Summary 1

SORTS Historical Readiness Reporting..... 3

 Calculations in SORTS 3

 Criticism of SORTS..... 6

Transition to DRRS 7

 Calculations in DRRS 9

 Major Improvements in DRRS 10

 Concerns about DRRS 12

 Remaining Challenges 12

Reports to Congress..... 13

CBO’s Examples of New Readiness Displays 13

 Example 1: SORTS Scores by Type of Unit and Deployment Status 14

 Example 2: Mission Assessments by Type of Unit and Deployment Status 14

 Example 3: SORTS Scores by Mission Assessment 16

 Example 4: Further Linking of Readiness to Resources 18

 Example 5: Readiness Summaries for Carrier Strike Groups 19

 Example 6: Unit and Personnel Rotation..... 19

 Example 7: Comparing the Supply and Demand of Forces Called for in War Plans 19

Summary

Each year, the Department of Defense (DoD) spends about \$350 billion to further the readiness of its forces for current and future military operations. This includes attracting, retaining, educating, and training top quality military personnel; keeping equipment well maintained; and providing the food, fuel and other material needed to support operations. DoD broadly defines readiness as the ability of U.S. military forces to fight and meet the demands of the National Military Strategy, which describes the armed forces' role in achieving national security objectives. DoD assesses readiness on at least two levels: individual units such as Army and Marine Corps battalions, Navy ships, and Air Force squadrons; and joint forces composed of units from more than one service branch.

Measuring readiness is important but difficult, and measuring DoD's readiness for its broad set of missions has been a long-standing challenge. In principle, assessments of readiness assist DoD and the Congress in determining whether U.S. military forces are ready for the missions they may be called on to perform and whether budgets are adequate and are being spent on activities that are the most effective and efficient at generating readiness. In this paper, the Congressional Budget Office (CBO) examines DoD's most recent approach to measuring readiness and its potential to provide better information about readiness to the Congress.

Since 1986, DoD has reported on the readiness of its units primarily through the Status of Resources and Training System (SORTS). That system measures the readiness of individual military units to perform the missions for which they were designed by comparing the current amounts of resources and training for each unit with the amounts the military services have determined that a fully-resourced unit would need. However, SORTS was widely criticized for not accurately or comprehensively measuring unit readiness. In response to a Congressional directive in 1999, DoD began implementing a new system called the Department of Defense Readiness Reporting System (DRRS) that was intended to eventually replace SORTS.¹

DRRS preserves a number of SORTS metrics for measuring readiness at the unit level. DRRS also attempts to measure readiness at a broader, more strategic level, synthesizing unit and joint force readiness to describe the ability of the armed forces as a whole (including the service branches, the combatant commands, and combat support agencies) to fight and meet the demands of the National Military Strategy. (A combatant command is a high level military unit composed of forces from two or more services and has a broad and continuing mission, such as defense of the Pacific region.) Figure 1 is an example of such a strategic view. The map gives an overview of the location of combatant commands, which are marked with circles that are color coded to show the commands' levels of readiness. Additional information about past and projected levels of readiness can be displayed by clicking on the circles marking the commands.

Although DoD initially envisioned DRRS as a replacement for SORTS, DoD now intends for DRRS to improve on, add to, and automate readiness reporting while continuing to incorporate

¹ Strom Thurmond National Defense Authorization Act for Fiscal Year 1999, Public Law 105-261, § 373 (1998). CBO uses the term SORTS in the same way that the Government Accountability Office (GAO) has used that term to refer to the legacy SORTS system: GSORTS and ESORTS. See Government Accountability Office, *Military Readiness: DoD Needs to Strengthen Management and Oversight of the Defense Readiness Reporting System*, GAO-09-518 (September 2009). Though the initial plan was to replace SORTS with DRRS, DoD now intends to incorporate much of SORTS into DRRS.

Figure 1.
A Strategic View of Readiness: DRRS Dashboard Main Window



Source: *DRRS Primer for Senior Leaders* (Office of the Under Secretary of Defense for Personnel and Readiness, August 2011), p. 21, http://certification.drrs.org/files/0000/0017/DRRS_Primer_For_Leaders_Aug_2011.pdf.

Notes: The data shown are illustrative. The actual status of units is classified information.

DRRS = Defense Readiness Reporting System.

most of the SORTS metrics. The additions and improvements to SORTS are numerous, including the ways in which commanders assess the readiness of individual missions (yes, no, or maybe), automation of the SORTS resource and training calculations, and allowing associated units to accurately report their combined or separate readiness. DoD's current plans call for DRRS to be fully implemented by 2014.

In CBO's assessment, DRRS has many advantages over the traditional SORTS system:

- DRRS is anticipated to be more accurate at measuring the resources of military units;
- DRRS measures the readiness of more types of units;
- DRRS tracks what units and individuals can do as well as their resources;
- DRRS allows commanders to specify which mission they are reporting on and to report on multiple missions;

- A commander’s assessment in DRRS incorporates a judgment about not only the specific resources and training a unit has but also other factors, such as morale or confidence, that are not quantitatively captured in the resources and training metrics;
- DRRS is updated much more frequently;
- The DRRS online system can generate many different types of reports; and
- DRRS can be used as a force management tool, matching the supply of ready forces with the demands for those forces to carry out plans and conduct missions.

Despite the many improvements in readiness measurement already underway, DRRS is still not completely implemented and DRRS reports do not yet make full use of all the information in the system. Moreover, very little of the improved readiness information in DRRS is currently contained in the Quarterly Readiness Report to Congress—a report that Congressional oversight committees rely on to assess the readiness of U.S. armed forces. CBO examined potential changes to that quarterly report, including:

- Displaying SORTS scores by unit type and deployment status,
- Displaying mission assessments by unit type and deployment status,
- Tabulating SORTS scores by mission assessment,
- Linking levels of readiness to resource metrics,
- Creating readiness summaries for aircraft carrier strike groups,
- Tabulating unit and personnel rotation, and
- Comparing the supply of ready forces to the demand of specific war plans.

SORTS Historical Readiness Reporting

The purpose of SORTS is to measure the readiness of individual military units to perform the set of missions for which they were designed. SORTS does that by comparing the current levels of resources and training for each unit to the targeted amounts—the amounts the military services have determined that a fully-resourced unit would need, what DoD calls the units’ requirement. SORTS also contains a field for reporting a unit’s ability to perform its currently assigned mission (as opposed to the design mission), but that field is a single number and its use has been inconsistent. Finally, SORTS can be used to summarize the types of units that are available to perform various tasks, although the details about which units can perform which tasks must come from other sources.

