The Quadrennial Defense Review Process:

Lessons Learned from the 1997 Review and Options for the Future

James S. Thomason, Project Leader
Paul H. Richanbach
Sharon M. Fiore
Deborah P. Christie

August 1998

NOT FOR QUOTATION OR ATTRIBUTION

PREFACE

This paper has been prepared by the Institute for Defense Analyses (IDA) in partial fulfillment of a task being performed for both the Office of the Under Secretary of Defense (Acquisition & Technology) (OUSD(A&T)/API/AR)) and the Office of the Director, Program Analysis and Evaluation (OSD, PA&E). The task, entitled "QDR Lessons Learned," is being conducted to help the DoD identify lessons learned about processes employed in the Department's first Quadrennial Defense Review (QDR-97), to offer options for improving the processes that may be used in future comprehensive reviews, and to recommend long-lead initiatives by which DoD could strengthen the next QDR.

The authors are accountable for the final content of the report, but many people have made important contributions. The open, collaborative atmosphere that the study sponsors created helped enormously in the interview process as well as in understanding a number of concerns within DoD regarding the QDR. QDR-97 participants from all levels throughout DoD took time from hectic schedules to share what they had learned in the QDR as well as to consider specifically how to apply those lessons to future reviews. Other experts, from the DoD as well as from independent research institutions, offered many useful insights as well, drawing on their extensive experiences with prior defense reviews and, in a number of cases, directly with QDR-97. These study participants were interviewed on a not-for-attribution basis in almost every instance. Without their candor and generosity, this study would not have been possible. They are listed individually in the first appendix of this report.

At IDA, many people provided valuable observations and recommendations. While these individuals are all identified in the appendix, the study team would particularly like to acknowledge the participation of Dr. David Graham, Mr. Michael Leonard, Mr. Philip Major, Dr. Victor Utgoff, and General Larry Welch in several extremely helpful brainstorming sessions early in this project. Dr. Graham, Dr. Robert Bovey, and ADM Bob Hilton (U.S. Navy, Ret.) also offered very constructive

SUMMARY

Between November 1996 and May 1997, the Department of Defense (DoD) conducted a wide-ranging review of its strategy, programs, and resources entitled the Quadrennial Defense Review (QDR). While the QDR was ultimately mandated by Congress, senior DoD leadership had already been planning such a review, having earlier accepted a recommendation along these lines by the 1994–95 Commission on Roles and Missions of the Armed Forces of the United States (CORM). During the QDR, Secretary of Defense William Cohen developed and articulated a path for the DoD that has significant continuity with the one he inherited. Yet the decisions he made in the first QDR also included several notable changes—in strategy, in some programmatic priorities, and in accelerated efforts to eliminate unneeded departmental infrastructure.

The QDR-97 process generated a range of structured comparisons of alternative ways to implement the newly articulated defense strategy—Shape, Respond, and Prepare. Through this process the Secretary of Defense made a series of choices among options, or "paths," and selected a path to "balance available resources across the major requirements of the strategy, both for the near and the longer term." Three paths were explicitly described in the QDR report. Each was said to be an equal cost option, and the three were compared for their relative prospects of achieving the capabilities to carry out each dimension of the "Shape, Respond, and Prepare" strategic construct at acceptable levels of risk. At the Secretary's direction, each path was examined to ensure that it was fiscally executable.

After the 1997 QDR was completed, OSD (A&T) and OSD (PA&E) commissioned IDA to provide DoD with an independent review of the QDR-97 process and to identify lessons that could be used to strengthen the next review. To conduct this study we first analyzed all available documentation related to the 1997 QDR—to understand its origins, design, major events, and key decisions. Then we explored ways to strengthen the next QDR process by interviewing a range of QDR-97 participants, from very senior officials to the panel membership. We sought perspectives and suggestions from several other sources as well: U.S. defense and management experts from outside the Department, several academic groups, some industrialists, and a few

current DoD officials who did not participate in the QDR itself. With this foundation, we have developed a set of eight lessons that we believe DoD should consider in planning the next major review.

Some critics of the first QDR argue that too little changed. Of these, some claim that a different process could have led to better results. Others assert that the process had little to do with the decisions that were ultimately made and that much of the work merely created the *appearance* of a comprehensive review for congressional consumption. Still others argue that the review produced reasonable results but consumed too much effort and involved too many heated debates.

Overall, we argue that a well-designed QDR process can and should offer an incoming Secretary of Defense a structured opportunity to review a range of important topics, significant options from which to choose, and an early opportunity to develop other options of interest. At the same time, many forces will place practical limits on the Secretary's latitude to alter departmental programs and practices in the near term or, in some respects, at all. For instance, much will depend on such factors as how much Congress supports specific changes, how favorably disposed the White House is, what mandate the President has from the public, and what support exists or can be built among the more influential players and interests within the Pentagon. In such a context, a good review process can and should enable a Secretary to fully exploit available opportunities to make prudent changes.

A comparative construct such as that initiated in QDR-97 can serve the DoD well in the years ahead, especially if explicit attention is devoted as soon as possible to deepening and expanding some of its key elements for the next review. The overall process design should take advantage of lessons that can be learned from the 1997 QDR and incorporate focused preparatory work that could be accomplished prior to the next review.

LESSONS LEARNED

The lessons depicted in figure S-1, below, were developed by the IDA study team based upon our analysis of the QDR-97 process and the observations and recommendations of QDR-97 participants and a range of independent experts. The following paragraphs offer some specific comments with regard to each lesson.

> *Lesson 1.* Prepare early and broadly for the next QDR.
>
> *Lesson 2.* Engage major players early.
>
> *Lesson 3.* Seek ways for the Secretary to lead from the outset.
>
> *Lesson 4.* Establish a small, strong leadership/integration group from the start of the QDR.
>
> *Lesson 5.* Provide early, clear guidance.
>
> *Lesson 6.* Establish vigorous but fair competition of ideas and approaches.
>
> *Lesson 7.* Focus on capabilities as much as possible.
>
> *Lesson 8.* Link the QDR to the PPBS in three major ways.

Figure S-1. Lessons from the QDR-97 Process

Lesson 1. Prepare early and broadly for the next QDR.

While the scope of the next QDR is likely to be mandated by Congress, the Secretary will ultimately decide how much emphasis particular issues will receive. Early and broad preparation for the next QDR, with independent inputs from activities such as a National Defense Panel (NDP) and other analytic sources, will best enable DoD to conduct a first-rate QDR of whatever scope the Secretary should choose.

As a practical matter, QDR-97 was so short that it was virtually impossible for participants to acquire, let alone become comfortable with, significant new data, tools, and analytic constructs during the process. It is unlikely that the next QDR will be much different in this regard. On the assumption that the incoming Secretary will plan to use the next QDR to structure programs and budget guidance for the Department on the regular PPBS timeline, that QDR will almost certainly need to be conducted during the first months of the next administration. If so, the period from March through June or July of 2001 would be a reasonable time frame for the QDR itself—so long as the department undertakes the necessary preparation. On the other hand, if the new Secretary elects to use a significantly different program and budget development process or schedule, several other QDR timing options, which are discussed in the body of this paper, could become more relevant. In any case, the more that individual analytic devices and data bases can be pre-tested and integrated as parts of a coherent process beforehand, the better prepared working-level participants will be to introduce results developed during the QDR to the senior-level participants whose judgments will be informed by them.

To catalyze and guide such preparation, a small, OSD-led steering group should be established in early 1999, or earlier if possible, to begin to monitor and integrate the various long lead-time efforts already underway within the Department and to initiate any other important efforts to fill analytic or data gaps (figure S-2).

1999 (early)—Establish an OSD-led, long-lead steering group

1999 (early)—Commission development of a working prototype QDR analytic process

2000 (March)—Complete development of a working prototype QDR analytic process

2000 (March)—Establish a formal QDR preparation team

2001 (March)—Start the QDR proper

2001 (June-July)—End the QDR proper

Figure S-2. A Potential QDR Timeline

One way to help focus the steering group's efforts would be for it to commission the development, by March 2000, of a working prototype of an analytic process that would build upon the force performance and funding risk assessment framework employed in QDR-97. Such an analytic process would incorporate strategy, force capability, and affordability criteria and assessments from the start. (An illustrative version is appended to this paper.)

A formal QDR preparation team should be established about March 2000. This could be an OSD-led team of approximately three dozen individuals representing the major DoD players, a team that would pre-test, refine, and elaborate on the prototype analytic process for the QDR that would be provided to it in March 2000 by the long-lead steering group.

The formal preparation team effort itself could have three distinct phases: initial, post-election, and final. The initial phase could start in March 2000 and last until the election in November, about 8 months. The post-election phase could run from the election until the confirmation of the new Secretary, or 2.5 to 3 months. The incoming Secretary could lead the final phase in February 2001, making final decisions on the QDR's agenda, process design, scope, special topics, explicit guidance, feedback and integration mechanisms, and timelines for intermediate and final products.

If another National Defense Panel (NDP) is convened, its main phase (assessments of alternative strategies and force postures) should also be conducted prior to the QDR, if possible, so that the results can be an independent input during QDR preparation.

The next QDR will most likely also occur just as a new administration is structuring its broader national security strategy as well as defining the security responsibilities of the federal departments and agencies and the relationships among them to make that strategy work. Part of DoD's preparation agenda for the next QDR could thus focus productively on helping to identify concrete steps and options to develop the new national security strategy and then integrate the defense strategy with it as quickly and smoothly as possible. Such an initiative could be particularly worthwhile since many critical security issues now confronting the United States (e.g., Shaping challenges and counter-terrorism, homeland/infrastructure protection and "cyber wars," border control) are likely to be best pursued within a strong inter-departmental framework. DoD could take an early, strong role in an administration-wide effort along these lines, building on prior initiatives, such as those within the current administration, and adding others as appropriate. For instance, after the election in 2000 DoD could prepare to help a security strategy transition team define and address such issues and options for working relationships. Such an effort could draw quite naturally upon the results of the Boren-Rudman Commission on National Security Strategy recently chartered by Secretary Cohen. At a minimum, DoD could develop draft proposals for working relationships on critical security challenges for explicit consideration as soon as the new White House is ready.

Lesson 2. Engage major players early.

All major components within DoD (OSD, JS, Services, CINCs, and Agencies) have valuable insights to contribute in designing and exercising a robust analytic process for the next QDR. Major components should be engaged in a fair and ongoing way to best ensure that problems identified and solutions selected can be implemented. Beginning in the preparation process for the next QDR, the Services, CINCs, and Defense Agencies should be fully engaged, serving on and providing valuable inputs to the OSD-led preparation team. They should nominate ideas for evaluation, comment on interim work products, and provide estimates and other information in support of the preparations. They should participate fully with OSD and the Joint Staff in designing and pre-testing the analytic process for the next QDR. During the QDR, the Services, CINCs,

and Agencies should also be deeply involved in all major activities, ranging from evaluating management alternatives to estimating and addressing any resource gaps identified through the analytic process.

Nonetheless, many QDR-97 participants and independent observers cautioned that the Secretary is paid to issue the tough guidance and to make the tough decisions. Individual DoD components should not be expected to willingly impose upon themselves what could be necessary but onerous decisions. While the full engagement of all major institutional players is not expected to produce a tranquil QDR, in our view this engagement is crucial to achieving decisions that include commitments to implementation and acceptance of responsibility for delivering on those commitments.

Lesson 3. Seek ways for the Secretary to lead from the outset.

Almost all QDR-97 participants whom we interviewed said that Secretary Cohen took charge of that review as best he could, given that he came in after the review had started. Most respondents favored finding ways for a new Secretary to be able to give guidance from the outset, thereby minimizing the "waiting-around-for-the-new-authoritative-guidance" time that was said to characterize at least part of the initial phase of QDR-97.

To this end, DoD should consider—

- Establishing an explicit coordination process for the transition period (November 2000 until Inauguration Day in 2001)

- Structuring an explicit preparation phase to allow the Secretary to make key QDR guidance decisions soon after being confirmed (such as the final preparation phase described above in Lesson 1)

- Starting the QDR itself at a time, say in early March 2001, to give the Secretary the best chance of being in charge of the process from the beginning.

Lesson 4. Establish a small, strong leadership/integration group at the start of the QDR.

Most respondents in our study strongly favored a streamlined guidance and review structure for the next QDR. For an activity like a QDR, strong coordination, integration, and interim feedback seem crucial. The QDR-97 "end-game" organization, described in chapter 2 of this paper, featured this type of structure. That arrangement appeared to work better than the initial phase structure in the 1997 review.

Lesson 5. Provide early, clear guidance.

Early guidance should address a considerable number of substantive and deliberative aspects of the overall process, including:

- Group charters, interim and final milestones, quality guidelines, timeliness, input-output sequences among the groups, integration of elements, planning horizons, product formats

- Procedures for developing significant, serious alternatives; types of alternatives desired

- Strategic options and procedures for selecting a strategy

- Fiscal guidance

- Capabilities to be sought

- Sensitivity cases to be performed

- Scope, priorities for work effort

- Metrics, measures of effectiveness (MOEs)

Many QDR-97 participants strongly advocated issuing clear guidance as soon as possible in a QDR. The next review is likely to have so many interacting parts that strong, early guidance seems essential if people are really to work together as a team, in a rational sequence. This guidance should be pre-tested and then reviewed often in the process—to assess clarity, effectiveness, adjustments needed, etc.

Lesson 6. Establish vigorous but fair competition of ideas and approaches.

The cost-effectiveness of significant alternatives should be tested—vigorously and impartially—to shed as much light as possible on DoD's best future course. A number of steps could be taken to promote rigorous evaluation of a wide range of alternatives, both in the preparation phase and in the QDR itself:

- Commission, during the preparation phase, several independent studies to develop and assess concrete, alternative approaches in key areas of strategy, force structure and capabilities, infrastructure, and so forth.

- Establish one or more "challenge teams" whose job it would be to encourage consideration of promising alternative points of view and analyses—during the preparation phase as well as in each of the assessment teams in the QDR. Alternative perspectives could be elicited from other parts of the federal government as well.

- Establish independent review and feedback from one or two small groups appointed by the Secretary from outside the current DoD structure, e.g., former Secretaries of Defense.

- Establish, as part of the Secretary's guidance at the outset of the QDR, several explicit alternatives that each group would, at a minimum, be tasked to assess and compare with the status quo as part of their charter.

- Structure rewards that could be offered to teams or individuals presenting the most compelling analyses, as judged by an independent panel appointed by the Secretary.

Most participants and others with whom we spoke believe the Secretary, the Department, and, ultimately, the Nation are best served by a QDR that seriously considers a set of strong competing alternatives to any extant strategy and program path, within a process that is as fair and impartial as possible. The extent to which such a review will occur is widely said to depend heavily on the Secretary's guidance and ongoing leadership in this area during the QDR itself.

Lesson 7. Focus on capabilities as much as possible.

A focus on capabilities, and on force characteristics to achieve those capabilities, is believed by many QDR-97 participants to be a more productive and constructive language for comparing alternative defense postures than traditional force unit terms, such as numbers of divisions, wings, and CVBGs.

For each element of a strategy under consideration, DoD should seek to assess—

- Demands for capabilities and the funding requirements to meet them

- Funding available to achieve those capabilities under baseline DoD projections

- Alternative approaches to achieve capabilities or to redirect available funds to address any identified imbalances

This approach was believed to be especially important in light of the significant differences likely to be found within each of the following three comparisons:

- Between the same package of force units employed with more and with less intelligent concepts of operations

- Between the capabilities of one platform and its next-generation successor

- Between the same set of platforms with, and without, a "network" linking them (and the skilled personnel to exploit that network)

Lesson 8. Link the QDR to the PPBS in three major ways.

DoD should consider (1) framing the QDR challenge in strategy and fiscal terms from the start, (2) drawing upon the best explicit strategy-resource comparison processes from throughout the Department, and (3) timing the QDR to both exploit and then drive ongoing PPBS activities.

In the broadest of terms, the business of the Department of Defense may be said to involve three basic steps:

- Conceive a strategy for the defense of the nation to address near and longer term threats, challenges, and opportunities

- Design, construct, employ, test, maintain, and improve the capabilities—including the relevant rules of behavior—to execute that strategy within acceptable levels of risk, subject to a set of legal and resource constraints

- Modify the strategy and/or press for more or different resources and/or legislative relief as appropriate

The QDR itself should be timed to enable the Secretary to guide the regular PPBS with the results of the review. With the type of preparation effort recommended here, we believe that the QDR itself could be conducted from approximately March 1 through mid-June 2001, a schedule that would provide timely guidance for the regular PPBS process.

A QDR offers a strong opportunity, at the outset of an administration, to assess and set a clear, constructive course for dealing with strategy-resource gaps, drawing on, among other inputs, the best insights from experience with the PPBS up to the start of that QDR. After establishing such a course, the Department needs to ensure that decisions from the QDR are implemented within subsequent PPBS activities and products.

RECOMMENDATIONS

The principal recommendation concerning process design for the next QDR is to implement preparation and review processes that incorporate the major lessons learned from QDR-97. While a number of design options are discussed in the body of this paper, the most compelling of these are, in our judgment, highlighted in the lessons set forth above. In particular, both QDR preparatory activities and the review itself should follow the timeline shown in figure S-2.

NEXT STEPS

Based on our assessments, there are at least two concrete near-term steps that the Secretary of Defense, in collaboration with the Chairman of the Joint Chiefs of Staff, may want to consider in looking ahead to the next QDR:

- Charter a small OSD-led steering group to monitor and begin integrating ongoing long lead-time QDR efforts

- Commission development of a working prototype of a DoD-wide analytic process that would be made available to a formal QDR preparation team in about March 2000 for refinement and elaboration as appropriate

An extensive preparation process for the next QDR may appear to be a costly investment for this administration. But in order to improve the defense planning and programming process over time, such initiatives and leadership may well be required. There is considerable untapped potential in both the performance risk assessment framework and the funding risk construct that were employed in QDR-97. Strengthening them through a DoD-wide effort as soon as possible could yield important benefits for the Department and the Nation in the years ahead.

CONTENTS

APPENDIXES

TABLES

FIGURES

1. INTRODUCTION

An important chapter in the history of the Department of Defense (DoD) concerns the efforts by successive Secretaries to gain and sustain control over key decisions in such areas as strategy, force structure, and programs for the Department. The record has not been one of uniform, linear progress. Change has come in stages through the years, with some Secretaries making more determined efforts than others to gain central control. Several formal processes, such as the Planning, Programming, and Budgeting System (PPBS), have improved the ability of Secretaries to keep track of the relationships between their guidance and, for example, the programs that are largely structured and administered by the individual Services.[1]

The Quadrennial Defense Review (QDR) represents a new and potentially important addition to the many and varied review processes within the Department of Defense.[2] The first QDR was conducted in 1997. Through it, Secretary of Defense William Cohen developed and articulated a path for DoD that displays significant continuity with the one he inherited.[3] Yet the decisions he made in this first QDR also include several significant changes—in strategy, in some programmatic priorities, and in accelerated efforts to eliminate unneeded departmental infrastructure.[4]

---

[1] An outstanding account of much of this history may be found in David Graham and Herschel Kanter, et al., *Linking Acquisiton Decisionmaking with National Military Strategy*, IDA Report R-366, October 1990.

[2] A brief overview of these processes may be found in chapter 5 of *The Joint Staff Officer's Guide* (1997).

[3] The *Report of the Quadrennial Defense Review* was submitted to Congress in May 1997, as stipulated in the legislation that mandated the review. The course selected by the Secretary was called "Path 3" in the language of the report. Some of the major areas of continuity in Path 3 are the continued use of the scenario centered on two nearly simultaneous major theater wars (MTWs) as the dominant force sizing device for the departmental force structure, the sustainment of many major modernization programs at levels close to those in the program Secretary Cohen inherited from Secretary Perry, and modest changes in levels of programmed active duty force levels. See chapter 2 of this paper for some specifics about each of the paths.

[4] The change in strategy has been characterized in several ways, but common to all versions is increased attention to activities other than the 2-MTW scenario, and increased legitimization of these other activities as grounds for retaining elements of the force structure even if they are not deemed necessary for the MTWs. This added focus could be especially important if one or both current prominent MTW threats—N. Korea or Iraq—should diminish significantly in the years ahead. It places increased emphasis on determining which capabilities are especially valuable (cost-effective) for non-MTW activities and objectives. The QDR also placed very strong emphasis on two other priorities: 1) ensuring that programmed funding for modernization activities is not diverted to other areas of the defense program, and 2) significantly increasing modernization funding beyond pre-QDR programmed levels. In addition, Secretary Cohen announced his intention to trim DoD's excess "tail" (infrastructure and support forces) using a variety of initiatives, quite a few of which were announced in his

Some critics of this first QDR argue that too little changed.[5] Of these, some claim that a different QDR process could have led to better results. Others assert that the QDR process had little to do with the decisions that were ultimately made and that much of the QDR work was merely designed to create the *appearance* of a comprehensive review for congressional consumption. Still others argue that the QDR produced reasonable results but consumed too much effort and involved too many heated debates.