Calculations in SORTS

All military units with a wartime mission—such as Army battalions, Marine Corps regiments, Navy ships, and Air Force squadrons—are required to report their SORTS data. The relationships among some units are hierarchical; for example, an Army brigade generally consists of several battalions and supporting units. Many of the subordinate units also report SORTS scores. Those

scores may not match each other or aggregate in a consistent way because the reports are created separately and the methods for aggregating units with different readiness levels are not uniform across the services.

For each unit and period of time, SORTS provides one overall C score that is an aggregation of the scores in four resource areas: personnel, supply, equipment, and training. Within each resource area, a ratio or set of ratios of actual resources to targeted resources is translated into a single four-point score ranging from 1 (most ready) to 4 (least ready).² The scale indicates rank order. For example, a score of 1 is better than a score of 2, but it is not necessarily twice as good. Each service has specific guidance on how to tabulate current resources and the criteria for assigning a score based on the ratio of current resources to the targeted amount. In a typical procedure, after the commander calculates the score for each of the four resource areas, the overall score is provisionally calculated as the largest number (reflecting the worst readiness) among the four resource areas. If the unit commander believes that the score does not accurately reflect the unit's current readiness, he or she may then adjust the overall score.³ Finally, the unit sends a text-based message that contains the SORTS scores to the appropriate headquarters unit (see Figure 2).

Historically, units have manually calculated the ratios and scores at least once per month or more often as circumstances dictate. There is no procedure for maintaining the data used to compute the SORTS scores, and thus the information is lost. The main data elements of SORTS reports are the overall scores and the scores in each of the resource areas. Other, more detailed readiness metrics are kept in separate systems such as equipment maintenance and spare parts databases. These databases are used at the local level or within specific communities, such as personnel, maintenance and supply, and are not generally available to other DoD offices.

Personnel. The SORTS score for personnel is the result of comparing the number of service members assigned to a unit by the number of positions approved for that unit. Ratios are calculated and translated into a personnel score ranging from 1 to 4. The four service branches have different rules for calculating and scoring the comparison. For example, a person who is assigned to fill a position but does not have the correct training for that position may or may not be counted in the numerator of the ratio.

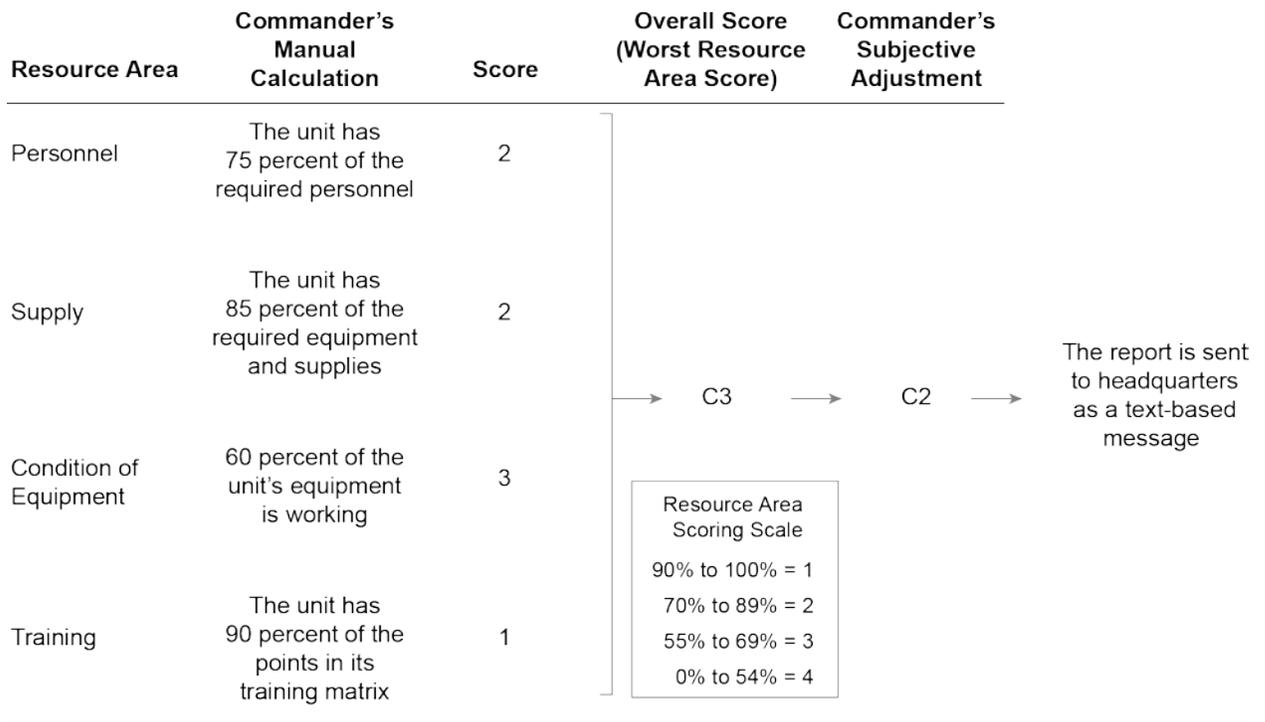
Supply. The score for supply compares the amount of equipment, spare parts, and ordnance a unit has with the targeted amount. For some of the larger and more complex units (such as aircraft squadrons), the supply score is based on an inventory of thousands of individual items. The services have different algorithms for aggregating the volume of parts and equipment—including equipment that is designated as critical and weighted more heavily in the calculation—to obtain a single ratio and, consequently, a single score. The final score does not reflect whether missing equipment, spare parts, or ordnance was most important in determining the score.

Equipment. The score for equipment reflects the *condition* of a unit's most important equipment (as distinct from the supply area which measures the *amount* of all equipment and supplies on

² There is also a score of 5 for units undergoing reorganization or depot maintenance. For more information on SORTS, see Chairman of the Joint Chiefs of Staff (CJCS) Guide 3401D, *CJCS Guide to the Chairman's Readiness System* (November 2010), www.dtic.mil/cjcs_directives/cdata/unlimit/g3401.pdf.