This paper takes a different perspective. A well-designed QDR process can and should offer an incoming Secretary of Defense a structured opportunity to review a range of important topics and options at the outset. Properly designed, a QDR can provide the Secretary significant options from which to choose and an early opportunity to develop others of interest. At the same time, many forces will place practical limits on the Secretary's latitude to change departmental programs and practices in the near term or, in some respects, at all. For instance, much will depend on such factors as how much Congress supports specific changes, how favorably disposed the White House is, what mandate the President has from the public, and what support exists or can be built among the most influential players and interests within the Pentagon. In such a context, a good QDR process can and should enable a Secretary to fully exploit available opportunities to make forward-looking, prudent changes.

More specifically, a first-rate QDR process can enable a new Secretary to—

- Study an extensive set of options for addressing important problems
- Compare the options through rigorous assessments, using a variety of yardsticks (strategic, effectiveness, efficiency, fit with other elements in an integrated framework, risk, etc.)
- Gauge the practicability of advocating particular changes
- Build support for those options the Secretary and key advisors find especially valuable.

It should not be considered a failing of a QDR process if good strategic, force structure, or programmatic options are developed but not ultimately selected in the QDR. On the contrary, the failure would occur if the QDR provided no new options. A good QDR process should be expected

---

Defense Reform Initiative Report that appeared several months after the QDR. See Cohen, *Defense Review Initiative Report* (November 1997).

[5] Consider, for instance, the reviews by the National Defense Panel (1997a,b); commentary by the principal co-sponsors of the QDR legislation, Senators Dan Coats and Joseph Lieberman, e.g., "A Reformed Military for the 21st Century," *Washington Times*, December 1, 1997; the review by James Blaker (1997); and feedback received by the IDA study team from selected members of the Center for International Security Studies at the University of Maryland (CISSM) Forum (2/5/98). Some participants in the QDR itself have offered thoughts along these lines too. Their views are summarized without attribution in chapter 4 of this report.

to develop a number of very promising options—including some quite "out-of-the-box," paradigm-altering approaches—for a new Secretary to consider even though, ultimately, they may not garner enough political support to be adopted at that time. The introduction of new ideas is the first step in facilitating growth and change.

This study seeks to identify several plausible design options for the next QDR, and to outline options for a process that the next Secretary of Defense could use immediately upon confirmation to set departmental priorities. Such a process should cover a number of important aspects of U.S. national security—including strategy, forces, and programs—for the near, mid, and longer term.

We proceed by first providing an overview of the 1997 QDR—its origins, a description of the process design, a chronology of the QDR process, and an overview of major decisions made in the QDR (chapter 2). We then outline the study assessment objective—to explore ways to strengthen the next QDR process—and our approach (chapter 3). Key issues include what the components of a good process are, what a good process can (and can not) do for the Secretary and the DoD, and how the study team has sought to answer these questions.

Next we describe the perspectives of a range of QDR-97 participants concerning the QDR process. Their views regarding the strengths and limitations of the 1997 review are set forth in chapter 4, while their ideas concerning how to structure the process the next time are summarized in chapter 5. Included are some pros and cons of these various recommendations, as the study team sees them. Chapter 6 provides perspectives and recommendations for the next QDR process gleaned from several other sources: U.S. defense and management experts from outside the Department, several academic groups, some industrialists, and a few current DoD officials who did not participate in the QDR itself.

Building on the foundation laid in the first six chapters, in chapter 7 we offer a set of lessons learned regarding the 1997 QDR that the DoD may want to consider in looking ahead toward the next major review.

2. THE 1997 QUADRENNIAL DEFENSE REVIEW

Between November 1996 and May 1997, DoD conducted a wide-ranging review of strategy, programs, and resources, entitled the Quadrennial Defense Review (QDR). While the QDR was ultimately mandated by Congress, senior DoD leadership had already been planning such a review, having earlier accepted a recommendation along these lines by the 1994–95 Commission on Roles and Missions of the Armed Forces of the United States (CORM).

ORIGINS

Until QDR 1997, DoD had not conducted a major departmental review since the Bottom-Up Review (BUR) in 1993. During the interim, concerns had intensified within the Department, the Congress, and the media regarding the U.S. military's ability to prepare for two major theater wars while at the same time handling numerous "small-scale contingencies" and other responsibilities. Responding to these and other concerns, in May 1995 the CORM recommended that DoD start each presidential term with a significant defense review. Senior DoD decision makers, including Secretary William Perry and by-then Deputy Secretary John White (who months earlier had been Chairman of the CORM), accepted the CORM's suggestion and began planning accordingly. By 1996, the Congress, citing the CORM, directed that a Quadrennial Defense Review be conducted by DoD and completed for Congress by May 15, 1997. The National Defense Authorization Act for FY 1997 mandated the review. The Military Force Structure Review Act, a part of the Authorization Act, required the Department of Defense to provide comprehensive assessments in a dozen substantive areas, including strategy, force structure, readiness, modernization, and infrastructure. It also established a National Defense Panel to provide an independent evaluation of defense strategy, forces, and resources requirements and options over the longer term.

Signed into law in September 1996, the statutory language makes the congressional intent clear:

> The pace of global change necessitates a new, comprehensive assessment of the defense strategy of the United States and the force structure of the Armed Forces required to meet the threats to the United States in the 21st century….The Secretary of Defense, in consultation with the Chairman of the Joint Chiefs of Staff, shall complete in 1997 a review of the defense program of the United States intended to satisfy the requirements for a Quadrennial Defense Review as identified in the recommendations of the Commission on Roles and Missions of the Armed Forces.

The review shall include a comprehensive examination of the defense strategy, force structure, force modernization plans, infrastructure, budget plan, and other elements of the defense program and policies with a view toward determining and expressing the defense strategy of the United States and establishing a revised defense program through the year 2005.

Not later than May 15, 1997, the Secretary shall submit…(1) a comprehensive discussion of strategy...and force structure best suited to implement that strategy; (2) threats examined...scenarios developed; (3) assumptions used...regarding cooperation of allies, mission sharing, acceptable risks, warning, intensity and duration of conflict; (4) effect on force structure of participation in peace operations and military operations other than war; (5) effect on force structure of use by our forces of technologies anticipated to be available by 2005 and changes in doctrine and operational concepts resulting; (6) manpower and sustainment policies required …to support conflicts of more than 120 days; (7) anticipated roles and missions of reserve components in the defense strategy and the strength, capabilities, and equipment necessary to assure that the reserve components can capably discharge those roles and missions; (8) appropriate tooth-to-tail ratio under the defense strategy including in particular, the appropriate number and size of headquarters units and Defense Agencies for that purpose; (9) the air and sea-lift capabilities required to support the defense strategy; (10) the forward presence, pre-positioning, and other anticipated deployments necessary under the defense strategy for conflict deterrence and adequate military response to anticipated conflicts; (11) the extent to which resources must be shifted among two or more theaters under the defense strategy in the event of conflict in such theaters; (12) the advisability of revisions to the Unified Command Plan as a result of the defense strategy; (13) any other matter the Secretary considers appropriate.

QDR CHRONOLOGY AND ORGANIZATION

April–October 1996: Preparation

Anticipating the legislative requirement, senior DoD leaders had begun discussions with key congressional members in the spring of 1996 regarding the scope and timing of a QDR. Design and early preparation began within DoD in the late spring and early summer. A variety of studies were initiated, and tentative plans were developed for the structure and timing of the review itself.[1] By October 1996, Deputy Secretary White had identified four elements that QDR-97 should encompass: new scenarios, the "Revolution in Military Affairs" (RMA), ensuring modernization, and achieving cost-savings by adapting and adopting the "Revolution in Business Affairs" (RBA).[2]

---

[1] A significant number of studies were prepared by OSD, by the Joint Staff, and by the Services, e.g., the "Strategic Futures" study, the Joint Strategy Review (JSR), the peacetime Defense Program Projection (DPP) preparatory work, and self-initiated cost assessments in the force structure area. These will be discussed in subsequent chapters and appendices.

[2] From a speech by Dr. John White to the Defense Science Board, October 1996 (White, October 1996).

End of 1996: Final Planning Phase and Kick-Off

After the presidential election of November 1996, then-Secretary Perry, Deputy Secretary White, and their principal aides worked with the Chairman of the Joint Chiefs of Staff, General John Shalikashvili; the Vice Chairman of the Joint Chiefs of Staff, General Joseph Ralston; and their key staff to assemble final plans. The process was intended to complete an ambitious agenda by being inclusive and collaborative, with a three-tier review structure to assimilate and integrate the work of half a dozen (later seven) assessment panels. The specific design for the QDR featured several phases in which guidance would be provided in a number of major areas, strategy would be developed, and options constructed by a series of panels in light of the strategy and other major parameters, including fiscal guidance. These options would then be reviewed by an Integration Group (IG), prepared for presentation to and review by a Senior Steering Group (SSG), and finally integrated into decision option briefings for the Secretary and his most senior advisors to consider.

The design schedule for these phases was established as follows:

1. Start-up and Guidance Phase (December 1996)

2. Strategy and Fiscal Context Phase (January 1997)

3. Analysis Phase (February 1997)

4. Integration Phase (March 1997)

5. Decision Phase (April 1997)

6. Report Submission (May 1997)

The organizational structure DoD established and promulgated for the conduct of the review is summarized in Figure 2-1.
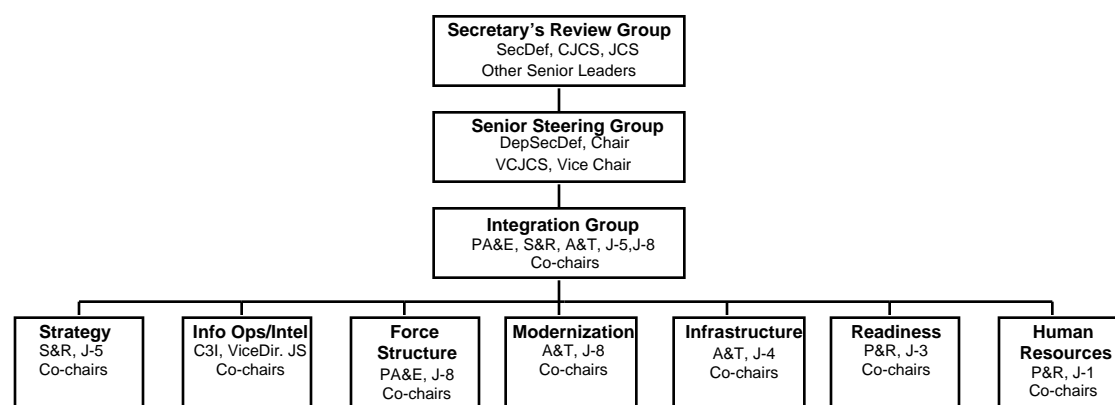
Source: Adapted from the initial QDR guidance briefing by the DepSecDef (see briefing I.2 in Table 2-1).

Figure 2-1. Formal QDR Organizational Design

At the top of the structure was the Secretary, along with the Chairman and other members of the Joint Chiefs of Staff. Following are the chairs and principal members of the Senior Steering Group (SSG) and the Integration Group (IG) as well as the co-chairs of the seven panels.[3]

Senior Steering Group

Chairman: Dr. John White, Deputy Secretary of Defense
Vice Chairman: General Joseph Ralston, Vice Chairman of the Joint Chiefs of Staff
Members:
    Mr. Walter Slocombe, Under Secretary of Defense (Policy)
    Mr. John Hamre, Under Secretary of Defense (Comptroller)
    Mr. Edwin Dorn, Under Secretary of Defense (Personnel and Readiness)
    Dr. Paul Kaminski, Under Secretary of Defense (Acquisition and Technology)
    General Ronald Griffith, Vice Chief of Staff, USA
    Admiral Harold Gehman, Vice Chief of Naval Operations
    General Thomas Moorman, Vice Chief of Staff, USAF
    General Richard Neal, Assistant Commandant of the Marine Corps
    Dr. Edward Warner, Assistant Secretary of Defense (Strategy and Requirements)
    Mr. William Lynn, Director, OSD, Program Analysis and Evaluation (PA&E)
    Mr. Joseph Reeder, Under Secretary of the Army
    Mr. Richard Danzig, Under Secretary of the Navy
    Mr. Rudolph de Leon, Under Secretary of the Air Force
    Mr. Gordon Adams, Office of Management and Budget (ex officio)
    Mr. Robert Bell, National Security Council (ex officio)
    Lieutenant General John Gordon, Central Intelligence Agency (ex officio)

Integration Group

Co-chairs:
    Mr. Noel Longuemare, Principal Deputy Under Secretary of Defense (A&T)
    Mr. William Lynn, Director, OSD, Program Analysis and Evaluation (PA&E)
    Dr. Edward Warner, Assistant Secretary of Defense (Strategy and Requirements)
    Lieutenant General David McCloud, Director, J-8
    Vice Admiral John Redd, Director, Strategic Plans & Policy (J-5)

---

[3]   From a (partial) QDR senior participant list provided to IDA by OSD (PA&E) on October 23, 1997.

Integration Group (Cont'd)

Members:

    Ms. Alice Maroni, Principal Deputy Under Secretary of Defense (Comptroller)

    Mr. Fred Pang, Assistant Secretary of Defense (C3I)

    Mr. Emmett Paige, Assistant Secretary of Defense (Force Management Policy)

    Ms. Deborah Lee, Assistant Secretary of Defense (Reserve Affairs)

    Lt. General Jay Garner, Army Assistant Vice Chief of Staff

    Vice Admiral Donald Pilling, Navy Deputy Chief of Naval Operations (Resources, Warfare Requirements and Assessments)

    Major General Rhodes, Marine Corps Deputy Chief of Staff (Programs and Resources)

    Major General Charles Link, Air Force Deputy Chief of Staff (Plans and Operations)

    Ms. Vickers, Office of Management and Budget (ex officio)

    Captain Sestak, National Security Council (ex officio)

Panels

Strategy Co-chairs:

    Ms. Michele Flournoy, DASD (Strategy)

    Rear Admiral Scott Fry, Deputy Director, J-5

Force Structure Co-chairs:

    Dr. Michael Gilmore, Deputy Director (OSD/PA&E)

    Brigadier General William Nyland, Deputy Director, J-8

Readiness Co-chairs:

    Mr. Louis Finch, DUSD (Readiness)

    Major General Steven Plummer, Deputy Director, J-3

Infrastructure Co-chairs:

    Mr. John Phillips, DUSD (Logistics)

    Major General John Hopper, Vice Director, J-4

Modernization Co-chairs:

    Dr. George Schneiter, Director, OUSD (A&T/S&TS)

    Rear Admiral Daniel Bowler, Deputy Director, J-8

Human Resources Co-chairs:

    Mr. Frank Rush, PDASD (FM&P)

    Brigadier General Patrick Adams (J-1)

Information Operations/Intelligence Co-chairs:

    Ms. Joan Dempsey, PDASD (C3I)

    Major General Stephen Rippe, Vice Director, Joint Staff

After holding initial meetings and developing this plan, DoD publicly launched the review on December 12, 1996, with a news briefing.[4] Then-Secretary Perry noted that he had been in

---

4   See DoD News Briefing, Thursday, December 12, 1996, 10:15 a.m. (see QDR 1000.doc).

touch with his nominated successor, Senator Cohen, about the QDR, and that they were in agreement on the approach to be taken. In the language that came to be employed in the QDR, the Department's leadership declared that it had a major challenge in trying to formulate a strategy that addressed the requirements posed by potential major theater wars (MTWs), smaller- scale contingencies (SSCs), "Shaping" activities, and important "Preparing" activities (investing in future capabilities).[5] This was said to be a particular challenge because all of this, and more, would have to be done within a budget expected to remain flat for the next several years.

Thus, early in the review attention was placed—first by Secretary Perry and perhaps even more aggressively by Secretary Cohen—on starting with a strategy but paying careful heed to the fiscal environment in which this strategy would have to be executed.   The Secretary and key advisors took a top-line constraint of approximately $250 billion very seriously. More specifically, early guidance to QDR participants placed a high priority on finding ways to close an anticipated modernization funding gap, identified as being on the order of $15 billion annually.[6]

January–March 1997: Guidance and First-Round Assessments

In December and January, panels formed and conducted first-round assessments based on top-level guidance given by Deputy Secretary White. A set of initial briefings (I.2–I.5 in Table 2-1) provided guidance and orientation to the panels. The briefings addressed such topics as the review structure, schedule, key assessment questions and critical decisions for each panel and top-line fiscal guidance (Brief I.2), threat projections (Briefs I.3 and I.4), strategy (Brief I.5 was provided early to key participants on a close-hold basis), and more detailed program projections within top-line fiscal guidance (Brief IV.3).

---

[5]   Please see below, the section entitled "Major Decisions," for a discussion of the three elements of DoD's new defense strategy (Shape, Respond, and Prepare).

[6]   See the Long Term Programmatic Projection ("DPP") Brief (IV.3 in Table 2-1).

Table 2-1. Highlights of Major QDR Briefings (Page 1 of 4)

Brief #	Title	Highlights
I.1	Summary Brief on QDR	Provides overview of process and decisions
I.2	Design and Approach	Gives guidance on approach, tests of success, objectives and critical issues for panels; structure for review process; schedule to guide work and integration
I.3	Future Visions 2010	Offers estimates of future threat by Director of National Intelligence Council (NIC)
I.4	Future Threats and Challenges	Presents estimates of future threat by Director of Defense Intelligence Agency (DIA)
I.5	Defense Strategy	Sets Forth the "Shape, Respond, Prepare" Strategy
I.6	Overseas Presence Options	Affirms current presence posture
I.7	Joint Vision 2010	Provides a framework for future warfighting and modernization
I.8	Preparing Now for an Uncertain Future: Modernization and the RMA	Identifies initiatives under way to develop future warfighting concepts and capabilities and identify promising technologies
I.9	Integrated Paths	Provides several alternative approaches to meet the dictates of strategy in a constrained fiscal environment
II.1	Smaller Scale-Contingency Force Requirements	Concludes better force management practices needed to meet both SSCs and MTWs
II.2	Dynamic Commitment	Describes the DC force-allocation wargame series; illuminates some impacts of contingency operations on future demands for forces
II.3	Campaign Analyses for Two MTWs	Highlights need for strong WMD protection; forms basis for decision to add $1 billion for WMD protection, and basis for QDR's conclusion that a force close to current needed to for acceptable levels of risk
II.4	Parametric Modernization Analysis—Regional Great Power Scenario, 2014	Supports the QDR's conclusion that an expanding, but measured modernization program needed to prepare U.S. forces for emerging challenges over the next several decades
II.5	Army Additional Assessments	Supports QDR decisions to maintain the current active Army combat units while reducing endstrength by downsizing headquarters and support units. Supports Army's proposals to reduce the Reserve Component and shift greater portion of (Reserve) force structure to combat support and combat service support roles
II.6	Additional Assessments of Maritime Forces	Forms basis for QDR's conclusion that current programmed force of 11 active carriers and one reserve carrier needed for overseas presence

Table 2-1. Highlights of Major QDR Briefings (Page 2 of 4)

Brief #	Title	Highlights
II.7	Air Force Additional Assessments	Concludes that even a two-wing reduction would put many aircraft types in excess of 150 deployed ("temporary duty") days per year, well over Air Force's maximum goal of 120 days per year
II.8	Marine Corps Assessments	Concludes that small reductions to Marine Corps personnel, mainly in infrastructure efficiencies proposed by the Corps, would be acceptable
II.9	Special Operations Forces Assessments	Supports QDR's conclusion that two reserve SO battalions could be reduced without impairing peacetime or wartime requirements
II.10	Summary of Services' Reduction Proposals	Contains recommendations that form the basis for the QDR report's personnel proposals
II.11	Nuclear Forces	Reaffirms current U.S. policy of sustaining START I force levels until Russian Duma ratifies START II
II.12	Readiness	Concludes tiered readiness approaches would not offer significant savings and would conflict with current strategy. Supports QDR's conclusions regarding need to manage readiness and operating tempo of our forces by reexamining current levels of joint exercises
III.1	C4ISR Alternatives	Concludes that improving MTI and SAR capabilities, through High Altitude Endurance UAV (HAE) investments, demonstrate greatest potential for MTI/SAR, but that risks with current HAE do not support programmatic change in the time frame of the QDR
III.2	Information Operations and Intelligence	Identifies need for a master plan of information operations, a proposal incorporated into 1997 DPG. Issues from this panel to be pursued in the 1997 intelligence program review and deliberations of the Expanded Defense Resources Board
III.3	Information Assurance	Reaffirms that the current framework—protection of systems and networks, intrusion detection and monitoring, reaction and recovery, readiness assessments and red teaming, and training and awareness—is the correct approach to meet postulated challenges
III.4	Joint STARS	Establishes basis for QDR decision to reduce planned buy of U.S. JSTARS aircraft while pursuing NATO procurement of JSTARS aircraft via the cooperative Alliance Ground Surveillance program. Supports decision to fund upgrades of U.S. JSTARS aircraft and "continue to explore potential for UAVs to provide radar ground surveillance"