³ Various DoD and service representatives disagree about how often such adjustments occur and whether or not they are allowed under current policy. CBO's review of historical data indicate that the overall scores are often adjusted to a higher level of readiness than the worst of the resource area scores indicate.

Figure 2.
A Simplified Example of the SORTS Reporting Process



Sources: Congressional Budget Office

Notes: The data shown are illustrative.

C1 = the unit can fully carry out its wartime mission; C2 = the unit can carry out most of its wartime mission; C3 = the unit can carry out portions of its wartime mission; C4 = the unit needs additional resources to perform its wartime mission.

The scoring scale percentages differ among the service branches.

SORTS = Status of Resources and Training System.

hand). The comparison is between the amount of equipment that is in working condition and the amount of equipment that the unit is supposed to possess; equipment that is not deemed to be in working condition does not contribute to the numerator of the ratio. The list of equipment in the equipment resource area is usually much shorter than the list included in the supply resource area. For example, an aircraft squadron might include equipment and supplies related to test and maintenance in the supply area but only the aircraft themselves in the equipment area.

Training. Each service branch and type of unit measures training differently. In the past, it was common practice for a unit commander to estimate the number of additional days of training the unit would need to complete its training syllabus; a larger number implied that the unit was less ready and so the training resource score, too, would be higher. Today, it is more common for a unit to have a training matrix—a list of training events and a level of completion or proficiency for each event. The SORTS training score for the unit is sometimes calculated from the average proficiency among all individuals in the unit and sometimes from the percentage of individuals who attain a certain level of proficiency. Changes to the training matrix can have large impacts on

the training score and thus the overall score.⁴ If another task is added to the training matrix or if the period for which training certification remains valid is shortened, the average proficiency of the unit or the percentage of personnel that are considered proficient will decrease unless additional training resources are provided.

Criticism of SORTS

While SORTS has been the most comprehensive and widely-used readiness reporting system in DoD for more than 25 years, it has also been subject to much criticism:⁵

- SORTS scores include subjective inputs as well as objective measures;
- SORTS data are prone to errors;⁶
- SORTS procedures are not standardized across the military services;
- SORTS scores may be misleading because they are based on broad measurements that can mask underlying problems in a critical area;
- There is no single SORTS database;⁷
- The standards for assessment in SORTS are not consistent;⁸ and
- The overall SORTS score can be subjectively changed (usually to a better score) by the commander of the reporting unit.

⁴ See Laura Junor and others, *Trends in Interdeployment Training Readiness: A Study of the Bathtub* (Alexandria, VA: CNA Corporation, Research Memorandum D0002077.A2, October 2000).

⁵ See Chairman, Joint Chiefs of Staff (CJCS) Guide 3401D, *CJCS Guide to the Chairman's Readiness System* (November 2010); Congressional Budget Office, *Trends in Selected Indicators of Military Readiness* (March 1, 1994), www.cbo.gov/publication/15082; Congressional Budget Office, *Paying for Military Readiness and Upkeep: Trends in Operation and Maintenance Spending* (August 31, 1997), www.cbo.gov/publication/10375; John Tillson and others, *Improving Readiness Reporting: Thoughts on Content and Design of the DRRS* (Alexandria, VA: Institute for Defense Analyses, December 2003), www.dtic.mil/futurejointwarfare/ideas_concepts/taxonomy_tasks.pdf; Government Accountability Office, *Military Readiness: DoD Needs to Develop a More Comprehensive Measurement System*, GAO/NSIAD-95-29 (October 1994), www.gao.gov/products/NSIAD-95-29; Government Accountability Office, *Military Readiness: Reports to Congress Provide Few Details on Deficiencies and Solutions*, GAO/NSIAD-98-68 (March 1998), www.gao.gov/products/NSIAD-98-68; and John T. Dewey, *Defense Readiness Reporting System: A Better Way to Measure Readiness?* (U.S. Army War College, 2007), www.dtic.mil/cgi-bin/GetTRDoc?AD=ADA469396.

⁶ Unit names are entered by hand and are not always consistent from one report to another; nondeployed units often file no report in a given month, which analysts can interpret, sometimes incorrectly, to mean that the level of readiness is the same as that of the previously reported month; and the system used for transmitting SORTS status updates has arcane formatting and is limited to text input and display.

⁷ The Office of the Secretary of Defense (OSD) does maintain a historical SORTS database for all four military services but updates it only occasionally. OSD indicated that DoD might have other combined SORTS databases, but those are not generally used for readiness analysis and were not made available for CBO to examine.

⁸ SORTS generally measures the ability of a unit to complete the wartime mission for which it was designed, but sometimes users interpret this metric as a measure of a unit's ability to complete its assigned or potential mission.

DoD developed DRRS in an attempt to address those long-standing criticisms. Several planned and ongoing improvements to readiness reporting and SORTS have been incorporated into DRRS.

Transition to DRRS

DRRS is now widely accepted in DoD as an improvement on SORTS, although the transition from SORTS to DRRS was longer and more difficult than initially envisioned.⁹ DoD has been experimenting with and implementing DRRS for more than 10 years and is still working toward full implementation. During interviews that CBO conducted, representatives of the services and other DRRS users within DoD noted several problems or concerns that arose during the initial stages of DRRS implementation, and those issues have been documented by the Government Accountability Office.¹⁰ Service representatives also reported that many of those problems—such as delays, poor guidance, and problems with contract management—have since been corrected.

DoD originally envisioned DRRS as an outright replacement for SORTS, and the SORTS resource scores were slated to be cancelled. During the evolution of DRRS, DoD changed its plan so that DRRS would continue to incorporate a number of unit-level measures, many of which are based on SORTS resource metrics. Also, while each service began with a separate DRRS system, DoD planned to merge those systems into a single system at the department level. Under the current plan, the services will retain their separate DRRS systems, which will feed into the DoD-wide system called DRRS Strategic (DRRS-S). DoD made that change to accommodate the services' desire to identify and correct reporting errors and problems of interpretation within their own systems before transmitting their data to the central system.

DRRS's most significant addition to SORTS is a commander's assessment of a unit's ability to perform tasks and missions that the unit may be called on to execute. A commander rates a unit against its actual assigned mission, anticipated mission, and core mission (the complete set of missions for which the unit was designed). Each assessment has lists of tasks and includes links to additional information and points of contact so that the basis for each assessment is clear and verifiable. For each mission and underlying set of tasks in DRRS, the commander assigns a rating of yes—the unit can complete the mission under anticipated conditions; no—the unit cannot complete the mission; and qualified yes—the unit may or may not be able to complete the full mission or could do so only under certain circumstances. DRRS translates those assessments into color codes of green, red, and yellow, respectively, records them, and records the date on which they were made. The data are all stored in DRRS, and commanders do not need to submit separate reports after updating any information. For a simplified example of this process, see Table 1.

DRRS incorporates several other improvements over SORTS. DRRS reports readiness for many unit types that were often not reported accurately—or at all—in SORTS. For example, based on CBO's inspection, SORTS data for reserve components and some higher-level units such as divisions (aggregations of regiments and battalions) and wings (aggregations of aircraft

⁹ For more information on how DRRS improves on SORTS, see Laura Junor, "The Defense Readiness Reporting System, A New Tool for Force Management," *Joint Forces Quarterly* 39 (October 2005), pp. 30–33.

¹⁰ CBO interviewed representatives from each service, OSD, the Combatant Command staff, and contractors who work on DRRS issues. Government Accountability Office, *Military Readiness: DoD Needs to Strengthen Management and Oversight of the Defense Readiness Reporting System*, GAO-09-518 (September 2009).

Table 1.
A Simplified Example of a Commander's Assessments in DRRS

Automatically-Calculated Resource Area Scores			
Personnel	Supply	Equipment	Training
75 percent	85 percent	60 percent	90 percent

The Unit Commander Enters Task and Mission Assessments Into DRRS		
	Commander's Assessment	Date of Assessment
Core Mission		
Task 1: Deploy	Yes	07/10/2012
Task 2: Sustain	No	06/06/2012
Task 3: Manage C4I	No	06/06/2012
Overall	No	07/10/2012
Assigned Mission		
Task 1	Yes	07/15/2012
Task 2	Yes	07/15/2012
Task 3	Qualified Yes	07/20/2012
Overall	Yes	07/20/2012

Sources: Congressional Budget Office; Office of the Secretary of Defense, *The Defense Readiness Reporting System: Handbook for Conducting Mission Assessments in DRRS*, Version 5.0, (Washington, D.C.: 2005), p.10.

Notes: The data shown are illustrative.

Yes = the unit can carry out its mission; qualified yes = the unit can carry out its mission with some risk under most conditions; no = the unit cannot carry out its mission to proscribed standards.

Colored shading corresponds to readiness assessments; green = yes, yellow = qualified yes, red = no.

DRRS = Defense Readiness Reporting System; C4I = command, control, communications, computers, and intelligence.

squadrons) often contained errors. Reporting for those types of units is more reliable in DRRS. Also, DRRS includes many headquarters-level units, detachments, combatant commanders, National Guard units (both their wartime and disaster response missions), and installations that SORTS excluded or only partially captured. DRRS's addition of those units gives an important overall view of readiness that SORTS did not provide. Also, the underlying data and other information about the reports is available to DRRS users. Figure 3 is an example of a unit's readiness in DRRS. The columns show different missions and the rows show assessments of the missions and the underlying tasks. Figure 1 is another, broader, view of similar data.

Figure 3.
DRRS Dashboard Showing the Data Underlying Readiness Scores for a Particular Command

Mission Assessment > CMDR COCOM (DJUUUU) > Overall					
Mission: Overall					
	Plan 00	Plan 07	Plan 20	Plan 05	Plan 06
Mission Assessment	Y	Y	Y	Y	Y
Last Approved Date	10-Jul-2010	10-Jul-2010	10-Jul-2010	10-Jul-2010	10-Jul-2010
Approval Status	Approved	Approved	Approved	Approved	Approved
MET					
ST 1 Deploy, Concentrate, and Maneuver Theater Forces	N	Y*	Y*	N	Y*
ST 2 Conduct Theater Strategic Intelligence, Surveillance, and ...	Q	Q	Q	Q	Q
ST 3.1 Process Theater Strategic Targets	Y*	Y*	Y*	Y*	Y*
ST 4 Sustain Theater Forces	Y	N	Y	N	Y
ST 4.2.4 Establish and Coordinate Training of Joint and Combin...	Y*	Y*	Y*	Y*	Y*
ST 5.1 Operate and Manage Theater C4I Environment	Y	Y	Y	Y	Y
ST 5.3 Determine Strategic Direction	Q	Q	Q	Q	Q
ST 5.5 Conduct Theater-Wide Information Operations (IO)	Y	Y	N	Y	Y
ST 6.1 Provide Theater Aerospace and Missile Defense	Y*	Y*	Y*	N	Y*
ST 6.2 Coordinate Protection for Theater Forces and Means	Q*	Q*	Q*	Q*	Q*
ST 8 Develop and Maintain Alliance and Regional Relations	Y*	Y*	Y*	Y*	Y*
ST 9 Conduct Combating Weapons of Mass Destruction (CWMD...	Q	Q	Q	Q	Q

Source: *DRRS Primer for Senior Leaders* (Office of the Under Secretary of Defense for Personnel and Readiness, August 2011), p. 15, http://certification.drns.org/files/0000/0017/DRRS_Primer_For_Leaders_Aug_2011.pdf.

Note: The data shown are illustrative.

DRRS = Defense Readiness Reporting System.

Calculations in DRRS

In SORTS, scores for each resource area were manually calculated and expressed on a scale of 1 to 4. In DRRS, the scores are calculated automatically and expressed on a scale of 0 to 100 percent. Each service, however, has different procedures for calculating those percentages, for example, how to count people without the proper training for a position and on the number of items to include in the supply area.

The basis for each mission and task assessment may be retrieved from DRRS. Each service has implemented this feature differently, but they all include the date of assessment, the scoring criteria (some tasks have a percentage goal while others are just marked as completed or not), and whether the commander based his or her assessment on an observed operation or training event or instead formed a judgment based on other information.

There are some important differences between the Navy's implementation of DRRS and that of the other services.¹¹ Units in the Army, Air Force, and Marine Corps report scores for four resource areas—personnel, supply, equipment, training—and overall. The Navy separates bombs, missiles, and ammunition from supply to create a fifth resource area—ordnance. (A typical situation for surface ships was that a shortage of missiles would cause the supply resource score to be low, in turn lowering the overall readiness score. That particular shortage was not apparent in SORTS unless specifically noted by the commander in the SORTS report.) Also, Navy units may report separate scores for dozens of distinct missions (called primary mission areas in the Navy's version of DRRS) or tasks. All of the resource scores are then automatically calculated for each mission. Naval shore installations also report a facilities resource area that lists details of the types of facilities available and also their condition. Thus, some Navy units report literally hundreds of resource scores in DRRS, providing a much richer picture of readiness than SORTS.