Table 2-1. Highlights of Major QDR Briefings (Page 3 of 4)

Brief #	Title	Highlights
III.6	Marine Corps Ground and Rotary Wing Modernization	Outlines QDR decision to leave the AAAV program unchanged: aging inventories argued against reductions. For V-22, a reduction in total number of MV-22 to be purchased deemed acceptable, due to greater capability of the V-22 relative to the medium lift helicopters it is replacing. Supports QDR decision to accelerate MV-22 buys to address aging fleet problem and to buy them at a more efficient rate
III.7	Deep Attack Weapons Mix Study, Part 2	Establishes basis for Department's judgment that the "cons" of buying more B-2s in place of other strike platforms outweighed the "pros"
III.8	Deep Attack Weapons Mix Study, Part 1	Indicates programmed budget sufficient to provide next generation high-leverage munitions to preserve our advantage. Some adjustments to planned mix and quantity of next generation weapons said helpful
III.9	Maritime Forces	Supports conclusion that current shipbuilding plans are appropriate to support the strategy and the planned force structure, including the Navy's plan to reduce surface combatants, to 116 ships by FY2003
III.10	Army Ground Force and Rotary Wing Modernization	Focuses on two largest programs—Comanche helicopter and Crusader artillery system. Highlighted need for more infrastructure savings from base closures, etc. to finance systems, and potential need to adjust phasing of the programs for long-term stability
III.11	Theater Ballistic Missile Defense	Establishes basis for decisions to restructure THAAD program due to recent test failures; to fund participation through FY 1999 in international MEADS program; to continue planned approach to Patriot Pac-3, Navy Area Defense, Airborne Laser, and Navy Theater-Wide programs
III.12	National Ballistic Missile and Other WMD Threats to the U.S.	Establishes basis for QDR decision to provide more funding to support development part of current "3+3" strategy; consensus for more study of threats from cruise missiles and other unconventional delivery of WMD; studies were directed on national cruise missile defense and DoD role in countering unconventional delivery threats to the U.S.
III.13	Navigation Modernization	Highlights two areas requiring continuing attention and more resources: protecting existing Global Positioning System (GPS) signal from jamming, and denying its use to our enemies while ensuring its availability to civilian users and our allies. No specific decisions made

Table 2-1. Highlights of Major QDR Briefings (Page 4 of 4)

Brief #	Title	Highlights
IV.2	Human Resources	Presents a wide range of alternatives in four areas: Military Personnel, Quality of Life Community Support, Civilian Personnel, and Organizational Staffing
IV.3	Long Term Programmatic Projection, FY 1998–2015 ("DPP")	Establishes the basis for QDR's conclusion that without further changes in content of the defense program, further erosion of funds from modernization to operating accounts likely, resulting in failure to achieve planned growth in procurement to $60 billion by 2001. Showed that a sustained $60 billion in procurement needed over next two decades to sustain equipment fleets associated with planned force structure. Highlights need for further cost reductions in infrastructure to provide additional modernization funding, both to fund planned programs and address areas of weakness
IV.4	Acquisition Program Stability	Highlights need to address sources of migration from planned investment funding to pay unanticipated operating and support (O&S) expenses. Outlines specific alternatives to expand use of management reserves in DoD's acquisition programs, proposals which led to Secretary's decision to adopt a new funding mechanism to reduce future technical risk in major acquisition programs

Dr. White identified (in Briefing I.2) the following six "tests of success" for the QDR:

- Match force levels and resources with the strategy.
- Resolve the tension between current spending and future investment.
- Preserve force readiness and personnel quality.
- Ensure robust and sustainable modernization.
- Signal a revolution in DoD business practices.
- Institute innovation in the structure and operation of forces.

Toward the end of January, the panels began briefing their findings to the Integration Group and then to the Senior Steering Group. Sometime during this first phase (probably early February), the Vice Chairman of the Joint Chiefs of Staff, General Ralston, and the Vice Chiefs of the Services, General Moorman, Admiral Gehman, General Griffith and General Neal, who were themselves members of the SSG (as noted above), decided that panel briefings would be given to them first, in the forum known as the Joint Requirements Oversight Council (JROC), a body chaired by General Ralston, before they were given to the SSG. By some accounts, this ad hoc innovation provided useful feedback and guidance to panels; by others, the feedback and guidance prevented important analyses and options from reaching the SSG. Almost everyone agreed that this development did create a more hectic pace for the process. Figure 2-2 offers a visual depiction of this organizational evolution.
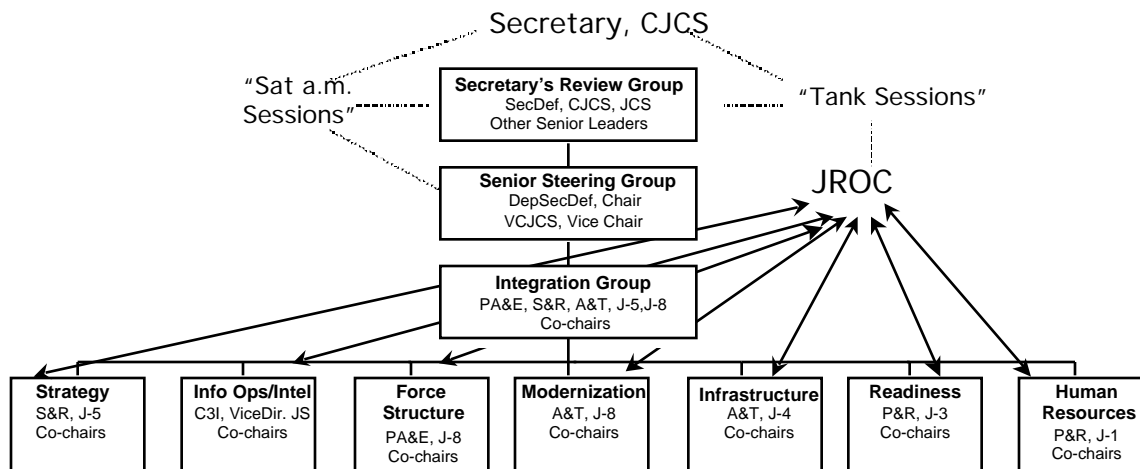
Figure 2-2. Actual Organization in First-Round QDR Assessments (February)

March–April 1997: "Final Round" Assessments and Decisions

In late February or early March an initial overall alternatives briefing, called the "Integrated Paths" (Brief I.9), was developed largely through the initiative of the Director, PA&E (OSD). This briefing outlined three very major decision alternative packages that were being considered informally up to that point. The briefing was first given at that time to the most senior leadership in the Department. Based largely on Brief I.9, the Secretary decided to direct the Services to develop a set of proposals that would achieve savings on the order of those associated with "Path 3." The Services, however, were to seek savings in infrastructure and support activities rather than in the combat force structure reductions proposed in the initial Path 3.

While the Services were preparing their proposals based on this guidance, key QDR managers were developing a final round of decision briefs for the Secretary and his Review Group. In particular, both the Integration Group and the Senior Steering Group began to meet in intensive "executive sessions." The Integration Group executive sessions were led by a so-called Troika comprised of Mr. Lynn, Dr. Warner, and Lt. Gen. McCloud. The SSG executive sessions (sometimes also called the JROC+) consisted of Deputy Secretary White, Vice Chairman of the Joint Chiefs of Staff General Ralston, the Service Vice Chiefs, the IG Troika, and a few others. Figure 2-3 illustrates the "endgame" or final-round structure that evolved.
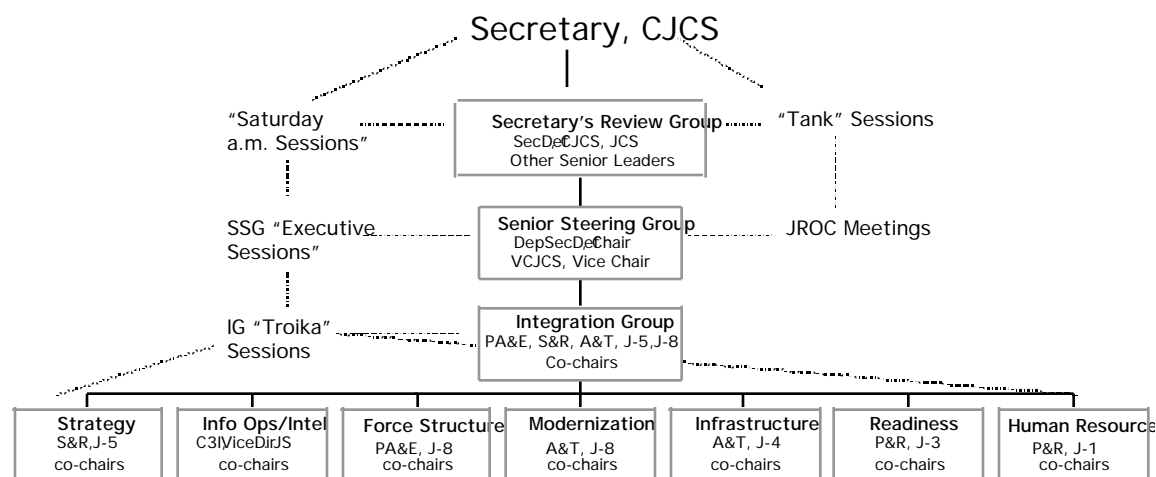
**Figure 2-3. Actual Organization for Final-Round "End-Game"
QDR Assessments (March–May)**

Mid-May: Report Submission

Drawing upon the Service proposals as well as an extensive set of additional assessments and options outlined in the endgame decision briefs (see briefs IV.2-IV.4 in Table 2.1), the Secretary made major QDR decisions based on final consultations with the Chairman and the Chiefs (in "tank sessions") as well as discussions with his other most senior advisors ("Saturday a.m. sessions"). The QDR report was then drafted—on a very tight schedule—and submitted to Congress in mid-May as Congress had directed.

MAJOR DECISIONS

Through the QDR, DoD developed a new, tri-partite strategy—Shape, Respond, and Prepare—as articulated in the *Report of the QDR*:

> In between competing visions of isolationism and world policeman lies…a national security strategy of engagement….[T]o support this national security strategy, the U.S. military and the Department of Defense must be able to help *shape* the international security environment in ways favorable to U.S. interests, *respond* to the full spectrum of crises when directed, and *prepare* now to meet the challenges of an uncertain future. (pp. 7–9)

QDR-97 considered a number of alternatives, or paths, within this framework, and chose one that emphasized the importance of balanced attention to both near-term and longer-term military capabilities, including capabilities for both shaping and combat.

Three paths of equal cost were explicitly described in the QDR 1997 Report and compared as to their relative prospects of achieving the capabilities to carry out each dimension of the Shape,

Respond, and Prepare strategy at acceptable levels of risk. Per the Secretary's direction, each path was also examined to ensure that it was fiscally executable.

As shown in Table 2-2, each QDR 1997 path considered was characterized along three dimensions: projected DoD active duty (ACDU), Reserve component (RC), and civilian (Civ) personnel levels by 2003; projected "steady state" modernization; and R&D funding per year. Path 1 featured ACDU, RC, and civilian personnel levels of 1.4 million, 0.9 million, and 0.7 million, respectively, and annual projected modernization and R&D funding levels of $50 billion and $35 billion. Path 2 featured lower personnel levels than Path 1 (1.29 million, 0.79 million, and 0.6 million), higher modernization ($65 billion), and comparable R&D ($35 billion). Path 3 featured personnel levels lower than Path 1 but higher than Path 2 (1.36 million, 0.835 million, and 0.64 million), modernization that was higher than Path 1 but lower than Path 2 ($60 billion), and R&D of potentially $5 billion per year less than either Paths 1 or 2 ($30–35 billion).

Table 2-2. Final Paths Considered in QDR 1997

Path	Path Name	DoD Personnel Levels by 2003 (millions)			Annual Modernization (1997 $B)	Annual R&D (1997 $B)
		ACDU	RC	Civ		
1	Focus on near-term demands	1.4	0.9	0.7	50	35
2	Preparing for a more distant future	1.29 (-.11)	0.79 (-.11)	0.6 (-.10)	65 (+15)*	35 (0)*
3 (final)	Balance current demands and an uncertain future	1.36 (-.04)	0.835 (-.065)	0.64 (-.06)	60 (+10)*	30−35 (-5 to 0)*

Note: Changes from Path 1 are shown in parentheses.
Source: Derived from the *Report of the QDR*.

Overall, as shown in Table 2-3, Path 1 (Focus on near-term demands) was deemed too risky on the Prepare dimension. Path 2 (Preparing for a more distant threat) was said to be too risky on the Shape and Respond dimensions. Path 3 (Balance current demands and an uncertain future) was said to offer the best prospect of achieving and sustaining capabilities that would support all three dimensions of the strategy at acceptable levels of risk. Path 3 was also deemed to be fiscally executable—assuming that projected costs and savings were realistic and that the DoD top-line did not go below $250 billion.

Table 2-3. Performance and Funding Risk Assessment Findings in QDR 1997

Path	Performance Risk Level			Funding Risk
	Shape	Respond	Prepare	
1	OK	OK	Too High	OK?
2	Too High	Too High	OK	OK?
3	OK	OK	OK	OK (if BRAC and other savings are realized and top line no lower than $250 billion per year)

Source: Derived from the *Report of the QDR*.

Key decisions thus included renewing and strengthening DoD's commitment to its modernization program and sustaining Shape and Respond capabilities into the future. The Secretary's decisions then served immediately to guide DoD's regular budget and program preparation and review process for FY 99 and beyond.

In view of Secretary Cohen's decision to commit the Department to this overall strategic course (Path 3)—within a flat projected budget of about $250 billion per year maximum—the QDR focused heavily on finding cost savings in many parts of the DoD budget, especially in infrastructure and support functions, which are often labeled the defense "tail." The Secretary argued strongly that the tail had been reduced far less in recent years than had combat capabilities, or "tooth," and that savings should therefore be sought aggressively in the tail—by eliminating excess bases and other facilities, for instance—before considering further, potentially risky, reductions in near-term combat capabilities. In Mr. Cohen's words:

> The downsizing of our infrastructure has fallen behind the downsizing of our force structure…In essence, our combat forces are headed toward the 21st century, but our infrastructure is stuck in the past. We cannot afford this waste of resources in an environment of tough choices and fiscal constraint. We must shed more weight… we will trim current forces - primarily in the "tail" (support structure) and modestly in the "tooth" (combat power)…. We must act now if we are to have the resources to invest in modernization in the midterm and if our support capabilities are to keep pace with our military capabilities in the long term.[7]

More specifically, the QDR report announced the following major substantive decisions:

- The Army will retain 10 active, combat-ready divisions; accelerate its Force XXI modernization plan; reduce end strength by some 15,000 active duty personnel; restructure its Reserve component by shedding excess combat structure; accelerate conversion of RC units from combat to combat support and combat service support roles, resulting in a Reserve end strength reduction of about 45,000 personnel.

---

7   Cohen, *Report of the QDR*, pp. viii–ix.

- The Navy will retain 12 carrier battle groups and 12 amphibious ready groups; reduce surface combatants to 116; reduce attack submarines from 73 to 50; reduce F/A-18E/F aircraft to be procured from 1,000 to 548; shift to the Joint Strike Fighter (JSF) with the goal of initial Navy production in FY 2008; and retain the option to procure up to 785 F/A-18 E/F if JSF development is delayed. Reducing the fleet, streamlining infrastructure, and transferring some logistics ships and functions to the Military Sealift Command will allow the Navy to reduce overall end strength by 18,000 (AC) and 4,100 (RC) personnel.

- The Air Force will consolidate units to streamline its command structure; shift one Active component fighter wing to the Reserves; accelerate the bidding competition for support functions; reduce force structure for continental air defense and handle the U.S. air sovereignty missions with other forces; maintain deployable fighter forces of 12 Active and eight Reserve fighter wing equivalents; realize a reduction of about 27,000 active duty personnel; proceed with the F-22 to replace the F-15 C/D; reduce F-22 procurement from 438 to 339.

- The Marine Corps will take reductions in end strength by restructuring support jobs, maintain a three Marine Expeditionary Force capability, and accelerate MV-22 tiltrotor aircraft procurement but reduce the total MV-22 purchase to 360.

- Total active duty end strength will be reduced to 1,360,000 (down 36 percent from 1989), with 835,000 in the Reserve forces (down 29 percent from 1989). Civilian personnel will decline to 640,000 (down 42 percent from 1989).

- The Army's Theater High Altitude Area Defense System deployment date will be shifted from 2004 to 2006 to stabilize the program, reduce risk, and allow study of the option of using common components with the Navy Theater-Wide missile defense program.

- National Missile Defense (NMD) will remain a high priority, on an accelerated research and development path aimed at creating the option by FY 2000 to deploy an initial capability in 3 years after a decision to deploy. The QDR concluded that the FY 2000 target could not be met by the current program budget, and the DoD will direct more funds to NMD. Even so, NMD will remain a program of high schedule and technical risk.

- To counter "asymmetric threats," from nuclear, biological, and chemical weapons to information warfare and terrorism, DoD will give more focus and funding.

- The review concluded that the policy and strategy to maintain U.S. nuclear forces are still correct. DoD will maintain the START I force posture in the current budget while the Russian Duma considers ratification of START II; remains committed to START II and to negotiating further reductions in a START III agreement after START II is ratified.

- The Department will press for authority for two additional rounds of Base Realignment and Closure (BRAC) and for restructuring of laboratories, research, development, and test facilities. DoD will seek more opportunities to out-source functions and radically reengineer and deregulate the Department's business practices.

- The Department will free up funds for increased investment in key programs by a series of Defense-wide program adjustments.

SUMMARY

A significant amount of important work was done in the 1997 QDR. The guidance, the process, and, most of all, the participants generated a large number of analyses and options in a very short time. Notwithstanding this massive effort, there is considerable interest within the Department in strengthening the next QDR process. Indeed, virtually all QDR participants IDA interviewed expressed the same constructive view—that much work was completed and some important decisions were made, but much more can and should be done the next time around, especially by drawing upon insights gained from the 1997 QDR.

Just what were those lessons, and what specific process recommendations do participants offer regarding the next QDR? Moreover, what do other experienced observers suggest? The next chapter outlines the approach IDA developed to address these questions.

3. STUDY OBJECTIVES AND APPROACH

In carrying out this task we studied documentation and commentary on the QDR, interviewed many of the QDR participants, examined a number of key processes used, and developed options for consideration as DoD prepares for the next review, now tentatively scheduled to begin in late 2000. This chapter describes the principal study objectives and elaborates on the main features of our approach to achieving those objectives.

OBJECTIVES

IDA focused on three broad objectives: (1) developing a set of lessons that may be learned from the conduct of the 1997 QDR, (2) formulating options for improving the process to be used in the next QDR, and (3) identifying options for long-lead preparatory analyses as well as development efforts for analytic tools and data that may be desirable for the next QDR.

APPROACH

Our approach had two main thrusts, implemented in two phases:

Phase 1 (September 1997–January 1998)—initial interviews (DoD participants in the QDR 1997 process, others in the defense community), initial review of the available documentation on the QDR (e.g., briefings, Panel reports)

Phase 2 (February–May 1998)—additional interviews (DoD QDR participants, additional independent defense experts, and some process experts), further review of QDR documentation and other relevant literature.

Phase 1—Initial Interviews and Review of QDR Documentation

The individuals who were interviewed or who otherwise provided their perspectives on QDR process issues are identified in Appendix A. In the vast majority of these interviews, the opinions offered were not for attribution. Collectively, the study participants provided very valuable insights and perspectives.

DoD Participants in the QDR

During Phase 1 we interviewed approximately three dozen DoD participants. Most expressed strong views regarding what DoD did right in the process and offered a variety of recommendations for improving future reviews of this kind. These respondents included chairs

and members of the Senior Steering Group (SSG), the Integration Group (IG), the Panels, and a group of QDR participants who were intensively involved in supporting the activities of their regular organization within DoD, e.g., the Services, the Joint Staff, and the CINCs.

Other Interviewees

In addition to interviewing DoD participants in the QDR, we also spoke with or received the views of several current and former DoD officials who did not themselves participate directly in the QDR but were contacted for the distinctive and often high-level perspectives they would bring. Finally, we conducted initial interviews with approximately a dozen independent experts in specific substantive areas, ranging from process design to analytic techniques that might be relevant before and during the next QDR. Some members of this latter group were involved in supporting analytic efforts in the QDR, while the remainder drew on other expertise and experience in framing observations and recommendations.

Interim Report

Phase 1 concluded with an interim report that documented QDR participants' perceptions of strengths and areas of concern in the 1997 QDR. It also identified process option features that interviewees felt should be given serious consideration in designing the next QDR, along with IDA's judgments as to the major pros and cons of the various process option proposals. Finally, the interim report outlined a series of broad substantive topics that Phase 1 respondents and a small group of independent experts that IDA contacted believed should be explored early in preparing for the next QDR. The Phase 1 report was circulated to interviewees for additional comments.