The other services have maintained the traditional SORTS resource areas and do not generally report resource scores by mission or task, but information about resources may be available as backup information in DRRS. The detailed records of missions and tasks in DRRS facilitate certain force management decisions by high-ranking users. For example, a commander could search across unit types and branch of service for power generation or water purification capabilities and see all of the units with those capabilities and their current readiness assessments. Alternatively, a commander could search across multiple units for personnel with Arabic language skills.¹² Other types of searches are not yet quick or automatic in DRRS but can be done with some effort. Another ad hoc calculation performed by DoD using DRRS data compares the supply of ready forces to the demand for those forces in war plans. That analysis highlights instances in which certain units were tasked in more than one war plan—which presents a potential problem in timing—and how quickly reserve units would need to be deployed to address that problem.

Major Improvements in DRRS

When fully implemented, DRRS will do everything SORTS did and more (see Table 2). The major improvements in migrating from SORTS to DRRS are:

- SORTS resource and training calculations are automated;
- All DRRS users—not just the reporting units—have direct access to the data on which the calculations are based;¹³
- The missions and tasks used for measuring units' readiness are identified and defined;

¹¹ *Defense Readiness Reporting System*, Navy briefing slides and verbal answers given to CBO in June, 2009.

¹² That particular search is so useful that DoD has added a specific “linguist finder” search tool to DRRS. Statement of Ms. Nancy E. Weaver, Senior Language Authority, Department of Defense, before the Subcommittee on Oversight and Investigations, House Committee on Armed Services (June 29, 2010), <http://prhome.defense.gov/rfm/READINESS/DLNSEO/docs/Weaver%20Testimony%20062910.pdf>.

¹³ For example, if a unit has a low score in the personnel area, the user can click on that score and see how many positions in the unit are unfilled; how many are filled but with people who have the wrong skills for their position; and how many people are non-deployable and the reasons for that status, such as dental problems or limits on consecutive deployments.

Table 2.
Transition from SORTS to DRRS

	SORTS	DRRS
Mission	Readiness is reported for one highlighted mission that the unit was designed for (usually the unit's core wartime mission). ^a	Readiness is reported for a range of missions and tasks including a unit's wartime mission.
Assessment	An overall readiness score is calculated from scores in four resource areas.	A commander gives an overall assessment for each mission based on assessments of tasks and the resources available.
Resource Areas	Personnel, equipment, supply, and training.	Personnel, equipment, supply, and training; the Navy separates ordnance from supply.
Calculating the Overall Score	The overall score is usually the worst of the four resources area scores, which are calculated from local unit records.	The commander enters the overall assessment directly. The resource scores are calculated from information in servicewide databases.
Scoring Scale	A scale of C1 to C4, with C1 as the highest level of readiness. Units with an overall score of C1 or C2 are considered to be ready for their mission. ^b	Each resource area is evaluated on a scale of 0 to 100 percent. A score of yes, no, or qualified yes is then given for each mission and task.
Sources of Data	Unit commanders track data and make calculations.	Calculations are automatic, using servicewide databases.
Commanders' Input	Commanders can change an overall score by one point.	Commanders cannot adjust resource calculations.
How the Scores are Reported	Commanders enter the scores by hand, and text reports are submitted to headquarters via a messaging system.	Reports and underlying data are generated automatically and are available to all users with appropriate credentials.
Reporting Units	Deployable combat and support units such as ships, squadrons, and brigades.	Deployable combat and support units such as ships, squadrons, and brigades, plus detachments, headquarters (including Combatant Commands), National Guard units (all missions), and installations.
Standardization Across the Services	The services have different reporting procedures, but all reports have the same formatting.	Each service had a distinct DRRS system. The systems are electronically compatible and are part of one common system.

Source: Congressional Budget Office.

SORTS = Status of Resources and Training System; DRRS = Defense Readiness Reporting System.

a. In SORTS, units can also report against their assigned mission, but the exact nature of that mission cannot be specified.

b. Units undergoing reorganization, reset, or depot maintenance can report a score of C5.

- A commander assesses each mission or task rather than adjusting a unit's overall resource score after the fact;
- A web-based collection of (classified) readiness reporting systems displays information in real time;
- Combined units and detachments can report their combined or separate readiness;

- The resources, and training levels of both individuals and units are easily identifiable; and
- Users can obtain more detailed information—the details of what resources a unit has or what training individuals are missing—from most information displays.

Concerns about DRRS

CBO interviewed various service representatives and other DRRS users, and all indicated that, when fully implemented, the system will be superior to SORTS. However, some concerns about DRRS remain:

- There continues to be a lack of standardization across services because the services define missions and resource areas differently and selectively report against potential missions (although the data formats are all the same);
- The mission assessments are subjective;
- DRRS contains a limited number of standardized reports, and users often must design, build, and test new reports for their unique purposes;
- Some units have limited access to the classified computer stations that are required to enter and retrieve DRRS information;
- Currently, DRRS has no way to distinguish between assigned missions, potential missions, hypothetical missions, and missions for which a unit has received no formal training;¹⁴ and
- The ability to archive DRRS data and access archived data is not yet automated, although such a capability is planned.

Remaining Challenges

Every year, DoD and the Congress make decisions about how much money to appropriate for the operation and maintenance accounts that pay for fuel, maintenance, and spare parts to support operational and training activities, and the military personnel accounts that pay the personnel costs of those activities. However, it has been difficult—if not impossible—to track how funding levels in those accounts affect SORTS scores, either in general or for specific units.¹⁵ DRRS has the potential to establish stronger analytical relationships between funding levels and readiness, but that potential has yet to be realized. Additional changes to DRRS, such as adding linkages to budgetary accounts or creating new types of reports, could help establish those relationships.

¹⁴ In the future, DRRS might have a feature that allows users to add potential missions to units that are visible only to certain users while not establishing official missions for those units.

¹⁵ Congressional Budget Office, *Paying for Military Readiness and Upkeep: Trends in Operation and Maintenance Spending* (September 1997), www.cbo.gov/publication/10375; and Congressional Budget Office, *Linking the Readiness of the Armed Forces to DoD's Operation and Maintenance Spending* (letter to the Honorable C.W. Bill Young, April 2011), p. 8, www.cbo.gov/publication/22105.