Phase 2—Second Round Interviews and Review of QDR Documentation and Commentary/Other Relevant Materials

Additional interviews with QDR participants and other defense and process experts were conducted in Phase 2. In addition, the documentation review was extended to encompass the enabling legislation for the QDR; transcripts of DoD news conferences; a variety of internal and public briefings prepared during the QDR Report; the QDR Report itself; public commentary on the QDR; subsequent DoD documents, such as the Defense Reform Initiative; and the reports of the National Defense Panel. These documents are cited throughout this report and listed in the Bibliography as well. They provided helpful background, as did a selection of materials from the management literature and from several major areas relevant to strategy, organizational behavior, and analytic approaches.

To evaluate the information obtained and to prepare and evaluate broad options for conducting future QDRs, we developed an analytical framework for assessing the key organizational and management features of the process.

Analytic Framework

In focusing on the process by which the QDR was conducted, we identified six key elements that form an analytical framework for process elements in this study: (1) Preparation; (2) Leadership; (3) Participation and Ownership; (4) Guidance, Feedback, and Review; (5) Links to PPBS; and (6) Timing. These process dimensions will be described and explored in subsequent chapters. We chose these six dimensions because of their fundamental importance according to a wide range of process management experts.[1] A thumbnail sketch of each is offered here for initial reference.

1. *Preparation.* Before decisions can be made, all the information that is necessary to make those decisions must (or should) be available to the decision makers. To run smoothly, the decision-making process must be designed so that people understand the objectives and priorities and are prepared for their roles.

2. *Leadership.* The strong leadership and active involvement of the chief (senior) executive is the single most important element of any planning process. People respond to what they believe their boss thinks is important. Because DoD is such a large and complex organization, the Secretary is not the only one whose leadership is critical.

3. *Participation and Ownership.* A central question in any decision-making process is, Who should participate and how should that participation be managed? In particular, the participation and management of the *acceptance set*—those who must accept a decision before it can be implemented—is critical. Participation in any decision-making process must be carefully structured and managed so that final decisions receive sufficient support from the acceptance set.

4. *Guidance, Feedback, and Review.* Managing participation effectively requires that the participants be given an opportunity to make their views known, while at the same time receiving adequate information and guidance on the wishes and decisions of their leadership.

---

1 See, for example, John Kotter, *Leading Change,*1995 ; Stephen Covey, *The Seven Habits of Highly Effective People,*1989; R. Fischer and Scott Brown, *Getting Together,* 1988; Personnel Decisions, *The Successful Manager's Handbook*, 1992; Arie De Geus, "Planning as Learning," *Harvard Business Review*, Mar-April 1988, pp. 70–74; Andrew Serwer, "Lessons From America's Fastest Growing Companies," *Fortune*, August 8, 1994; James Womack, et al., *The Machine That Changed the World*, 1991; Laurence Peter, *The Peter Prescription*, 1972; William Gates, *The Road Ahead,* 1995.

5. Links to PPBS. How, if at all, should the QDR be integrated into the Defense Department's existing decision-making and resource allocation system? This issue should be resolved before the formal QDR process begins.

6. *Timing*. Does the QDR, along with its associated activities, occur at the right time during the quadrennial political and biennial/annual budget cycle? This issue also needs to be decided well in advance of the next QDR.

Focus on Process, Not Critique of Substantive Decisions

It is important to emphasize that this study focused on *process*—the management and organizational issues surrounding the conduct of the QDR—not the substantive decisions made during the process (e.g., decisions on force structure or modernization). Nonetheless, some participants and observers attributed what they saw as shortcomings in outcomes to shortcomings in process. Without passing judgment on the quality of the decisions reached in QDR 1997, we distilled the information gathered to identify procedural initiatives that address some perceived shortcomings in outcomes.

The next chapter describes the collective views of the DoD interviewees from the 1997 QDR regarding both strengths they saw in that process and areas of concern.

4. PERSPECTIVES ON THE 1997 QDR PROCESS
FROM DOD PARTICIPANTS

This chapter describes the primary observations about the QDR process that we gleaned from a sample of DoD participants in the 1997 review. Consistent with the analytic framework introduced in chapter 3, we address the observations in six major categories: (1) Preparation for the QDR; (2) Leadership of the Process; (3) Participation and Ownership; (4) Guidance, Feedback, and Review; (5) Links to PPBS; (6) Timing.

PREPARATION FOR THE QDR

Strengths

Significant Preparatory Work—A considerable number of interviewees recognized that significant preparatory work had preceded the first QDR, despite the relatively short time available. They cited such efforts as the "Strategic Futures" study, the Joint Strategy Review (JSR), the peacetime engagement workshops and the Innovative Concepts Working Group on Presence, the combat modeling work (DAWMs and other analyses), DPP preparatory work, and self-initiated cost assessments in the force structure area.

Experienced Team/Continuity—Many of the senior OSD officials involved in the QDR had been at the Pentagon, working together throughout the first Clinton administration, and had significant experience working with the Chairman, Vice Chairman, and the Joint Chiefs. This shared experience was believed to be quite important.

Concerns

Insufficient Preparation in Some Areas—A significant number of participants said that more preparation would have helped in various areas: earlier intelligence taskings; strategic priorities; more Shaping assessments; more Perstempo assessments; more preparation on new forms of warfare; alternative budget scenarios; ways to reduce program oversight redundancy;

fuller studies of force structure, modernization, infrastructure alternatives; more and better data in a number of areas; and better models.[1]

Limited Opportunities to Build Common Vision—Some participants believe there are few structured opportunities for very senior DoD leadership to focus jointly on significant longer- term changes that may occur in the security or fiscal environment. Creating such opportunities was said to be highly desirable—both to aid DoD-wide planning and to help mitigate some of the parochialism that numerous participants observed in the 1997 QDR.

Unclear Assessment Priorities—Some participants stated that better preparation for the QDR could have helped the most senior leadership lay out priorities for assessments. There was fairly widespread concern that the QDR guidance called for fundamental reassessments of a vast number of key questions in the QDR, making it difficult to determine where to really focus in the short time available. For some participants, this guidance felt like being told to charge off in all directions at once in a very short time frame. Others found it very useful that a lot of analysis was initiated *and* completed in many areas, especially because such analyses could be used to respond readily to congressional inquiries.

LEADERSHIP

Strengths

Secretary's Commitment—Many participants spoke highly of the Secretary's leadership and demonstrated commitment to producing, on time, a quality product on which key DoD constituencies would support him in his efforts to persuade Congress to accept his recommendations.

Deputy Secretary's Bold Agenda—Many participants observed that the DepSecDef initially laid out a bold, ambitious agenda and many important objectives for consideration.

Chairman's and Vice Chairman's Efforts—Some interviewees spoke quite favorably of the efforts of the Chairman and the Vice Chairman to convince the Services that they should support the final "Path" that was chosen (Path 3b).

---

[1] Chapters 5 and 6 of this report, as well as appendices B and C, offer specific preparatory suggestions in most of these areas.

Concerns

Limits on Secretary's Opportunities—Many participants claimed that the current QDR design gives a new Secretary very little opportunity to develop strong working relations and a shared vision with the Service Chiefs before having to articulate such a vision in the QDR report.

Insufficient Prioritization/Follow-through—A number of participants cited the need for ongoing prioritization, guidance, and follow-through during much of the QDR.

Option Limits—Some participants were quite concerned that the process was not structured to induce the Services to seriously consider force structure alternatives. The result, according to these interviewees, was that "salami-slice" options were about the only alternatives given any consideration at the higher levels. Some interviewees also suggested that the Integrated Paths were "Goldilocks" alternatives—one "too cold," another "too hot" to be seriously considered, with the result that the third path became the obvious "just right" answer. The underlying assertion, then, is that *other* "warm" options could have been developed if there had been stronger leadership in that area.

PARTICIPATION AND OWNERSHIP

Strengths

Inclusive, Collaborative Structures—Many participants gave credit to the QDR designers for their efforts to build and sustain an open, inclusive, explicitly collaborative structure.

SecDef and CJCS Efforts to Win Support—A number of interviewees applauded the Secretary's efforts to win Service support of the QDR decisions. The Secretary's and the Chairman's "Tank sessions" with the Chiefs were said to be essential to winning that support.

Executive Sessions—A number of participants spoke favorably of the effectiveness of the "executive sessions" used by both the Integration Group and the Senior Steering Group in the final round (late March–April) analyses and decision brief preparation.

Concerns

Full SSG and IG Meetings Too Large for Work—One senior participant spoke for many, saying that while the SSG and IG structures were consciously designed to be inclusive and to afford a venue to keep senior participants informed and involved, they were too large to be effective as integrating and steering groups.

Inefficiencies in "Buy-in" Efforts—Many senior participants wondered whether the lengthy, large-group approach to programmatic option development in the QDR was really worth

the result. They wondered, more specifically, whether very small, very senior working groups could have reached similar programmatic options. One prominent example: "buy-in" from the Services was said by a number of participants to have been predominantly the result of the very senior, very private "Tank sessions," not the large, open, formal structures. The implicit concern here was that many of the large and very long group meetings may have been unnecessary.

Need for More Long-Term, DoD-wide Vision—Numerous participants described their frustration at what they saw as the lack of a long-term, DoD-wide vision in the Department and questioned how to make progress in this area. Many participants were very concerned about the level of parochialism in the QDR—which was said by some to have generated significantly more "heat" than the Bottom Up Review, for example—including but not limited to activities in the JROC. At the same time, many others argued that there was little that a QDR, or any associated process, could do to change the underlying, often competing visions of major DoD components. Some interviewees further asserted that the more a review, such as a QDR, put important "equities" or interests at risk, the more heated and parochial the behavior of major participants could easily become.

GUIDANCE, FEEDBACK, AND REVIEW

Strengths

Focused Attention on Key Problem(s)—The Long-Term Programmatic Projection (DPP) briefing in the QDR (see Brief IV.3, Table 2.1) is credited by many participants with having finally convinced many people that the modernization funding shortfall or "gap"—including the migration of resources from modernization to Operations and Support (O&S)—was truly a serious problem.

Integrated Paths Provided Needed Guidance and Focus—The Integrated Paths briefing (Table 2.1, Brief I.9) was said by many to have provided the Panels, the JROC, and the Integration Group with guidance they could use to focus on an appropriate set of options to forward up the line. Most participants wished that the Integrated Paths briefing had occurred much earlier.

Executive Sessions of SSG—During the final weeks of the QDR, the SSG began a set of executive sessions in which the principals met either to make decisions or to narrow the range of options that would be forwarded to the Secretary. Many participants felt the SSG should have held such sessions much sooner.

IG "Troika"—Another constant theme in participants' discussions about the QDR was the critical role played by Mr. Lynn, Dr. Warner, and LTG McCloud. The DPP and Integrated Paths briefings were often cited as specific examples of their efforts, though their presence was felt

throughout the process. Many also cited the important role Lynn played in pulling everything together at the end.

Concerns

Insufficient Integration, Guidance, Interim Feedback—The consensus among interviewees was that the Integration Group did not integrate, the Steering Group did not steer, and there was a lack of interim feedback to many of the panels. As one participant stated: "We kept waiting for a structure like the Saturday morning meetings in the BUR to provide interim feedback, decisions, and guidance." In fact, most felt there was little meaningful guidance until the final round. The SSG guidance was far-reaching but very broad according to most participants, who also thought the Integrated Paths briefings should have been provided earlier. An important constraint on getting the Integrated Paths brief earlier appears to have been the difficulty in getting a set of Joint Staff-blessed force structure alternatives earlier.

Role of JROC in the QDR—Although the JROC saw itself as attempting to provide some "adult supervision," many participants felt the Council caused the process to become more complex and demanding. Moreover, many people felt it reinforced the Services' tendency towards parochialism. Indeed, some felt one or more members of the JROC weren't acting truly "jointly." Yet, according to many people, part of the reason for the JROC's highly visible role was the dearth of strong, clear guidance from the Integration and Steering Groups in the first round of assessments (Jan–Mar). On the other hand, some QDR participants, particularly Joint Staff and Service members, believe that the JROC's participation was on balance a strength of the de facto QDR process, not a weakness.

LINKS TO PPBS

Strengths

Good Flow from QDR to PPBS—Some senior participants praised how well the Department was able to feed QDR decisions and priorities into the PPBS process. In other words, decisions made in the QDR were incorporated into the normal, annual programming and budgeting process.

Opportunity to Consider Issues Not Usually Considered in the PPBS Process—A common observation about the normal PPBS process is that some issues are so difficult they are not addressed within the regular process. In this context, many participants view QDRs as a once-in-four-years opportunity to tackle issues with which the normal PPBS process has difficulty, e.g., infrastructure and force structure issues. This is not to say that there was a consensus on how well

the 1997 QDR succeeded in addressing these kinds of issues, only that a QDR presents the opportunity.

Concerns

Incomplete Linkage of QDR with PPBS—Some people believe that the next QDR would proceed more smoothly if it could be placed within the context of a 4-year PPBS cycle. One view is that major decisions could be made at the outset of the 4-year cycle, and then the rest of the cycle would involve only adjustments as necessary. Another view, though not a contradictory one, is that the PPBS could be used to make progress on issues that might then be culminated during a QDR, e.g., "too hard" issues, as discussed above.

QDR Not Always Necessary—There is some sentiment that another QDR is unnecessary unless and until there is a major change in the security environment e.g., Korean unification. In this view, the normal PPBS process works well enough—the added cost of a QDR is not worth the benefits unless there is a genuine need to reevaluate our national security or defense posture.

TIMING

Strengths

Timing about right, given constraints—Many senior participants believe that the QDR was held at the best possible time in a new term. While some believe that the timing is, in some respects, not ideal (e.g., at the beginning of a new Secretary's, and often a new President's, term), they also believe a Secretary who wants to make a significant impact has little choice: the Secretary can't allow the budget under preparation, i.e., the FY 1999 budget in the case of QDR 1997, to go forward without a thorough review. Although the Secretary was (and in most cases will be) burdened by being new in office, stretching out the time for the QDR was not an option favored by many senior participants. In order to influence the next budget (the one to be submitted to the Congress the following January), the Secretary must make most major decisions by the late spring; whether a QDR is needed to meet this deadline is another matter.

Concerns

Too Short/Too Concurrent—Many interviewees believe there wasn't enough time to do many of the important topics justice, and the vast majority of participants also would have preferred the QDR to have been more sequential (strategy, force structure, then other parts, etc.).

Too Soon—On the one hand, a small number of senior participants believe that deferring a QDR by as much as a year would confer one or several advantages. It would afford the Secretary

time to build a corporate vision with senior advisors and to provide clear, early guidance, thereby minimizing wasteful start-up time for the assessment teams. To those who argue that a Secretary cannot afford to wait if he is going to have an impact, these participants suggest that the Secretary does not have to do a big QDR to make initial decisions. They assert that taking more time once the Secretary's team is together may produce a better, longer-lasting result.

Too Long—On the other hand, at least a few believe too much time was given by too many people and that a shorter, smaller-scale QDR would actually be better.

Improper Timing of National Defense Panel—Several people have argued that if it preceded the next QDR, an NDP would be able to provide "cover" for the QDR. On many controversial issues (e.g., force structure or modernization alternatives), the argument is that it is often difficult for the Department to even develop a set of alternatives for evaluation, because they immediately generate controversy and political opposition. As an outside group commissioned by Congress, the NDP could develop a set of alternatives that DoD would then be "obligated" to evaluate, thus providing bureaucratic and political cover. Most who offered an opinion believe that having the NDP follow the QDR is not likely to be very productive.

IMPROVING THE NEXT QDR

Many participants have cited important strengths of QDR-97 that can and should be built upon in the next QDR. A number of concerns have also been described in the areas above.

The most frequent, emphatic recommendation we heard was for explicit, early guidance regarding the products and decisions expected by participants. That particular concern was registered at all levels that we interviewed, although it was most common at the panel level. There was overlap among some categories, too. Some who wanted earlier guidance believed that earlier, stronger preparation would facilitate such guidance. Some who would like to see better methods for addressing tough issues—those in the "Too Hard (for PPBS) Box"—believe that some preparatory activities could help in this regard. Others believe that clearer, stronger guidance from the top leadership could help a process such as the QDR take on a few issues from this "Too Hard Box" in a very focused, concentrated way.

Overall, concerns of the sort we find registered here are not uncommon among individuals who are committed to making progress in building a coherent defense strategy and program. On balance, the majority of senior participants with whom we spoke saw strengths in the 1997 QDR on which they believe subsequent reviews can build. But many of the participants, certainly many at the panel level and within the QDR teams of the individual Services, also found the process

hard, long, and sometimes painful in one way or another, and would clearly like to see the next one improved.

What are some more specific options for designing a QDR process that could help address the concerns identified in this chapter while also building upon the quite tangible strengths? The next several chapters examine this issue, beginning, in chapter 5 with the recommendations made by the DoD QDR-97 participants we interviewed.

5. PROCESS DESIGN PREFERENCES OF SELECTED DOD QDR-97 PARTICIPANTS

IDA's Phase 1 interviews of DoD participants in the 1997 QDR elicited recommendations both to build on valuable aspects of the 1997 QDR process and to improve areas in which participants had significant concerns. The interviewees understood that their comments were not for attribution and responded candidly. Based on these interviews, IDA constructed a "menu" of process option elements and distilled major pros and cons for each element. Then, in Phase 2 of the study, IDA circulated this menu back to initial respondents as well as to additional DoD QDR-97 participants. Their principal preferences, insofar as IDA can determine them, are presented in this chapter.

PHASE 1 ANALYSIS: MENU OF QDR PROCESS DESIGN ELEMENTS

In developing the menu of process design elements for the next QDR, we used the six major categories of our analytic framework: (1) Preparation; (2) Leadership; (3) Participation and Ownership; (4) Guidance, Feedback and Review; (5) QDR-PPBS Linkage; and (6) Timing. Table 5-1 shows the process option elements as they relate to the framework. To get a flavor of the sentiments expressed by the study participants in these areas, refer to Appendix B, Selected Responses From QDR 1997 DoD Participants.

Preparation

Preparation issues naturally fall into several categories. One major decision concerns the actual scope of the QDR. The new Secretary, we presume, will ultimately make this decision. Nevertheless, many DoD participants in the 1997 QDR said that much can and should be done before a new Secretary assumes office.

Table 5-1. QDR Process Option Elements

Process Element	Element Options

Preparation
    Scope of QDR
    Front-End Assessments
    Senior Planning Sessions
    Specific Areas of Focus
	
	How much focus on Strategy/Programs/Special Topics
	Extensive/Limited
	Ongoing/Limited Offsites
	8 major topic areas (three dozen sub-topics)

Leadership	SecDef-Led/Steering Group-Delegation

Participation & Ownership
    Size
    Panel Leadership Structure
    Panel Leadership Selection
	
	Inclusive/selective
	Chair/Co-chairs
	Organizational/Ties to Leadership

Guidance, Feedback, Review
    Guidance
    Review Structure
	
	Early, Extensive/Broader
	Evolves as in 1997/Streamlined/Very Streamlined

QDR-PPBS Linkage	QDR as Strong "Forcing" Function/Rely on PPBS

Time
    QDR Start Date
    QDR Duration
    NDP Main phase
	
	Dec 2000/March 2001/Later
	4 months/6 months/9 months
	Before QDR/After QDR/ No NDP

Scope of the QDR

Three major questions should help determine the scope of the QDR—how extensive the strategy review should be, how extensive the program review should be, and which issues should be tackled from the "too hard" box.

Extensive Strategy Review? An extensive strategy review during the QDR provides a valuable opportunity for early focus on decisions that will have to be made in the normal PPBS process. It does not interfere with the normal PPBS process, and may help to strengthen it. In fact, an extensive strategy review is expected in many quarters outside the Department, particularly the Congress, thus the legislative mandate for a QDR.

Some would argue against an extensive strategy review, however, for two reasons. First, if the world security environment has not changed much, what is the point? Major strategy reviews should, in this view, be dictated by the need for a review, not the (political) calendar. Second, given that the Joint Staff prepares a Joint Strategy Review (JSR) every year, and OSD prepares a Defense Planning Guidance (DPG), an extensive strategy review may be superfluous.

Extensive Program Review? Some believe an extensive program review during the QDR is necessary and valuable so long as DoD continues to struggle with severe fiscal constraints. In this view, it is impossible to conduct a meaningful review of strategy without also exploring the programs required to execute it. Needless to say, early identification of first-order program priorities that flow from the strategy review and fiscal guidance during a QDR may be quite useful.

An alternative view is that the normal program review conducted during the annual PPBS process is already extensive and robust enough, and that duplicating this effort during the QDR adds unnecessarily to the workloads of everyone concerned. This is said to be particularly true if the strategy and the security environment are both unchanged.