Reports to Congress

DoD provides the congressional oversight committees with the Quarterly Readiness Report to Congress (QRRC). The committees' staffs use them to track the readiness of the armed forces and whether DoD is adequately funded. The main sections of the most recent editions of the QRRC contain unclassified summaries of current readiness assessments and highlight particular issues. The report also generally includes three classified annexes that provide more detailed readiness information. Annex A contains a classified summary of internal DoD readiness reports, Annex B contains combatant commanders' assessments from DRRS, and Annex C contains detailed scores for every military unit that reports in SORTS. The content and order of information changes frequently.

The QRRC has many different users within the Congress, and so it must provide different levels and types of information. It currently includes unit-level SORTS scores for about 2,000 units, and in 2012, some commanders' assessments from DRRS were added to the report. Many new readiness metrics in DRRS are not included or even summarized in the QRRC, and the report does not give a quantitative overall view of readiness trends. Some charts aggregate all units within a service, but interpreting those charts can be difficult.¹⁶ Also, the QRRC simply does not systematically address many readiness questions, such as the pace of operations and its effect on readiness or morale and psychological well-being.

Another shortcoming of the current QRRC is the timeliness of its information. QRRCs are due 45 days after a quarter ends but have been submitted up to 60 days after the end of the 45-day period. The shortcomings of the QRRC and its lack of timely information mean the Congress must ask DoD and the service to provide ad hoc readiness reports and briefings. DRRS automates many of the SORTS resource and training scores, allowing for greater detail about readiness and a more timely delivery of the QRRC—which would, in turn, make the Congress's ad hoc requests less frequent and more focused. Alternatively, real-time access to DRRS data could be made available to the Congress through DRRS online accounts.

DoD added some unit-level mission assessments to the QRRC in 2012, but more space and longer data series are provided for traditional, overall SORTS scores than for the new DRRS metrics. While the greater detail might not be useful to every QRRC reader, it would be valuable to any DRRS user who currently uses the SORTS assessments. Additional context and cross tabulations could also be useful, such as SORTS scores versus mission assessments versus deployment status. To allow users to create specific reports and trend analyses, making the most detailed data available separately from the main QRRC report in electronic form would be particularly useful. System developers cannot anticipate all possible displays or views that would be of value to DRRS users, but good exporting and archiving utilities within DRRS would facilitate offline analysis and the creation of custom displays.

CBO's Examples of New Readiness Displays

Congress will have to determine which types of data best inform its process for authorizing and appropriating funds to DoD and setting other parameters and policies (such as caps on military

¹⁶ For example, one chart aggregates ships and aircraft into a single summary. None of the service representatives or other DRRS users within DoD whom CBO interviewed was able to provide a case in which such a chart would convey useful information.

personnel levels and contractor activities). The tables and charts in this section illustrate seven specific examples of displays and other information that could be added to the QRRC through DRRS.¹⁷ Such changes could help the Congress to better track and understand the readiness of U.S. military forces.¹⁸

Example 1: SORTS Scores by Type of Unit and Deployment Status

There are a few summary charts in recent QRRCs, but they are difficult to interpret because they mix types of units and they often contain no information on deployment status. A chart that separates units by type and deployment status would be more useful and easier to interpret.

Figure 4 shows monthly information about readiness from SORTS scores for all the Army units of one type (active army infantry battalions) by deployment status (deployed, deploying within 90 days, and not deployed). Charts such as those in Figure 4 would be easier to interpret than the current QRRC charts because they show trends for a particular type unit and the number of units in each deployment status. (Figure 4 shows that there were 18 active army infantry battalions deployed as of December 2012, 8 of which had C1 status). Separating the data by deployment status and unit type provides more meaningful information to the reader. For example, a reader could examine the trends in SORTS scores for nondeployed reserve infantry units, for navy tactical squadrons getting ready to deploy, or for any other similar category of units.

One reason that the QRRC did not include charts organized by unit type and status before DRRS may be because DoD's older SORTS database did not contain information on deployment status. The services sometimes merge deployment status with the SORTS data, but few QRRC charts have used that combined information. As forces return from Afghanistan, deployments should become less common for Army units. Instead of the separating units by deployment status, other similar divisions may be more appropriate. The Army uses the terms reset, ready, and available to classify units going through the Army Force Generation Process.¹⁹ Those categories could be used in the same way.

Example 2: Mission Assessments by Type of Unit and Deployment Status

As an alternative or in addition to the SORTS scores, the Congress might be interested in assessments of units' core wartime missions or their currently assigned missions. The charts in Figure 5 are examples of summary charts for deployed units (active army infantry battalions) arranged by type of mission (core or assigned). Similar charts could be developed for all services, unit types, and deployment statuses. Such charts could help assess, for example, which type of mission—core or assigned—units are ready to carry out.

¹⁷ All of the data in these tables and charts are notional because actual readiness data are classified.

¹⁸ For additional information on areas where the QRRC could be improved, see Government Accountability Office, *Military Readiness: Reports to Congress Provide Few Details on Deficiencies and Solutions*, GAO/NSIAD-98-68 (March 1998).

¹⁹ See U.S. Army, A Statement on the Posture of the United States Army 2008, Addendum E, Army Force Generation Process (February 26, 2008), www.army.mil/aps/08/addenda/addenda_e.html. The Air Force has a similar concept with different terminology; see Malinda Singleton, "Are You Ready to Deploy? Understanding the AEF Cycle," Air Force Intelligence, Surveillance, and Reconnaissance Agency (March 1, 2007), www.afisr.af.mil/news/story.asp?id=123042980.

Figure 4.
SORTS Scores for Active Army Infantry Battalions, by Deployment Status
 (Number of units)



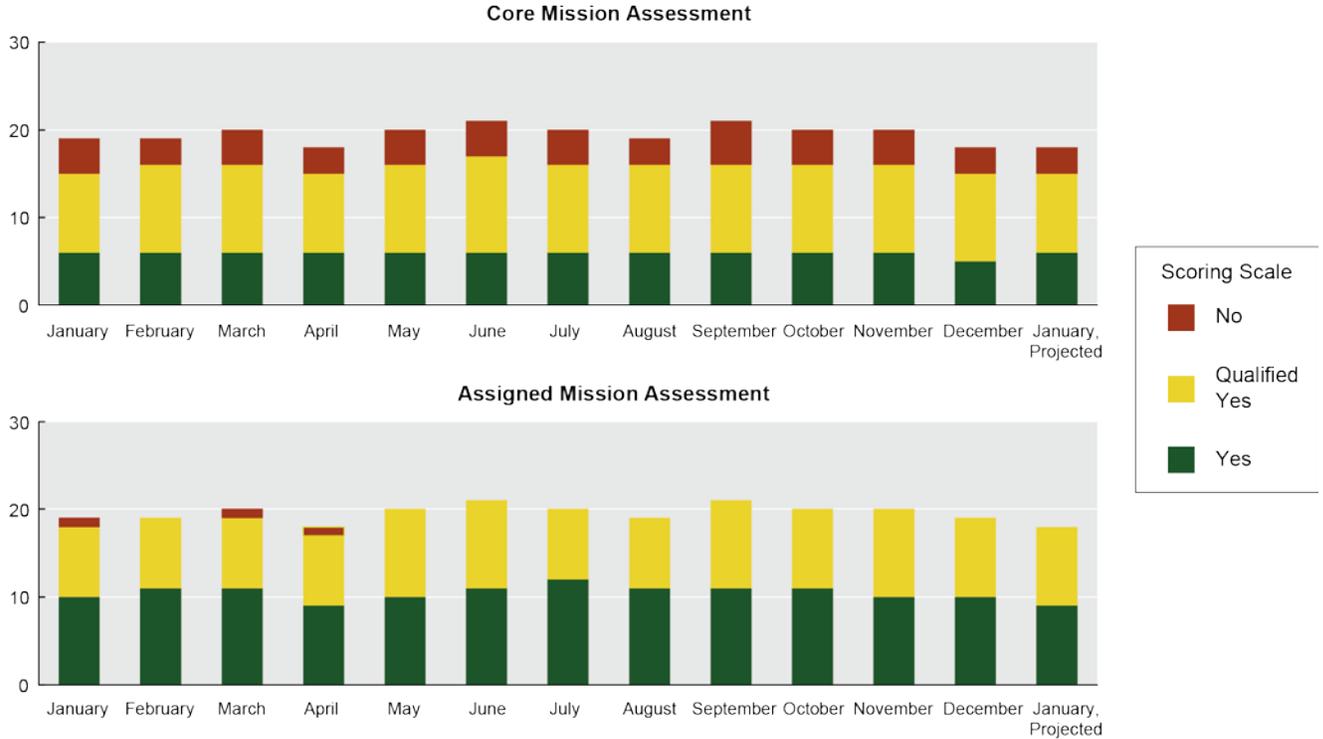
Source: Congressional Budget Office.

Note: The data shown are illustrative.

SORTS = Status of Resources and Training System.

Variations of Figures 4 and 5 could be developed as needed to explain any emerging trends in readiness. DRRS already has many capabilities for reporting and displaying data, but some additional tools would aid in the analysis. For example, readiness can vary over time because of changes in the composition of forces, such as the number of heavy battalions or different types of aircraft, or the deployment pattern of those forces. Index methods can hold some of these effects

Figure 5.
DRRS Mission Assessments for Deployed Active Army Infantry Battalions, by
Type of Mission
 (Number of units)



Source: Congressional Budget Office.

Note: The data shown are illustrative.

DRRS = Defense Readiness Reporting System.

constant in order to better understand the trends, much as a price index tracks the cost of a fixed bundle of goods across time.²⁰ If those types of reports are developed, they could be incorporated into the QRRC as needed.

Example 3: SORTS Scores by Mission Assessment

Another potentially useful way to display information for the QRRC would be to link the commander's mission assessments in DRRS to the resource scores in SORTS. Table 3 is a simple example of linking readiness to resources. The commander's assessments reflect how ready the unit is for different types of missions. The SORTS resource scores are indirect measures

²⁰ See Ted Jaditz, *The Composition of the Force Affects Overall Readiness* (Alexandria, VA: CNA Corporation, November 1999).

Table 3.
Average Resource Area SORTS Scores Corresponding to Mission Assessments for
Active Deployed Army Battalions, December 2012

(Number of units)

Mission Assessment	Personnel	Equipment	Supply	Training	Overall
Assigned Missions					
Yes	91	94	91	87	87
Qualified Yes	85	85	82	87	84
No	76	71	75	70	71
Average	90	92	89	87	87
Core Missions					
Yes	85	90	88	87	91
Qualified Yes	81	80	82	82	89
No	76	72	70	77	80
Average	90	88	86	86	90

Source: Congressional Budget Office.

Note: The data shown are illustrative.

SORTS = Status of Resources and Training System.

of the budget resources provided to the units, though historically, linking the reported SORTS resource scores to the associated budget accounts has been difficult.²¹

The data in Tables 3 and 4 were generated in such a way that units with mission assessments of “yes” have higher average SORTS resource scores than units with lower assessments. For example, in Table 3, the average equipment score is 94 percent for active deployed Army battalions with an assigned mission assessment of “yes,” but that average drops to 85 percent for units with a “qualified yes” assessment. Whether actual data would show the same relationships has not yet been researched.

The link between core mission assessments and SORTS resource areas could be stronger or weaker than the relationship between assigned mission assessments and SORTS resource areas. Generating tables with actual data may yield useful information about those relationships.

Tables arranged by mission assessment could also be adapted to show how often commanders upgrade SORTS scores. The first set of columns in Table 4 compares active deployed Army battalions according to their core mission assessments and raw overall SORTS scores without any upgrade by the unit commanders. It also shows the number of units in each mission assessment category that reported each overall SORTS score. The next set of columns makes the same comparison using the reported overall SORTS scores with any upgrades by the unit commander. That sort of display illustrates how often commanders upgrade their SORTS scores and whether

²¹ Matt T. Robinson and Wendy R. Trickey, *USMC Resource-to-Readiness Study* (Alexandria, VA: CNA Corporation, January 2011), pp. 1-6.

Table 4.
SORTS Scores With and Without Adjustment for Active Deployed Army Battalions,
December 2012

(Number of units)

Core Mission Assessment	Overall SORTS Score Without Adjustment				Overall SORTS Score With Adjustment				Total Number of Units
	C1	C2	C3	C4	C1	C2	C3	C4	
Yes	3	4	8	0	5	3	7	0	15
Qualified Yes	0	0	4	0	0	0	4	0	4
No	0	0	0	0	0	0	0	0	0
Total	3	4	12	0	5	3	11	0	19

Source: Congressional Budget Office.