Which Issues From the "Too Hard Box"? The QDR is viewed by some as an opportunity to press for major changes on some very tough issues. By their nature, though, these issues are contentious and analytically tough, and they take time and significant leadership to resolve. The Secretary must decide how much effort to devote to which tough issues.

Extent of the Preparation Process

Extensive Front-End Assessment. As noted in chapter 4, DoD prepared for the 1997 QDR in a significant number of areas, e.g., Strategic Futures, the JSR, peacetime engagement workshops, innovative concepts working group on presence, regional threat assessments, DAWMS, and taskings to the intelligence community. However, some argue that DoD could prepare more fully and systematically through a broader front-end assessment process, looking at a range of strategy and force structure alternatives and preparing scenarios, models, data bases, cost estimates, key questions, cogent arguments, and so on. This work would begin 12 months or more before the next QDR.[1] As a result, a number of options for the QDR would be reasonably well developed, and guidance could be provided early in the QDR process. These assessments could potentially be organized/facilitated for DoD by an in-house preparation team, possibly drawing on an

---

[1] Several senior DoD participants argued forcefully that the politically more controversial options should be scoped out as far ahead of the next QDR as feasible; the year preceding the next QDR will be too late. Well before that time, major stakeholders will be thinking about every preparatory option in terms of the budget implications for their component organizations. While avoiding such calculations through "budget lenses" may ultimately be very difficult no matter when the options are developed, there could well be several advantages to starting more than a year ahead. This report discusses some potential advantages.

independent research/support organization or a teaming arrangement among several such organizations.

Limited Front-End Assessment Process. Others argue that such broad-scale—and often contentious—assessments really aren't needed. A few limited planning sessions in the months prior to the QDR, combined with normal PPBS, JSPS outputs, and the regular study program, should suffice. Moreover, this group would argue, limited assessments ease the demand on already limited resources.

Senior Leadership Sessions

Two to Four Offsite Strategy Retreats, Every Year. As noted earlier, some participants believe DoD suffers from an inadequate long-range corporate perspective. To address this problem, several corporations have used an ongoing series of planning sessions for top leaders as a means of building solidarity, creating shared vision, and helping to break down parochial barriers among different parts of their companies.

One option is for the Secretary of Defense and a small group of senior officials (i.e., fewer than 20) to engage in a series of two to four offsite strategy retreats every year. These would be conducted independent of the QDR, but could benefit the QDR when it comes along every 4 years.

One argument against such sessions is that it is difficult for the top leadership of the Department to schedule the time. A second argument against such sessions is that until the new Secretary arrives, such sessions are not especially relevant.

Offsite Strategy Sessions Only in Months Prior to and During QDR. A second option is to conduct such sessions only in the months prior to and during a QDR. This has the obvious advantages both of allowing the new Secretary to be involved and of minimizing ongoing demands on the leadership's time, but it may be insufficient for developing shared vision and strong teamwork.

Specific Areas for Preparation

In Phase 1, participants identified seven major study topics (plus one miscellaneous "other" category) worth pursuing as soon as possible to be ready for a next QDR. These topics (and three dozen key sub-topics) follow.

Future Security Environment--Threat Assessments
- Developing long-range vision regarding Korean unification
- Assessing the likely impact of WMD and other terrorism

- Studying alternative Chinese development paths

- Setting out earlier intelligence assessment taskings

- Analyzing asymmetric threats

- Identifying realistic leading indicators of the emergence of peer and near-peer competitors

Shaping Assessments

- Assessing requirements for low-density, high-demand forces

- Identifying and alleviating the human costs of "Shaping" activities and programs

- Strengthening the Dynamic Commitment series

- Building Base Engagement Force (BEF) tracking tools and a readiness impact monitoring system

- Building systematic methods to assess the relative effectiveness and costs of alternative Shaping activities and programs

Combat Modeling

- Developing back-up assessment tools and data in the event "Plan A," e.g., JWARS, doesn't mature in time

- Checking results using a variety of methods and models

- Examining the strengths and limits of models vs. the limits of model inputs; assessing alternative operational concepts, e.g., for the halt and other phases of MTWs

- Conducting Military Operations in Urban Terrain (MOUT) analyses

- Developing and comparing alternative roadmaps to JV2010

- Exploring the utility of JWCA products in modernization trade-off analyses

- Simulating the impact of C4ISR capabilities

Terrorism

- Examining possibilities both overseas and in the United States

- Elaborating options for addressing WMD and other versions of this scourge, including U.S. federal, state and local collaborative options

Future Force Structure/Modernization Alternatives

- Constructing "theme-based" options that assess the potential capabilities of various mixes of forces, e.g., ground-air, land-sea, Active-Reserve, to identify broad alternative solution sets (trade-offs) for future force structure, munitions, etc.

- Identifying alternative paths and programs to transform U.S. forces for "Full Spectrum Dominance"

Infrastructure

- Reducing program oversight redundancy (OSD and Services)

- Identifying alternatives to commissaries

- Studying fee-for-service approaches to Defense Agencies

- Reducing energy costs

- Building Management Information Systems of several kinds

- Pursuing RBA (Revolution in Business Affairs) applications and inventory management approaches aggressively

- Tracking the impacts of infrastructure initiatives

Budget and Cost-Saving Assumptions, Methods, and Data

- Identifying alternative fiscal scenarios

- Preparing contingency plans if "Plan A," e.g., QDR/DRI 1997 cost-savings projections from infrastructure RBA initiatives, doesn't work as well or as quickly as anticipated

- Pressing aggressively to develop and use activity-based costing tools

- Developing DPP excursions

Other

- Maximizing the use of the best PPBS/JSPS/JWCA products in QDR

- Assessing savings opportunities of various pending and potential legislative changes, including legislative relief from restrictions on depot-maintenance work, BRAC, etc.

- Devising credible incentives for Services/agencies to identify savings

Leadership

Top-Level Involvement Throughout. Many participants believe that the success of a QDR hinges on the top leadership's willingness to establish priorities and champion them throughout the process. The leadership must build coalitions to support established

priorities and demonstrate their commitment to the project and the efforts of the working-level participants. The potential drawback of this model is the erroneous belief that the top leaders can solve all (or almost all) problems if they would just truly lead. In both public and private sector organizations the top leaders face significant limits to what they can do on their own, and DoD is no exception.

Steering Group-Delegation Approach. Senior leaders have to delegate many tasks in order to be effective. They cannot do it all themselves. Indeed, effective delegation to a Steering Group can be a productivity multiplier. In DoD, there are many very capable individuals who can, for example, provide the Secretary with valuable insight and assist in coordinating such complex undertakings as a QDR.

Delegating does, however, entail some risks. The most senior leader(s) risk appearing less than fully interested, in turn reducing participants' willingness to put in the extraordinary effort usually needed for a major project such as a QDR to succeed. And if the group comprises representatives of organizations with powerful but narrow interests to protect, participants may focus more on protecting near-term "equities" (the status quo) than on attaining the objectives of the Department.

Participation and Ownership

Size of Groups and Panels

The 1997 QDR was large and inclusive, but smaller panels or a combination of large and small panels are worth considering.

Large and Inclusive. Many participants saw the open, inclusive structure for the panels and review groups (Integration and Steering Groups) as a two-edged sword. On the one hand, inclusiveness allows many important people to stay informed, increases the prospects for buy-in, and increases the number of people who have direct knowledge of the event. On the other hand, many meetings become "exercises in crowd control" rather than more productive discussion and decision meetings. And while a large and inclusive membership increases the prospects for buy-in, the question is, are all the participants important enough for their buy-in to matter? Including unessential people only complicates the process.

Small and Select. A small, select membership for each group has the advantage of improving the prospects for thorough debate and, in the case of groups like the Senior Steering Group, makes it more likely that feedback, guidance, and decisions will be both

forthcoming and meaningful. The disadvantage, of course, is that if key people are left out, the acceptance of and ability to implement decisions later may be compromised.

Combinations. Consideration should also be given to combining small groups (e.g., executive sessions of the SSG) with occasional larger sessions.

Panel Leadership Structure

Panel Co-chairs (OSD/JS). The 1997 QDR panels each had co-chairs, one from OSD and one from the Joint Staff. The obvious advantage of such an approach is to improve the prospects of buy-in from these two key organizations. The disadvantage is that it tends to dilute responsibility and inhibit decisive leadership.

Chair/Vice Chair. One alternative is to assign a chair and a vice-chair. The risk here is that the gains in decisiveness and leadership may be offset by a loss of buy-in in cases where the chair is less than fully sensitive to such issues.

Panel Leadership Selection

Based on Organizational Affiliation. In this QDR, co-chairs were assigned primarily on the basis of their organizational affiliation. The potential advantage of this approach is that it improves the prospects for buy-in by important organizations and constituencies, who are "represented" by their chairperson. The potential disadvantage is that it increases the prospects of narrow organizational interests trumping the common good (i.e., "stovepiping"). In addition, chairs in whom the leadership has less confidence are likely to be less effective.

Based on Personal Qualifications/Relations with Leadership. Selecting chairs on the basis of personal qualifications and relationships with the senior leadership increases the likelihood that they will work closely and effectively with the leadership. The risk is that views contrary to those of the leadership may have greater difficulty penetrating the inner circle. In addition, consideration must be given as to whether powerful organizations are adequately represented among the chairs.

Guidance, Feedback, and Review

Guidance

DPP-Like Brief Early. Many participants urged the early development and presentation of clear and strong guidance, including fiscal guidance—something like the

DPP. Most people agree that a clear understanding of the budget constraint under which the Department is operating is critical to the decision-making process. Deciding among competing programmatic alternatives is not, in this view, merely a "budget drill," a criticism which has been voiced by some.

Earlier Decisions and Briefings on Strategy and Force Structure Options. Many participants also recommended earlier presentation of a briefing on strategy and force structure options—somewhat similar to the Integrated Paths briefing, only with more force structure options, and earlier. Senior decision makers and the panels would then have a clearer basis for focusing QDR efforts and resources. The potential difficulty with this approach is that any leaks to the media may politicize the QDR process, and specific guidance too early may, it is alleged, limit creativity.

Review Structure

SSG, IG, Panels, and JROC—As in 1997. The structure used in 1997 could be used again next time. Familiarity would be an advantage. On the other hand, many people have been extremely critical of the 1997 process because it was very time-consuming, and many believe it had difficulty overcoming parochial interests, particularly those of the Services, but also of OSD.

Panels and Streamlined Integration Group Reporting to Streamlined SSG. Alternatively, the panels and a streamlined Integration Group could report to a more streamlined Senior Steering Group, in essence replicating from the start the "end-game" structure that evolved in 1997 (Figure 2-3). This arrangement might improve guidance and decision making, but some potential drawbacks would remain: The entire process might still be too cumbersome (too many people on too many committees), the small membership would have to be managed carefully to ensure buy-in, and the Services might still insist on being briefed first and separately, as they were in 1997 through the JROC.

Open Meetings With a Streamlined Integration and Feedback Structure. An even more streamlined alternative would be to replace the Integration Group and the SSG with a small group of senior officials (something like the so-called JROC-plus: the JROC plus White, Lynn, Warner, and McCloud). The advantage would be that feedback and guidance would be more forthcoming in this more streamlined process. The potential disadvantage is that greatly reducing the number of people participating may create buy-in problems, particularly in the Services.

Links to PPBS

QDR as Impetus for Establishing PPBS Priorities?

Strong Influence. Structure QDRs to regularly force attention to a range of issues and options that need attention but that do not get enough during the regular PPBS. Use PPBS to implement those decisions.

Limited Influence. Rely chiefly on the regular PPBS for programmatic assessments and decisions.

Timing

Starting Date and Duration of the QDR

Start in November-December and End in May. The most obvious option is to conduct the QDR as it was scheduled in 1997, i.e, begin in November–December (2000), right after the election, and finish in mid-May (2001). This scheme's main advantage is that it fits the PPBS cycle. The main disadvantage is that a new Secretary would have little time to assemble a team, design the QDR, and develop relationships with the Chairman and Service Chiefs.

Start in November-December and Extend. A second alternative is to extend the completion date of the QDR by 3 months, which the current legislation already offers in the case of a new administration. Thus, the report would not be due until August. The advantage this offers in additional time for the Secretary to establish a team, design the QDR, and develop key relationships may be offset by the need to make major decisions earlier in order to have the maximum impact on the following year's budget. A variation on this theme is to extend the deadline for the report even further, so that it is submitted to the Congress along with the President's budget in January. The advantage of additional time here may be offset by the need to have a longer period of public debate prior to the submission of the budget.

Other QDR Timing Options. Two final timing alternatives both involve starting the QDR later. Starting later would give a new Secretary a better chance to lead the QDR from the start, to choose a team for the review, and to strengthen relations with major Pentagon players before the QDR starts. The first of these two options, *Start later and shorten*, say March to June 2001, would offer less time for the QDR itself but would improve the chance that the QDR results could be used to guide the program

development process that year. The second option, *Start later and maintain duration or extend*, say March to September or October 2001, would provide more time to conduct the review but probably would not allow time for many of the QDR decisions to influence the program development process that year.

Timing of the National Defense Panel

Main Phase before the QDR. By conducting the main phase of an NDP prior to the QDR, its results can be made available to the incoming administration *before* the Secretary has to make major decisions in the QDR. Arguably, the NDP can provide a range of analyses and options wide enough for any new administration, and in doing so can provide "cover" that would allow the administration to seriously evaluate controversial options. The disadvantages are that the Department may pay little attention to an "outside" group, the NDP may become a forum for competition between the Services on contentious issues, and it may become embroiled in election-year politics.

Main Phase after the QDR. Some argue that the timing of the NDP this time was right—allowing the NDP to develop assessments (in its main phase) in light of the QDR results, and permitting the Panel to help fill gaps and offer critiques where warranted. The risk is that it may be viewed as irrelevant next to the QDR itself.

No NDP. Some have suggested dispensing with the NDP altogether. Although this would eliminate a burden that DoD must support, it might result in a loss of valuable independent assessments and critiques.

PHASE 2 ELABORATION OF PROCESS DESIGN PREFERENCES

To expand on the insight gained in Phase 1, the study team circulated the menu of process design elements, which synthesized the initial interview responses, and asked each Phase 1 participant to indicate one or more preferences in each area, adding alternatives if appropriate. The same request was also circulated to an additional group of DoD QDR-97 participants, based largely upon the suggestions of a number of Phase 1 participants.   The responses we received are summarized here and presented in appendix B.

QDR Design Preference Scorecard

The suggestions and recommendations provided above illustrate vividly the character of many of the design preferences of some DoD personnel who participated in

the 1997 QDR. This section now offers some overall perspective on these respondents' preferences on the six major process elements discussed above. For convenience, these process elements are listed in the leftmost column of Table 5-2. Column two depicts the favored option ("Top Design Preference") among those participants who expressed a preference in the category. The third column shows what percentage of those who expressed an opinion about the process element favored the top design preference in column two. The results represent the total of 39 DoD respondents who participated in this study; however, not every participant expressed a preference in each category. The number of responses for each process element ranged from 17 to 34.

Table 5-2. Selected DoD Respondents' QDR Design Preferences

Process Element	Top Design Preference	% of Category Respondents with this Preference
Preparation		
Scope	Broader	73
Front-End Assessments	Extensive	100
Sr Planning Offsites	Ongoing	55
Leadership	Strong, engaged	Very strong*
Participation	Inclusive	59
Panel Chairs	Co-chairs	90
Chair Selection	Organizational	87
Guidance, Feedback, Review		
Guidance	Early, strong, detailed	94
Review Structure	Streamlined SSG/IG at start	84
QDR-PPBS Linkage	QDR as forcing function	Very strong*
Time		
Start Date	Dec 2000	59
Length	4–6 months	83
NDP	Before QDR	57

*These process element options were not offered directly to the respondents. The responses noted as *very strong* are inferred from the discussions with the participants.

Based on our not-for-attribution interviews with a significant number of senior as well as working-level DoD participants in the 1997 QDR, the following overall preference profile emerges. Most respondents favor a QDR of relatively broad scope (73%) preceded by an extensive preparatory phase (100%). They favor a series of ongoing senior leadership sessions (offsites) to build and provide a common vision and strong guidance for the QDR (55%). Through our discussions with the participants it became clear that a strong, engaged leadership that establishes priorities and demonstrates a commitment to the project and the efforts of the working-level

participants is believed to be essential to the success of the next QDR. Also believed to be important are an inclusive process (59%) and panel co-chairs who are selected based on their organizational affiliation (90%), as in the last QDR, to improve the prospects for buy-in by important organizations and constituencies (87%). Early and explicit guidance from top leadership (94%) and a streamlined review structure (84%) are process element improvements that are viewed as necessary to minimize confusion and non-productive work efforts early in the QDR process.

Although the data are not recorded quantitatively, we believe there was also a consensus among these respondents that a QDR should provide a strong "forcing" function for explicit consideration of important issues that rarely get raised in the normal PPBS process. Most believe that the QDR should begin, all things considered, around December of 2000 (59%) and last 4 to 6 months (83%). A clear majority are convinced that if there is to be another National Defense Panel, it would be most helpful to the Department of Defense for its main phase to be conducted before, not after, the QDR (57%).

In addition to looking at the overall responses for each process element, we analyzed the preferences by grouping the responses as follows: OSD participants versus the Service and JS participants; QDR "designers" versus "non-designers";[2] and DoD respondents with very senior formal roles in the QDR versus other DoD QDR participants.[3]

Overall, there were few pertinent differences across these sub-groups; most favored the majority options shown in Table 5-2. However, there were three areas with notable differences. First, the respondents least likely to be required to participate in ongoing offsites (the "less senior" QDR participants) favored them strongly—much more so than those who would have to participate. The second major area of difference was *participation*: "less senior" QDR respondents and the designers of the "open" process favored inclusive participation; the others preferred smaller groups. The third difference

---

[2] Those participants classified as "designers" include the chairs of the SSG and the co-chairs of the IG and the panels. The classification was made on the premise that these individuals had strong leadership roles in structuring the activities of their groups. The "non-designer" category includes all other DoD interviewees.

[3] For this analysis, DoD participants in the "senior formal QDR roles" included all QDR participants at levels above the panels. The term "senior formal QDR role" refers to the participant's role in the QDR-97 structure—not to the individual's position within the regular DoD organization. (Refer to figure 2-1 for a diagram of the formal QDR organization structure.)

was that the Service and JS respondents did not prefer to have the NDP prior to the QDR. The specifics regarding these differences may be found in Appendix B.

DISCUSSION

The preferences of those DoD QDR participants whom we have interviewed in this study cannot necessarily be imputed to the entire group of DoD participants in the 1997 QDR. These results do offer, however, a clear picture of those design features favored by a very significant group of individuals—from senior to relatively junior—who worked long and hard in the review. To the IDA study team, these respondents overwhelmingly appeared to make a strong effort to lay out their most candid insights with the overriding objectives of strengthening the planning process and ensuring the defense of the United States in the years ahead.

As a part of this study, IDA also sought the views of a number of defense experts from outside DoD, as well as the ideas of some other individuals with process design expertise, concerning sensible areas for DoD to try to strengthen for the next QDR. Chapter 6 provides a summary of their perspectives regarding areas in which preparations would be made ahead of time as well as recommendations for designing a vigorous, impartial competition of ideas and approaches for the next review.

6. INDEPENDENT RECOMMENDATIONS FOR QDR PROCESS DESIGN

IDA asked a variety of independent observers and experts to review the QDR design options menu presented in chapter 5, including the eight major preparation categories and three dozen subtopics described there that were recommended by the DoD QDR participants with whom we had spoken in Phase 1. The recommendations of these independent experts for improving the next QDR process fell into three major categories: (1) force performance assessment capabilities and assessments; (2) cost analyses and projections; (3) the structure and management of the overall review process. This chapter briefly summarizes the principal recommendations we received from these individuals. Appendices C and D of this report provide a more detailed compilation.

Many experts with whom we spoke urged the Department to push vigorously to elaborate the type of basic risk assessment framework that was used in QDR 1997. That framework generated a range of structured comparisons of alternative ways to implement the newly articulated defense strategy—"Shape, Respond, and Prepare."[1] Through it the Secretary of Defense evaluated a series of options, or "paths," and selected a path to "balance available resources across the major requirements of the strategy, both for the near and the longer term."[2]

---

[1] See QDR Report to Congress, May 1997, pp 7–9.

[2] As noted earlier, three paths were explicitly described in the QDR-97 report. Each was said to be an equal cost option, and the three options were compared for their relative prospects of achieving the capabilities to carry out each dimension of the Shape, Respond, and Prepare strategy at acceptable levels of risk. See chapter 2 of this report, especially Tables 2-2 and 2-3, for some details of each path. Per the Secretary's direction, each path was also examined to ensure that it was fiscally executable. Overall, Path 1 (Focus on Near-Term Demands) was deemed too risky on the Prepare dimension. Path 2 (Preparing for a More Distant Threat) was said to be too risky on the Shape and Respond dimensions. Path 3 (Balance Current Demands and an Uncertain Future) was said to offer the best prospect of achieving and sustaining capabilities that would support all three dimensions of the strategy at acceptable levels of risk. Path 3 was also deemed to be fiscally viable—assuming that projected costs and savings were realistic and that the DoD top-line did not go below $250 billion.

FORCE PERFORMANCE ASSESSMENT CAPABILITIES AND ASSESSMENTS

We will summarize the suggestions of the experts with whom we spoke regarding how DoD could improve its assessment capabilities and analyses in the framework of the three strategy elements—Shape, Respond, and Prepare. Parenthetically, across this spectrum we found widespread conviction that, because many of these efforts require time, thought, and resources, DoD would be well-advised to start or accelerate its efforts in each area immediately.

Shape Assessments

Quite a few observers noted that DoD has laid out numerous—about 17—broad sub-tasks or activities within the Shape dimension of the strategy. They encourage the department to establish, as soon as possible, metrics of performance in these areas, to identify alternative programs, and to try assessing the cost-effectiveness of these alternatives. Acknowledging that, historically, progress in this area has been difficult, most of these observers point out that vast resources have been applied to MTW analyses, and that significant benefits might be derived from well-structured and funded basic research and experimentation designed to move the DoD toward a more "output oriented" requirements process in the major Shape objective areas.[3]

Respond Assessments

We received a variety of suggestions for strengthening the next QDR analysis of smaller-scale contingencies, major theater conflicts, and assessments of the relative capabilities of various force structures and force employment concepts to meet the combined demands of alternative projected mixes of SSCs, MTWs, and other potential obligations of military units.

The Department was encouraged to—

- Start as soon as possible to lay out the specific, perhaps hard, questions to be addressed in this area for the next QDR

---

[3] An input-oriented requirements process identifies resources that are assumed to be useful in promoting a specific objective. Typically in this construct the more of these resources that are available, the better. An "output-oriented" requirements process actually focuses on how well various combinations of inputs perform (what their relevant outputs are) with respect to a set of mission or task objectives. Output-oriented research is at the heart of cost-effectiveness analysis.

- Determine the tools that will be available, make needed enhancements, and pre-test the approaches, while maintaining fallback approaches in case planned model enhancements do not materialize on time

- Examine, fairly and impartially, a broad range of promising alternatives in the preparation phase in order to be ready to do the same thing for the QDR itself

- Prepare to teach the principals and their staffs the capabilities and limitations of the tools and data that will serve QDR deliberations so they expect neither too much or too little

The following paragraphs expand on these recommendations in summary form. Then these summaries are elaborated further in appendix C, which also includes several representative specific suggestions.

Frame the questions that the next QDR likely will address. Some observers noted that the "light to heat" ratio could be improved if the hard questions are addressed dispassionately in the preparations for the QDR. Practitioners recognize a number of perennial favorites; Active and Reserve component utilization is an example. Some new questions have been added as well. An example is a suggestion that the CINCs' theater-level battlefield targeting goals should be very carefully examined, since they can make a great deal of difference in what the combat models produce.[4]

Prepare the tools and data bases for the next QDR. The experts we interviewed suggested many preparatory actions. Roughly, they fell into four categories.

First, strengthen understanding of what models will be available for the next QDR and what they can and cannot do to help decision makers dealing with, *inter alia*, the hard questions. Then, in light of this survey figure out what can be done in time to develop alternative approaches, including models, data and pre-tests.

Second, fix certain long-standing weaknesses in both the models themselves and the ways they have been used. For example, some observers opined that QDR analyses did not adequately consider the logistics of friendly and enemy forces. Because U.S. forces emphasize logistics support, in their opinion, this biased the results in favor of the enemy.

---

[4] See appendix C of this report, page C-10, for details.

Third, prepare the models or their utilization protocols to improve the ability of the next QDR to deal with emerging questions such as the role of C4ISR in the RMA or the use of WMD by an adversary seeking to respond asymmetrically to U.S. military strength.

Fourth, in light of the tools available and the questions likely to be addressed, focus and add to ongoing efforts to improve the data used in the analyses that support the next QDR.

Examine a broad range of alternatives in preparing for the QDR and in the QDR itself. Suggestions in this area ranged from very specific analytic techniques to policy matters. An example of the former is a suggestion to improve the examination of the "script" that controls a combat model application to a hypothetical war; this is based on the conviction that changing one of the critical elements of the script can have a profound effect on the overall results. A related recommendation is to use "sensitivity analysis" much more extensively in the combat model work. Extending these principles to a broader level, some outside observers argued that the analytic mindset in DoD needs to change from designing forces to meet a few identified contingencies to designing forces to be capable of handling a very wide range of contingencies. Finally in this vein, there was a strong view among outside observers that the next QDR needs to be able to consider significantly different approaches to fulfilling the responsibilities of DoD in the national security strategy; this will be addressed in more detail below.

Prepare to teach the users of the next QDR what can be expected from the analysis that supports them. A perennial problem is that some decision makers expect analysis to give them *the* answer, while others expect too little, merely tolerating it. The answer is in the middle ground, according to most experts. Effective use of analysis can provide useful structure to the decision process, helping to frame the debate. Often it can identify really bad alternatives and occasionally it can provide an insight or idea that contributes to a change in direction. Before the next QDR these experts recommend that DoD develop means to help the QDR decision-makers understand the important but limited role of analysis in pragmatic terms.

Prepare Assessments

Revolution in Military Affairs (RMA). Most experts we contacted believe that a stronger set of tools focused on modernization and RMA issues could be devised and employed over the next several years to elucidate the relative merits of various future

force structures and modernization and R&D mixes. QDR 1997 devoted significant effort to this area but was still disadvantaged by the relatively short lead time to prepare for that first review.

Revolution in Business Affairs (RBA). DoD includes efforts to exploit the so-called RBA within the Prepare dimension of its strategy. A number of experts with whom we spoke regarding this area urge DoD to pursue aggressively how to deal with reducing infrastructure expenditures. Four topics that were singled out for attention are described below.

- Performance measures, including costs, are key to determining which goods and services are being produced inefficiently and how much improvement is possible. DoD's accounting systems cannot provide activity-based or mangerial costs except for Working Capital Fund activities, however. There is growing demand for such costs for all activities, from the acquisition community among others, and DoD is required by law to meet government-wide accounting standards, which include managerial costing. Efforts are underway in a few areas, but a coordinated and comprehensive effort will be necessary if DoD is to maximize the benefits of managerial information.

- Historically, a DoD outsourcing study has covered one function at one base, sometimes involving only a few positions. On the one hand, this approach maximizes the amount of work involved both in conducting the studies and in monitoring outsourcing contracts when that is the outcome. It also increases the pain for government workers, who must reengineer their jobs and still possibly lose them, and the political pressures on local commanders if they are seen as acting on their own rather than as part of larger initiative. On the other hand, it minimizes the prospects for success by offering only small packages of work to the private sector and by limiting opportunities for economies of scale. A top-down approach that covered an entire function or geographic region might reduce work and offer greater savings. Analysis of impediments to such an approach, and of potential savings from adopting such a course, might suggest actions DoD could take to make progress in this area.

- Of the eight main categories of infrastructure, spending on force management is higher (relative to 1989), than any other except health care.[5] There is no OSD Principal Staff Assistant responsible for this category (unlike, for example, health care, logistics, or acquisition), and it has not been the subject of any major reengineering efforts. The headquarters in this category perform many functions, some of which are not related to the size of the force. A better understanding of the factors that influence the size of management headquarters might suggest an approach to reducing the number or size of these activities.

- While substantial legal constraints have been placed on DoD in its efforts to privatize and outsource activities of many kinds, aggressive DoD efforts to estimate how much money may be saved through a wide variety of such efforts could help DoD win additional support for such initiatives over time.

Hedge Against Unlikely but Significant Future Threats. Assessment of a growing number of reports in recent years has led the DoD to begin a set of programs designed to counter a range of unconventional threats posed by rogue states and terrorist organizations. Considerably more DoD attention will doubtless be required in this area in the years ahead. Several observers suggest that the DoD should work hard to ensure that it has an explicit set of indicators to provide long-lead warning of the emergence of a near-peer competitor, that is, an economically capable nation motivated to develop military power sufficient to seriously threaten the United States either conventionally or unconventionally. They further suggest that the DoD scope out some first-order contingency plans to understand how the U.S. would accelerate production of additional capabilities in time to cope with such a threat as it emerged.

---

[5] As a percentage of 1989 spending, 1997 DoD spending in each of eight major infrastructure categories has been estimated as follows: Acquisition (64%), Installations (79%), Communications (73%), Force Management (95%), Logistics (70%), Medical (101%), Personnel Infrastructure (88%), Training (68%). See S. Horowitz, 1998. These eight categories are defined in an IDA working document (INFRADEF.doc, dated 8/19/97). The Force Management category includes all DoD activities that furnish funding, equipment, and personnel for the management of the defense forces, including Department-wide administration, management/operational headquarters, and geophysical aids.

COST ANALYSES AND PROJECTIONS

Stronger force assessment capabilities will, over time, enable the Department to more systematically and rapidly compare a richer set of alternative approaches as to their relative effectiveness and the risks involved in using them to try to meet the demands of the current strategy and potential variants. At the same time, many observers, both within and outside the DoD, point out that the next QDR, much like QDR-97, will have to determine how to fit promising approaches within a set of likely fiscal constraints. Looking ahead, several experts suggest that at least two cost-related aspects of DoD's current strategy-resource comparison process could be strengthened for the next QDR.

Build a generalized DPP. One important focus could be to help major players understand just how funding gaps or risks, such as those identified in the 1997 DPP brief, are actually derived, starting with the strategy.[6] A generalized DPP would, in effect, begin with a strategy, move to a concept for implementing the strategy, elaborate a set of force and resource requirements to be able to implement the strategy, estimate the resources needed to meet those demands, and develop one or more estimates of a funding risk, or gap—if any emerges. An effort to elaborate the analytic tool and the data requirements for just such a process could be a very useful and comparatively objective task.

Conduct Focused Studies of Cost-Drivers and Build Links to a Generalized DPP. A second major cost-related task here could be to help all the major players understand the key causes or drivers of any projected gaps.[7] Clearly, individual DoD components have relatively little control over some new costs, such as when they are tasked to shoulder a more ambitious set of peacetime military activities, when inflation is higher than expected, and when a robust economy is bidding up the cost of keeping military personnel of a given quality. On the other hand, there are likely to be dimensions where some DoD components are slower, compared with others, in implementing previously agreed upon cost-saving measures. The stronger the DoD's analytic basis for understanding the relevant history and likely futures in this area, the better able the

---

[6] The Long-term Programmatic Projection Briefing, FY 1998–2015 (DPP): see Table 2-1, Briefing IV.3.

[7] The DPP (see Table 2-1, Briefing IV.3) outlined and examined the following major sources of the funding risk (or gap) in the 1997 QDR: O&S migration (unplanned bills; potential unrealized savings); Investment cost growth (numerous systems); programmatic risks (NMD, START1, NBC Protective capabilities; minor procurement, etc).

Secretary and other major players will be to work out fair and reasonable solutions to address projected funding risks or gaps in the next QDR.[8]

STRUCTURE AND OVERALL MANAGEMENT OF THE REVIEW PROCESS

Independent observers offered a variety of suggestions for designing a vigorous, impartial review of important options for an incoming Secretary to consider. Most notable were seven major types of suggestions urging DoD to—

1. *Establish strong, engaged leadership to ensure a vigorous, fair review.* Some experts suggest that the most important leadership task for a Secretary interested in significant change and improvement via a QDR process is to set up and conduct a vigorous but scrupulously fair review—a spirited competition, with rigorous tests of rival approaches, structured to ensure that the rules of the contest will not be biased, either in favor of any one major player or in favor of the status quo.

2. *Prepare for change.* (a) Conduct an extensive preparatory phase to explore a range of alternative strategy assessments and force structure options within one or several budget top lines. (b) Structure and pre-test a wide range of databases, models, and issue papers on key topics believed to be of use to the incoming Secretary for the next QDR. (c) Commission several independent efforts to propose alternatives and test them against some benchmarks established by the preparation team. (d) Elaborate a new conceptual framework for readiness evaluations of alternative force and capability postures, considering the framework being developed for OSD (P&R). (e) Encourage focused off-sites among senior DoD leadership to jointly consider approaches to alternative futures.

3. *Build guidance to include significantly different approaches.* (a) Task each assessment team in the QDR to specifically examine major alternative proposals summarized by a QDR preparation team (e.g., the 1995 CORM Report, *Directions for Defense*; the 1997 National Defense Panel Report, *Transforming Defense*; *Key West Revisited*, *Roles and Missions of the U.S. Armed Forces in the Twenty-first Century*, Barry M. Blechman, et al.,1993). (b) Press for the main phase of the next NDP to go before the QDR: QDR

---

[8] A range of analyses projecting the extra costs to DoD of various future levels of peacetime military activities under different economic assumptions and timelines could be quite useful here. Some analytic work is underway along these lines for the DoD Comptroller now (see Paul Goree, The COST Model, an IDA briefing, April 1998; for a brief discussion, see appendix C of this report, page C-6). Overall, development and pretesting of an integrated set of costing tools to address the kinds of factors alluded to here could be beneficial in the next QDR. For additional perspective, see Appendix E of this report.

preparation teams within DoD could then review and include valuable NDP alternatives among options for QDR review. (c) Task each QDR assessment team or panel in each area to identify the current DoD paradigm and range of solutions under that paradigm; and then to identify at least two other paradigms for approaches to each problem and potential solutions or paths along those lines. (d) Have participants, especially proponents, consider and describe, for each option developed in the QDR, what, if anything, would lead them to change their minds and propose something else. [9]

4. *Institute "challenge" teams.* Commission independent review group(s), appointed by the Secretary, to comment privately to him on emerging proposals during the QDR.

5. *Set up DoD-wide secure links to encourage innovative inputs.* Set up the next QDR so that it can be conducted largely on-line (in a secure environment as appropriate), with guidance provided to teams interactively. To the extent possible, the QDR coordination team would handle feedback, questions, requests for clarification, etc., on-line. Secure links would enable participation of key DoD players/communities throughout the world and rapid receipt of potentially innovative proposals from throughout DoD.

6. *Designate an ombudsman reporting to the Secretary and the oversight group.* The Secretary would designate an independent ombudsman who would track and monitor proposals emerging from assessment groups as well as alert the Secretary to especially promising proposals being developed in the assessment groups that were not reaching the Secretary through the regular channels in the QDR.

7. *Provide incentives for change.* (a) Develop and use a "Bishop's Fund." In this approach the Secretary would establish a set of incentive funds that he uses to reward organizations within DoD that submit program proposals promising to advance the Secretary's priorities especially well. (b) Offer budget rewards to Services for actual priority improvements. (c) Identify a military strategy and then invite the Services to propose what they would do and how well they could implement that strategy under one or more of the following conditions: each Service has 90%, or alternatively, 75%, of its current funds and could bid for the rest. Individual and cooperative proposals would be considered.

---

[9] Richard Neustadt and Ernest May refer to this approach as asking "Alexander's" question. See their *Thinking in Time, The Uses of History by Decison-makers,* The Free Press (1986), p. 152.

DISCUSSION

Soon after taking office, the next Secretary of Defense most likely will seek to lay out a new strategy, to identify potential demands for capabilities implied by that strategy, to compare those demands with likely resources, and then to assess alternative ways to minimize any projected demand-resource imbalances, such as the "modernization funding gap" that was identified and taken quite seriously in QDR 1997.

Many of the causes of the resource gap that was identified in the 1997 QDR appear to be endemic. This is evidenced by Secretary Cohen's recent public plea to the Congress for budgetary relief from unanticipated expenses and for legislative relief from the ongoing burden of excess infrastructure within the Department.[10] Another example of chronic problems in this arena is potential cost growth in acquisition programs that can result from schedule slips in the start of full-scale production.[11]

In the QDR Report and on numerous subsequent occasions, Secretary Cohen has accorded reducing excess departmental infrastructure a high priority in his program proposals. Thus, Mr. Cohen made a strong case in the QDR for congressional cooperation along these lines, even though that support, especially for approval of additional rounds of BRAC, was believed by many to be unlikely in the near term. The Secretary's position in these efforts may well have been to try this approach and, if the gambit didn't work, move to the less attractive "Plan B" he alluded to recently: "Congress must allow the Defense Department to close military bases we no longer need…. If…not…it will seriously affect decisions I am scheduled to make on whether to proceed with some major weapons programs…. [And] without the fair and efficient base closure process used in the past (which Congress can try to improve if it wishes), bases will wither due to lack of funds, and communities will not receive the economic re-use assistance that comes with the closure process."[12]

In our study, many respondents have indicated quite forcefully that DoD would do well to strengthen the kind of strategy-resource-risk assessment framework that the department exercised to some extent in QDR 1997 through devices such as its risk analyses and the DPP briefing. Vigorous efforts to strengthen such a framework could

---

[10] William Cohen, "Defense: Getting Down to Basics," *The Washington Post*, April 22, 1998, p. A23

[11] See, for instance, Tim Smart, "Getting the F-22 Off the Ground," *The Washington Post*, April 20, 1998.

[12] William Cohen, "Defense: Getting Down to Basics."

provide the principals in the next review with even clearer, earlier perspectives on potential funding gap issues, and possible solutions, than were available in QDR 1997. By building soon upon such strengths of the 1997 QDR and by taking seriously many of the specific constructive recommendations offered by DoD and independent experts who participated in our review, IDA believes that the analytic and decision processes for such efforts in the next QDR can be appreciably enhanced.

The next and final chapter sets forth eight principal lessons and several recommendations that we believe are worth considering seriously in designing the next QDR process.

7. LESSONS AND RECOMMENDATIONS

The 1997 QDR process generated a range of structured comparisons of alternative ways to implement the newly articulated defense strategy—Shape, Respond, and Prepare. Through this process the Secretary of Defense made a series of choices among options, or "paths," and selected a path to "balance available resources across the major requirements of the strategy, both for the near and the longer term." Three paths, labeled One through Three, were explicitly described in the QDR Report. Each was said to be an equal cost option, and the three were compared in the report for their relative prospects of achieving the capabilities to carry out each dimension of the "Shape, Respond, and Prepare" strategic construct at acceptable levels of risk. At the Secretary's direction, each path was examined to ensure that it was fiscally executable.

A comparative construct such as this can serve the DoD well in the years ahead, especially if explicit attention is devoted, as soon as possible, to deepening and expanding some of its key elements for the next QDR. The overall process design should take advantage of lessons learned from the 1997 QDR and incorporate focused preparatory work that could be accomplished prior to the next review.

As will become clear in what follows, the IDA study team recommends that the Secretary of Defense and the Chairman of the Joint Chiefs of Staff—

- Establish, as soon as feasible, a small, long-lead steering group for QDR preparations

- Commission the development, by March 2000, of a working prototype strategy-resource comparison process that would build upon the risk assessment framework and the long-range programmatic projection process employed in QDR-97

- Charter a formal QDR preparation team that would convene no later than March of 2000 and engage in a broad, three-phase preparation effort for a QDR that would be conducted from March through June 2001

LESSONS LEARNED

The IDA study team has derived eight principal lessons from the 1997 QDR process, as follows:

1. Prepare early and broadly for the next QDR

2. Work hard to engage major players early

3. Seek ways for the Secretary to lead from the outset

4. Establish a small, strong leadership/integration group from the beginning of the QDR

5. Provide early, clear guidance

6. Establish vigorous but fair competition of ideas and approaches

7. Focus on force capabilities as much as possible

8. Link the QDR to the PPBS by—

   • Framing the QDR challenge in strategy and fiscal terms from the beginning

   • Drawing together the best explicit "strategy-resource comparison processes" from throughout DoD

   • Timing the QDR both to enable the new Secretary's priorities and guidance to be established at the start of the review and to use the QDR to produce timely guidance for the budget and program that will be under development at that time

These lessons relate fairly naturally to the six major process elements we have discussed earlier (preparation; leadership; participation and ownership; guidance, feedback, and review; links to PPBS; and timing). Several of the lessons pertain to more than one element.

Lesson 1. **Prepare early and broadly for the next QDR.**

The next QDR should feature a preparation period that would start earlier than did most of the advance work for QDR-97. In light of the three dozen or so types of long-lead preparatory work recommended by many of our respondents (see chapter 5, Specific Areas for Preparation, p. 5-4), we believe the preparation also should be more extensive than that in QDR-97.[1]

---

[1] There is precedent for extensive preparatory analyses for a major national security review. One significant example is the set of "pilot studies" that OSD conducted in 1968. Those studies served as a

As early as feasible, a small, OSD-led steering group should be established, to conceive, initiate, guide and monitor long lead-time efforts. One of the major jobs of this long-lead steering group would be to commission the development, by March 2000, of a working prototype strategy-resource comparison process that would build upon the risk assessment framework and the long-range programmatic projection process employed in QDR-97.