Note: The data shown are illustrative.

SORTS = Status of Resources and Training System.

the raw or reported SORTS scores correlate better with the mission assessments. For example, the table shows that of the 15 units with a core mission assessment of yes, one unit's overall score of 2 was upgraded to 1 and one unit's overall score of 3 was also upgraded to 1. Depending on the Congress's response, tables showing the upgrading of SORTS scores could be temporarily or permanently included in the QRRC or generated as part of a separate study.

Example 4: Further Linking of Readiness to Resources

Further linking of resources to readiness may require additions to DRRS and connections with budget databases. Adding fields common to both DoD's five-year budgetary plan (the Future Years Defense Program, or FYDP) and DRRS would allow for easier matching across those two databases. The best fields to use for matching would depend on the level of information desired. For example, an overall analysis could be performed with a field common to both the FYDP and DRRS that links the readiness of Army infantry battalions to the operation and maintenance budget for those same units as a group. Trend analysis could then be performed to identify the budget accounts that are most closely related to the readiness of a group of units and to measure the strength of the statistical relationship. Alternatively, each unit in DRRS could be linked to its specific operations and maintenance budget, to the extent that detailed information is available in the FYDP or other budget databases.²²

In addition to linking budget databases to DRRS, budget execution databases such as the Navy's Visibility and Management of Operating and Support Costs (VAMOSOC) could be linked to DRRS on the theory that readiness is more closely related to funds actually spent than to funds budgeted. Budgeted amounts of funding for a year are spent over a few years or sometimes reallocated to other purposes. Links with those budget execution databases may also show

²² Some of the difficulties in that approach were highlighted in Congressional Budget Office, *Linking the Readiness of the Armed Forces to DoD's Operation and Maintenance Spending* (letter to the Honorable C.W. Bill Young, April 2011), www.cbo.gov/publication/22105.

relationships between readiness and the use and age of equipment—for example, how the number of past flying hours on an aircraft relate to current maintenance expenses and squadron readiness.

The Navy has made an effort to link resources to readiness and presence (how many ready carrier strike groups, or CSGs, can be deployed for forward presence missions)—an even broader measure of the Navy’s output than is as yet available in DRRS.²³ Such a model could be used as another link between the readiness of one unit and the resources of another unit. For example, the DRRS report for a ship could be linked to the DRRS record of a shipyard and its resources. Such a complex linkage may require some effort to develop but could be worthwhile, allowing for other research or standard reports that measure the effects of spending on the readiness of operational units that rely upon the supporting units.

Example 5: Readiness Summaries for Carrier Strike Groups

Some large composite units are so important that they warrant their own readiness summaries. In Table 5, assessments are given by primary mission area for a carrier strike group (a formation consisting of an aircraft carrier and escort vessels such as cruisers, destroyers, attack submarines, and supply ships). The table uses some DRRS information specific to the Navy; the most useful summary for major units would depend on the service and the type of unit. Types of units (aircraft, ships, special forces units, etc.) could be mixed or separated by unit type.

In an electronic version of a table, each piece of information would be linked to underlying information. For example, clicking on “CSG-1” could bring up the units in the strike group and clicking on the core assessment for October could bring up specific commanders’ comments and the underlying tasks assessments.

Example 6: Unit and Personnel Rotation

A sample report provided to CBO by the Office of the Secretary of Defense presents detailed unit and individual rotation metrics from DRRS that are not available in SORTS, the QRRC, or anywhere else. That type of report could be formalized and would give the Congress and DoD better information to help manage stress on deploying units and personnel. Table 6 is an example of the type of information that may be important to Congress.

Example 7: Comparing the Supply and Demand of Forces Called for in War Plans

In 2012, DoD performed some ad hoc calculations using DRRS data that compared the supply of ready forces to the demand for forces slated to be used in war plans. That analysis highlighted instances in which certain units were involved in more than one war plan—a potential timing and priority conflict problem—and how fast reserve units would need to be deployed to perform their roles. That type of analysis is not yet automated in DRRS, but such reports could be developed and added to the QRRC. For example, it may be possible to show how many units that have a role in a particular war plan have been assessed to be not ready for the mission associated with the plan, or the effect of one or more war plans on equipment levels and personnel and unit rotation.

²³ *Navy Afloat Readiness*, Navy briefing slides and verbal information conveyed to CBO in January 2009.

Table 5.
Readiness Summary for a Carrier Strike Group

Carrier Group: CSG-1 (USS Carl Vinson + 5)
 Location: Mediterranean
 Deployment: September 1 to March 1

Actual and Projected Mission Assessments, by Type of Mission

Mission Assessment	October 2012	November 2012	December 2012	January 2013, Projected
Core	Qualified Yes	Qualified Yes	Qualified Yes	Qualified Yes
Assigned	Yes	Yes	Qualified Yes	Qualified Yes

Summary: A continuing shortage of upgraded Standard Missiles degrades anti-air warfare capability on escort ships. Should not affect assigned mission.

Resource Scores and Commander's Assessment, by Primary Mission Area, December 2012

Primary Mission Area	Personnel	Supply	Equipment	Training	Ordnance	Average Score	Commander's Assessment
Anti-Air Warfare	92	95	88	88	70	87	Qualified Yes
Mine Warfare	73	88	83	94	86	85	Yes
Command and Control	77	93	86	87	82	85	Yes
Intelligence	93	90	94	95	78	90	Yes
Mobility	84	97	82	95	77	87	Yes
Strike Warfare	72	75	91	85	76	88	Yes
Overall Score	82	90	87	91	86	86	Qualified Yes

Source: Congressional Budget Office.

Note: The data shown are illustrative.

Table 6.
Rotation Metrics for Units and Personnel

Service	Type of Unit	Number of Units	Unit Rotation		Personnel Rotation	
			Unit Rotation Goal (Months deployed: months home)	Actual Unit Rotation (Months deployed: months home)	Total Personnel	Average Number of Months Personnel Were Deployed in the Last Year
Army	Infantry	70	1:3	1:2.1	20,000	4.3
Navy	Surface Combatants	150	1:3	1:2.9	100,000	3.9

Source: Congressional Budget Office.

Note: The data shown are illustrative.