The formal QDR preparation process should begin about a year before the QDR itself, about March 2000. Preparatory work would be run by an OSD-led team of approximately three dozen individuals representing the major DoD players (OSD, the Joint Staff, Services, CINCs and Defense Agencies). [2] A main function of the formal preparation team would be to refine and extensively pre-test the working prototype strategy-resource comparison process that would be provided to it by the long-lead steering group in March 2000. Overall, the formal preparation effort could consist of three distinct phases: Phase A (Initial Preparation); Phase B, (Post-Election); and Phase C (Final Preparation). Phase A could start in March 2000 and last until the election in November, about 8 months. Phase B could run from the election until the confirmation of the new Secretary, or 2.5 to 3 months. The new Secretary could then lead Phase C in February, making final decisions on the QDR's agenda, process design, scope, special topics, explicit guidance, feedback and integration mechanisms, and timelines for intermediate and final products.[3]

While the scope of the next QDR is likely to be mandated by Congress, the Secretary will ultimately decide how much emphasis particular issues will receive. Early and broad preparation for the next QDR, with independent inputs from activities such as

---

key input to the large-scale NSSM-3 study conducted by the Nixon administration in 1969. Both the pilot studies and NSSM3 study itself were analyzed as background to the current study, and may be found in Robert Bovey, *NSSM-3—A Pivotal Initiative in U.S. Defense Policy Development*, IDA Document D-2147, September 1998.

[2] If one knew now that the next QDR would focus narrowly on a defense strategy review, a relatively small team—perhaps a dozen members drawn from OSD, the Joint Staff and independent experts—might be adequate to prepare and illuminate options with respect to issues of strategy. But the preparations must account for the possibility that the QDR also will cover a broad range of programmatic and management issues. Thus, the team will need perhaps three dozen members from OSD, the Joint Staff, Services, CINCs, and Defense Agencies who will form smaller teams to address the issues selected by the steering group.

[3] Of course, if the incumbent Secretary were staying on, the QDR almost certainly could start earlier than March 2001.

an NDP that preceded the QDR and other analytic sources, will best enable DoD to conduct a first-rate QDR of whatever scope the Secretary should choose.

The next QDR will most likely occur just as a new administration is structuring its broader national security strategy as well as defining the security responsibilities of the federal departments and agencies and the relationships to make that strategy work. Given this, part of DoD's preparation agenda for the next QDR could focus productively on identifying concrete steps and options to develop the new national security strategy and then integrate the defense strategy with it as quickly and smoothly as possible. Such an initiative could be particularly worthwhile since many critical security issues now confronting the United States (e.g., Shaping challenges and counterterrorism,[4] homeland/infrastructure protection and "cyber wars,"[5] border control) are likely to be best pursued within a strong inter-departmental framework. DoD could consider taking an early, strong role in an administration-wide effort along these lines, building on prior initiatives, such as those within the current administration, and adding others as appropriate. For instance, after the election in 2000 DoD could prepare to help a security strategy transition team scope out and address such issues and options for working relationships. At a minimum DoD could develop draft proposals for working relationships on the kinds of security challenges mentioned above, for explicit consideration as soon as the new White House is ready.

In addition to preparation efforts within DoD, an NDP—if one is to be convened—should conduct its main phase (assessments of alternative strategies and force postures) prior to the QDR, if possible, so that the results can be an independent preparatory input to the QDR.[6]

Overall, QDR-97 participants expressed a strong preference for extensive preparation, for inclusive preparation efforts, and for the NDP main phase to be held

---

[4] "One of our most demanding challenges will be presented by transnational terrorists….What are we going to do when some group dumps biological viruses into Virginia's water supplies or those of any other state or city?" W. Cohen, "1998 Eisenhower Institute Leadership Dinner," April 28, 1998.

[5] See, for example, Bradley Graham, "U.S. Studies New Threat: Cyber Attack," *The Washington Po*st, May 24, 1998. Graham quotes Deputy Secretary of Defense John Hamre as saying that the Pentagon is establishing a permanent joint task force on cyber security and taking steps to improve the training of those who operate military computer systems.

[6] That year will be a presidential election year. It seems reasonable for an NDP to be named in the spring or early summer of 2000. Some argue that the NDP should deliver its report by early November 2000; others recommend delivery by late February 2001. Almost all who favor an NDP believe it should submit its main phase report before the QDR starts.

before the QDR if there is to be another NDP. As a practical matter, the actual window for a QDR is likely to be so short that it will be virtually impossible to acquire and allow working level participants to become comfortable with significant new data, tools, and analytic constructs during the process. In general, the more the analytic processes and data bases are pre-tested and the results shared, the better prepared working level participants will be to introduce these items before the QDR to the senior level participants whose judgments will be informed by them. In this way, the tools, data, and results can be used to better advantage during the QDR based on insights gained during the preparatory period.[7]

Lesson 2. **Work hard to engage major players early.**

In the preparation process, the Services, CINCs, and Defense Agencies should be fully engaged, serving on and providing valuable inputs to the OSD-led preparation team. They should nominate ideas for evaluation, comment on interim work products, and provide estimates and other information in support of the preparations. They should participate fully with OSD and the Joint Staff in designing and pre-testing the QDR strategy-resource comparison process. The Services, CINCs, and Agencies should also be deeply involved in all activities of the QDR itself, ranging from evaluating management alternatives to estimating and addressing gaps identified through the strategy-resources comparison process.

All major components within DoD (OSD, JS, Services, CINCs, and Agencies) have valuable insights to contribute in designing and exercising a robust strategy-resource comparison process. Major components should be engaged in a fair and ongoing way to best ensure that problems identified and solutions selected can be implemented. At the same time, many study respondents cautioned that the Secretary is paid to make the tough decisions and issue the tough guidance; individual components should not be expected to willingly impose upon themselves what could be necessary but onerous decisions. Therefore, the full engagement of all major institutional players is not expected to produce a tranquil QDR. Nonetheless, in our view this engagement is crucial to achieving decisions that include commitments to implementation and acceptance of responsibility for delivering on those commitments.

---

[7]   Appendix E of this report describes in detail what such an overall preparation process might look like.

Lesson 3. **Seek ways for the Secretary to lead from the outset.**

Establish an explicit coordination process for the transition period (November 2000 until Inauguration Day in 2001); consider structuring an explicit preparation phase to allow the Secretary to make key QDR guidance decisions soon after being confirmed (such as the Phase C described above in Lesson 1); start the QDR itself at a time, say in early March 2001, that gives the Secretary the best chance of being in charge of the process from the outset.

Almost all QDR-97 participants said that Secretary Cohen took charge of that review as best he could, given that he came in after the review had started. Most respondents favored finding a way, if possible, for a new Secretary to be able to give guidance from the outset, thereby minimizing the "waiting-around-for-the-new-authoritative-guidance" time that was said to characterize at least part of the initial phase of QDR-97.

Lesson 4. **Establish a small, strong QDR leadership/integration group from the start of the QDR. (This group would oversee the conduct of the steps outlined in Lesson 5 below.)**

Most respondents strongly favored a streamlined guidance and review structure. For an activity like a QDR, strong coordination, integration, and interim feedback seem crucial. The QDR-97 "end-game" organization, which featured this type of structure, appeared to work much better than the initial phase structure in the 1997 review.[8]

Lesson 5. **Provide early, clear guidance (both what to do and how to do it), with specific timelines, interim products, final products, time and product linkages among assessment teams, and priorities.**

This guidance should address a considerable number of substantive and deliberative aspects of the overall process, including:

1. The development of threat assessments and alternative strategies; the assessment of capability demands, policies, and funding requirements in light of each strategy; the development of demand variants within each strategy, performance risk assessments associated with those demand variants; associated policies and funding requirement implications of those demand

---

[8]   See figure 2-3 for a visual depiction of such a structure.

variants; the estimation of baseline funding possibilities; the estimation of fiscal executability risks associated with funding uncertainties, strategy-resource mismatches, "gaps," as in the QDR 1997 DPP analyses

2. The development of innovative "strawmen" approaches to address any "gap" estimates above (demand-side, supply-side, both)

3. The process of choosing among strawmen, or the development of alternative proposals consistent with the Secretary's preferences

4. The timing and conduct of the final review phase of strawmen or alternative proposals; final negotiations with the major players, and final selection of a strategy and program

5. The development and completion of the final report to Congress; the promulgation of instructions to major players for implementing results of the QDR in the PPBS process; the plans and procedures to monitor and implement the QDR decisions; the adjustment of these plans and the program as necessary.

Many QDR-97 participants strongly advocated issuing clear guidance as soon as possible in a QDR. The next review is likely to have so many interacting parts that strong, early guidance seems essential if people really are to work together as a team, in a rational sequence.

Lesson 6. **Establish vigorous but fair competition of ideas and approaches.**

Vigorous, impartial tests of the cost-effectiveness of significant alternatives should be undertaken to shed as much light as possible on DoD's best future course. A number of steps could be taken to promote rigorous evaluation of a wide range of alternatives, both in the preparation phase and in the QDR itself:

- Commission, during the preparation phase, several independent studies to develop and assess concrete, alternative approaches in key areas of strategy, force structure, approaches to shaping, responding, and preparing

- Establish one or more "challenge teams" whose job it would be to encourage consideration of promising alternative points of view and analyses—during the preparation phase as well as in each of the assessment teams in the QDR

- Establish independent review and feedback from one or two small groups appointed by the Secretary from outside the current DoD structure, e.g., former Secretaries of Defense

- Establish, at the outset of the QDR, as part of the Secretary's guidance, several explicit alternatives that each group would, at a minimum, be tasked to assess and compare with the status quo as part of their charter

- Structure rewards that could be offered to teams or individuals presenting the most compelling analyses, as judged by an independent panel appointed by the Secretary.

Most participants and others with whom we spoke believe the Secretary, the Department, and, ultimately, the Nation are best served by a QDR that seriously considers a set of strong competing alternatives to any extant strategy and program path, within a process that is as fair and impartial as possible. The extent to which such a review will occur is widely said to depend heavily on the Secretary's guidance and ongoing leadership in this area during the QDR itself.

Lesson 7. **Focus on capabilities as much as possible: Consider demands for capabilities associated with the strategies under review (and then funds needed) versus projected supplies of capabilities (and funds likely to be available).**

For each element of the strategies under consideration, assess the demands for capabilities and the funding requirements to meet them, and compare these factors with the funding available to achieve those capabilities under baseline DoD projections. Seek alternative approaches to achieve capabilities, or redirect available funds to address any identified imbalances. A focus on capabilities, and on force characteristics to achieve those capabilities, is widely thought by QDR-97 participants to be a more productive and constructive language for comparing alternative defense postures than traditional force unit terms, such as numbers of divisions, wings and CVBGs. This approach was thought to be especially important in light of the likely significant differences in the following three comparisons: (1) between the same package of force units employed with more and with less intelligent concepts of operations; (2) between the capabilities of one platform and its next-generation successor; (3) between the same set of platforms with, and without, a "network" linking them (and the skilled personnel to exploit that network).

Lesson 8. **Link the QDR to the PPBS by framing the QDR challenge in strategy and fiscal terms from the start, by drawing upon the best explicit strategy-resource comparison processes from throughout the Department, and by timing the QDR to both exploit and then drive ongoing PPBS activities.**

In the broadest of terms, the business of the Department of Defense may be said to involve three basic steps: (1) conceive a strategy for the defense of the nation to address near and longer term threats, challenges and opportunities; (2) design, construct, employ, test, maintain and improve the capabilities, including the relevant rules of behavior, to execute that strategy within acceptable levels of risk, subject to a set of legal

and resource constraints (3) modify the strategy and/or press for more or different resources and/or legislative relief, as appropriate.

The ongoing PPBS process could be strengthened by elaborating on the QDR-97 strategy-resource comparison process and on approaches to solve any identified funding risks or gaps in light of a new strategy (and its associated demands).

The QDR itself should be timed to enable the Secretary to guide the regular PPBS with the results of the review. With the type of preparation effort recommended here, we believe that the QDR itself could be conducted from approximately March 1 through mid-June 2001, a schedule that would provide timely guidance for the regular PPBS process.

A QDR offers a strong opportunity, at the outset of an administration, to assess and set a clear, constructive course for dealing with strategy-resource gaps, drawing on, among other inputs, the best insights from experience with the PPBS up to the start of that QDR. The Department needs to ensure that decisions from the QDR are implemented within subsequent PPBS activities and products.

RECOMMENDATIONS AND CONCLUDING REMARKS

The principal recommendation concerning process design for the next QDR is to implement a preparation and QDR process that incorporates the major lessons learned from QDR-97. While a number of design options were discussed in chapter 5, the most compelling of these have been highlighted in the lessons set forth here. Figure 7-1 depicts the timeline envisioned here for both QDR preparatory activities and the review itself.

An extensive preparation process for the next QDR may appear to be a costly investment for this administration. But in order to improve the defense planning and programming process over time, such initiatives and leadership may well be required. Moreover, there is considerable untapped potential in both the risk assessment framework and the DPP funding risk construct that were employed in QDR-97. Strengthening them through a DoD-wide effort as soon as possible could yield important benefits for the current administration as well.
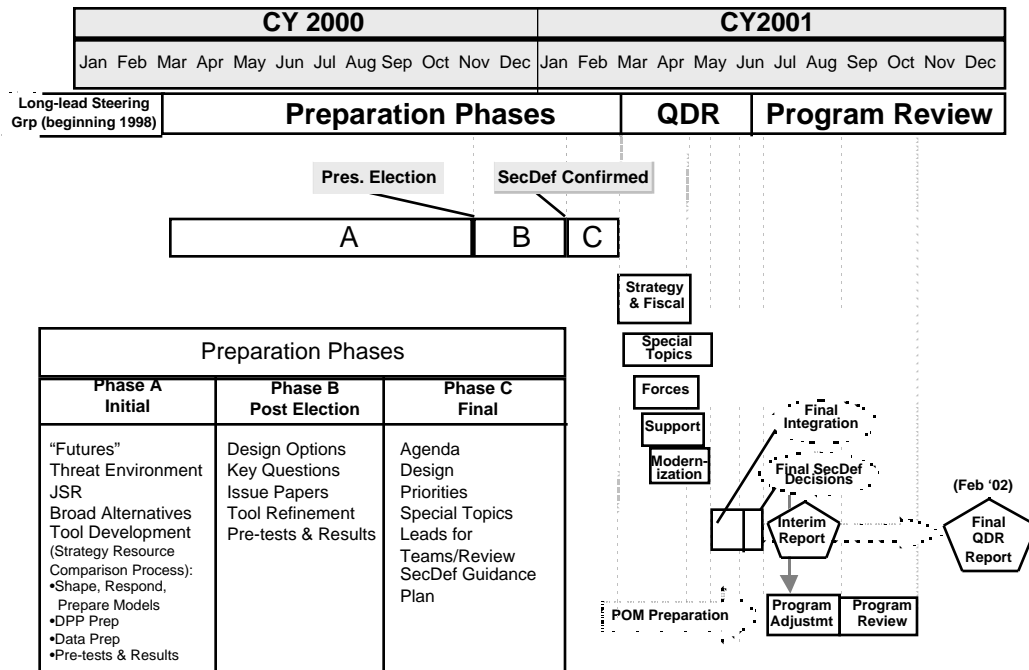
Figure 7-1. Potential QDR Timeline

Based upon our assessments, there are at least two concrete near-term steps that the Secretary and the Chairman may want to consider in looking ahead to the next QDR:

- Charter, as soon as feasible, a long-lead steering group to conceive, initiate, guide, and monitor long lead-time QDR efforts as well as to plan for establishment of a formal QDR preparation team to be created on or about March 1, 2000.

- Commission the development, over the next year, of a working prototype for a DoD-wide strategy-resource comparison process that would be made available to the QDR preparation team in March 2000 for refinement and elaboration as appropriate. Early development of such a prototype, conceivably along the lines sketched in appendix E, could be of considerable value in the next QDR.

Appendix A
LIST OF RESPONDENTS IN THE IDA QDR-97
LESSONS LEARNED STUDY

The following is a list of individuals who contributed to this study by sharing their experiences and ideas with us on a "not for attribution" basis. We interviewed many of these people extensively; others participated on a more limited basis. We are grateful to all of them for their time and cooperation.

Respondents from the DoD Who Were Involved in QDR-97

Brigadier General Patrick Adams

Mr. Russell Beland

Vice Admiral Dennis Blair

Captain Susan Blunt

Colonel John T. Bolger

Rear Admiral Dan Bowler

Dr. Robin Buckalew

Mr. Daniel Czelusniak

Mr. John Dalton

Mrs. Joan Demsey

Mr. Louis Finch

Ms. Michelle Flournoy

Dr. Michael Gilmore

Brigadier General Mark Hamilton

Dr. John Hamre

Lt. General David Heebner

Colonel Paul Herbert

Mr. Andrew Hoehn

Major General John Hopper

Dr. Paul Kaminski

Lt. Commander Keith Keck

Colonel Ronald Kurjanowicz

Ms. Belkis Leong-Hong
Major General Charles Link
Mr. William Lynn
Lt. General David McCloud
Mr. William McManaway
Dr. David McNichol
General Thomas Moorman
General Richard Neal
Major General William Nyland
Colonel John O'Pray
Colonel Greg Parlier
Admiral Donald Pilling
Major General Steve Plummer
General Joseph Ralston
Colonel Charles Rash
Vice Admiral John Redd
Lt. Colonel Ronald Robinson
Mr. Phil Rodgers
Lt. Colonel William Roege
Mr. Frank Rush
Captain Paul Ryan
Mr. Robert Scher
Dr. George Schneiter
Mr. David Shilling
Mr. George Singley
Mr. Walter Slocombe
Mr. Robert Soule
Dr. Nancy Spruill
Rear Admiral (S) Stanley Szemborski
Mr. John Todaro
Lt. Robert Tovado
Dr. Edward Warner
Dr. John White
Mr. Roy Willis
Mr. Charles Witschonke

Other Respondents from the DoD

Major Patrick Condray

Dr. Jacques Gansler

Dr. Paul Halpern

Rear Admiral Thomas Marfiak

Major General Charles Wald

Other Respondents (Non-DoD)

Dr. George Akst

Ms. Patti Antsen

Dr. Robert Atwell

Dr. Norman Augustine

Dr. Stephen Balut

Mr. James Bexfield

Dr. Barry Blechman

Dr. Robert Bovey

Mr. Roger Brown

Ms. Fran Burwell

Dr. Ashton Carter

Mr. Thomas Christie

Dr. David Chu

Dr. Ivo Daalder

Dr. Paul Davis

Mr. David Galloway

Dr. Matthew Goldberg

Dr. David Graham

Dr. Jeffrey Grotte

Ms. Laurna Hansen

Rear Admiral Robert Hilton

Dr. Wade Hinkle

Mr. Stanley Horowitz

Mr. Christopher Jehn

Mr. Rob Jordan

Mr. Edward Kerlin

Dr. George Koleszar

Mr. Michael Leonard

Mr. Karl Lowe
Mr. Philip Major
Dr. Michael Nacht
Mr. John Olio
Dr. George Quester
Dr. Leslie Lewis
Dr. David Randall
Dr. Karen Richter
Mr. John Schrader
Mr. John Tillson
Dr. Kathleen Utgoff
Dr. Victor Utgoff
General Larry Welch
Mr. James Wilson

Appendix B
SELECTED RESPONSES FROM QDR-97 DOD PARTICIPANTS

Appendix B contains selected study participant responses categorized by QDR process design elements. The quotations reveal the wide range of views and preferences expressed by the participants. These quotes were selected because they are representative of the various sentiments expressed for each design element option. The details of the sub-group analysis follow the quotations.

PREPARATION

Scope

In support of an Extensive Strategy Review

"Before we do all this again, we ought to have a real national strategy review...and I don't mean a re-looked JSR…we need to decide...as a DOD/Service team or whatever...how to get organized for combat to get things done more productively and with a lot more value-added. "

"We believe quite strongly that the Department should conduct a comprehensive review of its strategy, plans and program no less than every four years. Certainly, if there is a major change in the strategic environment, a review could be started earlier, but we would never want to see more than four years pass between reviews. Even if the overall security environment hasn't changed significantly, a comprehensive review is needed to ensure we are still on course, particularly since we have seen how difficult it is to make significant changes to the Defense program outside of the environment of a Department-wide review."

In support of Extensive Program Review

"The point of a QDR is to "set out a blueprint" and "do a comprehensive assessment…. I don't think that you can only do a strategy review and then offer broad fiscal guidance—I think you've got to do more…."

"You've got to get to the details to make much headway."

In support of studying issues from the "Too Hard Box"

"The QDR should focus more on issues from the "Too Hard Box," e.g., Tactical Aircraft programs; the modernization funding 'migration' problem."

Front-End Assessments

In support of an Extensive Front-End Assessment Process

"I favor extensive preparation: the 2001 QDR should culminate a multi-year 'get-ready' process, in which the leadership of the next administration applies its policies and priorities to a comprehensive set of issues, analyses, options, and recommendations developed by DoD, legislative, and private sector experts."

"The time frame allowed for the [1997] QDR could be adequate, but only if the resources and people were identified ahead of time, and the preparation were very thorough. Just spinning up a new group of people with no corporate memory was a horrendous undertaking….it took a while just to learn where all the prior supporting work was located."

"I recommend an organization such as IDA build a broad road-map of pre-QDR assessments; assessments involving many experts, with results summarized for use by a small group (a few senior DoD managers) in the QDR, using a process with which those managers are familiar. Requirements for study tools and data should follow from the study plan, not be determined independently."

"A valuable lesson from QDR 1997 is to prepare soon/early: we had been working many of the QDR issues in a steady process."

In support of a Limited Front-End Assessment Process

"Since we know that the Department plans to hold a major review at least every four years, it will be possible to prepare much more systematically for these reviews in the future. While we do not believe that it will be feasible to do an extensive front-end assessment—one that would have the majority of the analysis in place leaving only the decisions to be made—we do think a series of limited assessments would be both possible and quite useful."

Off-sites

In support of Two to Four Offsite Strategy Retreats, Every Year

"I favor very early offsites to develop long-range corporate vision: this should guide and focus the rest of the strategy for the next QDR."

"Heavy use of offsites is valuable…"

In support of Offsite Strategy Sessions Only in Months Prior To and During QDR

"…would be most beneficial for creating a strategic vision for the Department and providing early guidance for a QDR; they should be planned to occur after the new leadership is confirmed and before the start of the QDR."

"We think that a limited number of these offsites would go a long way toward providing coordinated, high-level guidance so necessary for a review of this scope. We also think that this time could be used to clearly establish the entire course of the

review—paths, milestones, and products. The more that can be decided upon early and the more clearly those decisions can be communicated, the better chance any review has of actually achieving its goals."

"It is virtually impossible for top leaders to find the time….I also don't think you can really make much headway in the abstract regarding long-term corporate vision—maybe using a generic situation, as Lynn's shop did in QDR."

Specific Areas of Preparation

(These recommendations reinforce or add to many of the suggestions cited by participants in Phase 1.)

In support of Future Security Environment—Threat Assessments

"We need to get a dialogue going among the various intel groups—early in the process—as to their perspectives on each others' threat projections."

"I urge development of papers on the issues by independent groups, such as FFRDCs, in a preparation phase. Exploit existing process products (JSR, etc.) and options as much as possible."

"The next review must have intelligence and threat assessments tasked earlier (get annual cycle changed for GPF DIO assessments)."

In support of Shaping Assessments

"Develop and elaborate techniques to get at shaping and responding together better than in the 1997 QDR."

"Shaping efforts by the Services is a key area—Dynamic Commitment War games and MTOF Developments were key to the success of the QDR and provided the analysis needed to support the QDR."

"Quality of life...troop and people morale...never became the general issue it could or should have."

In support of Combat Modeling Development

"Combat models are inadequate, so start fixing them now. We know we can't wait two years to start that."

"1997 QDR models and data bases were very inadequate…. [S]lips of IOC dates for new models…e.g., JWARs, suggest they will not be available for the next QDR. Some focus is needed on a reasonable fix."

"Early agreement on a few models must be obtained."

"[E]xplicitly feed the QDR with results and insights from Joint Warfighting Experiments, Joint Warfighting Simulations, and Service Warfighting Experiments."

"There are ways to conduct the review more efficiently…there is a large amount of baseline analysis that can be tasked and conducted before the review officially begins, and we believe that this will help us tremendously."

"First, we must continue to refine and improve our force structure analysis tools. Much of the work done in the QDR was groundbreaking, and we need to institutionalize these gains, and then work to improve the tools. We need to continue to improve our campaign modeling tools, so that they more accurately represent the battlefield of today and the future. Analysis done in the QDR for the first time

seriously examined our activities during "peacetime," and those tools, from Dynamic Commitment to the Baseline Engagement Force, need to be refined as we approach the next review. "Second, we believe we need to devise ways to more systematically study the interactions between force structure and modernization decisions…. Right now, these decisions are too often made independently from one another and then melded together, often with less than stellar results. We need to find better mechanisms for analyzing the effects of trade-offs between these two critical elements of the defense program. Finally, we must be vigilant in collecting data on the full range of operations that involve US forces. Much of the analytical challenge we face can be traced to a lack of available data on force deployment. The Department would be remiss if it approached another QDR and had not solved our current data collection shortfalls."

"[E]nsure the models will be capable of explicitly and quantitatively modeling…the new operational capabilities and employment concepts envisioned…. One approach: explicitly assess the capability of the models to represent Joint Warfighting Capability Objectives" delineated in the JWSTP now submitted annually to Congress…. A complementary approach: assess the models' capability to represent systems and operational concepts currently being evaluated in the…ACTDs."

In support of Infrastructure Improvements

"For the next QDR, we should work aggressively to get at the tough infrastructure issues. And then, we should monitor the implementation and savings of any infrastructure initiatives."

[Since it will be a long time before another BRAC], "we need to develop a 'Plan B' as soon as possible."

In support of Future Force Structure/Modernization Alternatives

"Force structure alternative analyses are not done in normal course. A QDR should provide a good opportunity to look at them."

"Combat modeling needs to be done better. Other modeling was available and used, but not described here. Models are not the only input and most of them do not model all aspects of the warfight well. There needs to be an accepted family of models vice one or two. Modernization was poorly served in this respect."

"Modernization was nothing more than a programmatic review. If it cannot be done another way in the future we ought not to waste time going through the painful process again."

"Start work on force structure alternatives earlier, and especially a process to get some support from JS earlier."

"Address the implications of various plausible levels of adversary training upon the performance of U.S. combat systems and operational concepts."

"Get macro-trade-off analysis among modernization alternatives underway early --
"we tried, but program by program not the way to do it."

"…new warfighting capabilities enabled by advanced technologies inserted into new or upgraded systems and advanced warfighting operational concepts which are identified by a modernization panel need to be quickly passed to a Force Structure and Strategy panel so they can consider the implications of those alternatives."

"…address opportunities and challenges of new warfighting capabilities available to both friendly and adversary forces."

In support of Improved Budget and Cost-Savings Assumptions, Methods and Data Collection

"Our accounting and financial systems have a problem: they serve our needs to exercise control and to carry out our legal responsibilities, but they don't give us the appropriate management information. We really don't know what things cost."

"OSD has no insight into Service O&M costs….We don't have cost information on this at the OSD level…we have budget information. Several initiatives are underway…"

In Support of Other Recommendations

"Seek improved mechanisms and processes to (a) link the QDR to the PPBS, (b) integrate QDR priorities into the PPBS, and (c) make the PPBS responsive to QDR results."

"To get their buy-in, DoD needs to make Congress feel more involved during the next process, not after the fact."

LEADERSHIP

In support of Top-Level Involvement Throughout

"Leadership…was about right. DoD got the message that this was the most important thing we are doing now and the support and focus by other agencies seemed to be there."

"Get better oversight by SecDef from the start."

PARTICIPATION AND BUY-IN

In support of Large and Inclusive Groups and Panels

"Large, inclusive groups are beneficial in selling the decisions to those—the Services and staff—who have to implement those decisions."

"SSG meetings were too big to do much other than involve people, but that was ultimately necessary."

"Next time, have people in who were involved this time."

"The CINCs played an indirect role, for sure...but they were very interested in the JSR and what became the 'defense strategy.'"

In support of Small and Select Groups and Panels

"Buy-in is important, but what really counts is getting wisdom and smart options on the table for consideration, from the right people--who know the business and are accountable."

"A small group is better; it can maintain control and offer good initial and interim guidance."

"A small group should be placed in charge and therefore actually be in a position to provide ongoing guidance and feedback; this is essential to maintain an orderly, disciplined process from the start."

"Smaller groups are better: my group was a hindrance, not a help, though my co-chair was a real help."

PANEL CHAIRS

In support of Panel Co-chairs (OSD/JS)

"Co-chair situation worked out fine because when one couldn't be there the other could."

In support of Selecting Panel Co-chairs Based on Organizational Position

"Panel chairs should be selected based on their organizational position…in order to be accountable for implementing those final decisions."

GUIDANCE AND REVIEW

Guidance

In support of a DPP-Like Brief Early

"The whole QDR needed to be financially based from the start; not bogeys necessarily, but strong financial guidance; a 'strategy-first-then-go-from-there' approach doesn't really help. Once we got DPP in there it really helped."

In support of Earlier Decisions and Briefings on Strategy and Force Structure Options (plus fiscal guidance)

"Need enforceable [fiscal] bogeys; need force structure sooner; make strategy more available [to the panels]."

"Early decisions are needed on strategy, force structure, and budget projections as inputs to the modernization analyses and should be completed early to minimize concurrency."

"Clearer, earlier guidance/priorities/decisions needed."

"Need a way to reduce the overall level of chaos."

"Imagine my surprise to read, for the very first time in your draft report, the DepSecDef's "Tests of Success" and "four key elements in his vision. If I had been given these two pieces of bedrock information, I could have focused my efforts in a much more productive manner."

"Needs a system in place to exchange/process/coordinate the massive amount of information being generated: there simply was no system in place in the 1997 QDR.

"Tell guys who are working on strategy and other programs, if you propose more dollars, you better have an overwhelmingly compelling argument; if you don't, sorry!"

Review Structure

In support of SSG, IG, Panels, and JROC--as in 1997

"[K]eep the JROC—formalize it in the process."

"The JROC had an important role in the QDR—tried to clarify issues; it made panels' and SSG life more complicated, yes, but made tank sessions group's life easier…SSG meetings were too big to do much other than involve people, but that was ultimately necessary."

"The JROC should be the centerpiece of uniformed inputs; it wasn't."

In support of Panels and Streamlined Integration Group Reporting to Streamlined SSG

"A streamlined organizational structure would improve efficiency….using the last organizational structure would have little benefit."

"On structure, get agreement early on; don't make Vice Chiefs key to the agreement."

In support of Open Meetings and Streamlined Integration and Feedback Structure

"It would be good to think about concurrent open and smaller sessions from the start, rather than just in the endgame."

"Shifting of sub-panels to other panels late in the process was a problem…the organizational structure for the QDR was too fragmented to be fixed. Some radically different alternatives should be considered. The problem of integration should not be made too hard to be worked."

"Perhaps the Defense Management Council could manage QDR option development, as it is now overseeing Defense Reform Initiative Directives (DRIDs) implementation."

LINKS TO PPBS

In support of the QDR Serving as a Strong "Forcing Function"

"The QDR has a greater potential [than the PPBS] to derive innovative solutions for a larger variety of issues, not just the top priority issues."

"The QDR offered a real opportunity to do something in this area…. Theoretically it could have been done in the regular PPBS, but in practice PPBS doesn't…so QDR was a success in illuminating a big problem in this area although it isn't fixed yet."

"Seek improved mechanisms and processes to: (a) link the QDR to the PPBS; (b) integrate QDR priorities into the PPBS; and (c) make the PPBS responsive to QDR results."

"The next QDR needs a well orchestrated implementation process for its decisions."

"It is also important to remember that, although many of the key decisions concerning defense policy and the program will be made during the review, there are many areas where the Secretary will use the initial results of the review to spark further study to be completed outside the timelines of the review itself, just as was done in the 1997 QDR."

"Traditionally, the DPG says do "X" and the Services don't…this time we developed and used an "O&S Programming Realism Issue Paper" to monitor and promote compliance."

"The experience of this past PPBS cycle—delay of the overall cycle and compression of its timing—proved burdensome and counterproductive. Integrating a QSR into the ongoing operations of the Department requires a more coordinated solution."

In support of the QDR serving a limited "forcing function":

> "If another QDR is unavoidable, I'd focus on strategy and then let the regular PPBS handle the rest."

TIMING OF THE QDR

In support of Start in November-December and Ending in May

> "There is no doubt that it is a Herculean task to do a Department-wide review between the time a new Secretary is installed and when guidance must be sent to the Services and Defense Agencies to influence the next year's budget preparation. We also have no doubt that we have no other choice but to conduct the review in that time frame."

> "More time would have produced no better product."

> "The time frame allowed for the [1997] QDR could be adequate—but only if the resources and people were identified ahead of time, and the preparation were very thorough."

In support of Starting in November-December and Extending

> "[S]tart [the QDR] about the same time, but extend it one month."

In support of a Shorter QDR:

> "The QDR should be shorter, which should be possible with more up-front analyses."

In support of Starting Later and Maintaining Duration or Extending

> "The extra time would be useful—I think you can stand that in terms of getting a budget ready for the next year. We could probably wait and that would give us another month."

> "This QDR was done at the worst possible time. I'd like to defer it for two years into a new administration."

> "Start later, after the Secretary and his team are in place and have developed some working relationships…."

> "Submit results [of the QDR] with or shortly before the President's budget that implements the decisions."

NDP

In support of Main Phase Before the QDR

> "The NDP should finish first (fall of year prior to the QDR)—to provide input to DoD process and to help DoD think 'Big Thoughts' outside the box."

> "NDP would be better off at the beginning."

> "The review would also be aided by having an oversight panel, much like the NDP, do their work before the review begins. This way, the Department would have the insights of this panel as we began our work and could actually explore in depth any alternatives they would suggest. Having a panel report after the review is over, only serves to create an adversarial relationship between the panel and the Department."

> "The NDP should precede the QDR and develop grand strategy options…."

SUB-GROUP ANALYSES

As mentioned in chapter 5, we analyzed the preferences of the DoD QDR participants by grouping the responses into the following sub-groups: OSD participants versus the Service and JS participants; QDR "designers" versus "non-designers"[1]; and DoD respondents with senior formal roles[2] in the QDR versus other DoD QDR participants. Table B-1 contains a summary of the results of our sub-group analysis.

---

[1] Those participants classified as "designers" include the chairs of the SSG and the co-chairs of the IG and the panels. The classification was made on the premise that these individuals had strong leadership roles in structuring the actives of their groups. The "non-designer" category includes all other DoD interviewees.

[2] For this analysis, DoD participants in the "senior formal QDR roles" included all QDR participants at levels above the panels. The term "senior formal QDR role" refers to the participant's role in the QDR-97 structure—not to the individual's position within the regular DoD organization. (Refer to figure 2-1 for a diagram of the formal QDR organization structure.)

Table B-1. Preferences of DoD QDR Participants Interviewed (by subgroup)

Process Element	Top Design Preference	% in Favor					
		OSD	Services/JS	Designers	Non-designers	Senior Formal QDR Role	Other DoD QDR Role
Preparation							
Scope	Broader	85	62	82	67	67	76
Front End	Extensive	100	100	100	100	100	100
Offsites	Ongoing	46	71	50	58	17	71
Leadership	Strong, engaged	-	-	-	-	-	-
Participation	Inclusive	60	58	89	38	43	67
Panel Chairs	Co-Chairs	100	78	85	100	83	93
Chair Selection	Organizational	75	100	83	89	83	89
Guidance, Feedback							
Guidance	Early, strong, detailed	100	87	86	100	92	95
Review Structure	Streamlined SSG/IG at start	88	81	77	89	64	95
QDR-PPBS Linkage	Strong Forcing Function	-	-	-	-	-	-
Time							
Start Date	Dec 2000	69	45	54	64	50	65
Length	4 to 6 Months	92	70	100	71	89	79
NDP	Before QDR	78	20	67	50	50	63

Each of the sub-groups favored the majority option—with the following exceptions. *Offsites*: Almost everyone preferred some form of offsite meetings for senior leadership—the differences among the groups are related to whether they should be held on an ongoing basis or just prior to the QDR. The Services were strongly in favor of ongoing offsites (71%), whereas OSD's preferences were more evenly split between the majority choice (46%) and "just prior to the QDR" (54%). Only 17% of the "seniors" preferred the ongoing offsites option, while 71% of the other DoD participants supported the idea. *Participation*: Designers strongly preferred inclusive participation (89%), while the Non-Designers did not (38%). Of the "seniors" only 43% preferred the larger group size, while 67% of the other DoD participants were in favor of it. OSD and the Services/JS concurred that the popular choice of more inclusive participation—"larger group size"—was best (60% and 58% in favor, respectively). *NDP:* The OSD

participants expressed a strong preference for having the NDP before the QDR (78%), but only 29% of the Services/JS preferred that option.

Two process elements in particular—*Front-End Assessments* and *Guidance*—produced an overwhelming majority response, regardless of how the responses were categorized, and therefore merit special notice. There is a unanimous preference for an extensive preparatory phase (in the form of front-end assessments). This is particularly interesting because it raises the question, "What will the scope of the next QDR be and what is the value of doing work in areas that may not be deemed necessary by the new Secretary of Defense?" Through vigorous discussions with the participants on this topic, we discerned that the majority thought a well-designed preparatory phase would allow the Secretary to conduct an effective QDR *regardless* of the scope. Assuming that critical national security issues—issues that would be important regardless of who becomes the new Secretary of Defense—would be studied in this preparatory phase, extensive preparation will keep more QDR options open for the new administration. On the other hand, a limited preparatory phase could foreclose the opportunity for the new Secretary to consider alternatives that require extensive analysis that could not be completed by the QDR deadline.

As for *Guidance*, 94% of all respondents favored early, strong, more detailed guidance. It is worth noting that this choice was unanimous among the Services and the non-designers and between 86% and 95% for the other groups. This recurrent theme appears to be related to a preference to improve communication or dissemination of information, which is linked to a belief that the review structure should be improved in the future (84% of the respondents preferred a streamlined review structure with SSG/IG at start).

The preferences described here cannot necessarily be generalized to the entire group of DoD participants in the 1997 QDR. These results do, however, offer a clear picture of those design features favored by a very significant group of individuals—from very senior to relatively junior—who worked long and hard in the 1997 QDR. To the IDA study team, these respondents overwhelmingly appeared to make a strong effort to lay out their best, most candid insights with one overriding objective: strengthening the processes of planning for and ensuring the defense of the United States in the years ahead. Their cooperation and good will has made the study team's task much easier than it otherwise would have been.

Appendix C
DETAILS ON INDEPENDENT RECOMMENDATIONS FOR QDR PREPARATION

This appendix presents representative perspectives and recommendations of some non-DoD, or independent, experts contacted for this study.[1] This group addressed all six of our QDR process design elements, but the vast majority of their recommendations focused principally on preparing for the next QDR, and more specifically on combat modeling. Briefly, six major recommendations emerged:

- Help decision makers better understand and utilize analysis

- Specify variants of the current national security strategy and analyze associated major risks

- Strengthen analytic techniques and data needed to assess how well various approaches meet elements of the strategy

- Elaborate on explicit procedures needed to identify capability gaps across the entire strategy

- Prepare for change

Each is elaborated below.

HELP DECISION MAKERS TO BETTER UNDERSTAND AND UTILIZE ANALYSIS

Numerous independent observers with whom we spoke advocated systematic efforts throughout DoD to help decision-makers better understand and utilize analysis. In their view, some decision makers expect too much, thinking that analysis will give them "the answer," while others expect too little, tolerating analysis only when it supports their position. Effective use of analysis, these observers argue, can lend structure to the decision process, helping to frame the debate. Often it can identify bad alternatives; it can also provide insights or ideas that contribute to a change in direction.

Because the notes in this appendix are particularly detailed and extensive, they appear at the end.

What improvements are needed? This group of respondents suggests promoting courses or brief tutorials for senior decision-makers that contain segments on how to use and review analysis—to help them distinguish the good from the bad. They also believe that efforts to prepare fair, impartial reviews of existing studies can help decision-makers understand the intricacies of analysis and resolve conflicting conclusions among studies.[2]

SPECIFY VARIANTS OF THE NATIONAL SECURITY STRATEGY AND ANALYZE ASSOCIATED MAJOR RISKS

Many independent observers applauded the QDR-97 strategy, especially its greater attention, compared with previous DoD strategic statements, to activities unrelated to major theater wars, such as Shaping and small-scale contingencies (SSCs). At the same time, many of these same respondents urged the Department of Defense to start thinking soon about variants of the current strategy as well as different strategies that would be plausible for the next QDR.[3]

Numerous observers wondered whether DoD is systematically exploring two important areas: (1) alternative ways to achieve the capabilities needed to meet various MTW demands in combination with various SSCs and presence postures; and (2) the capabilities to meet MTW and other types of demands at various levels of risk, subject to a budget constraint.

Some independent experts encouraged DoD to give early attention to alternatives to threat-based assessments. Two general themes were expressed:

(1) The United States should develop the intellectual underpinnings for nurturing significant defense capabilities even in the absence of an imminent MTW threat, especially if the U.S. is going to engage in effective Shaping, or what some call preventive defense, activities.

(2) DoD needs more combat capabilities that are flexible enough to meet a wide spectrum of rather uncertain threats. Thus it should try much harder to shed the attrition warfare, force-on-force planning concepts that are still said to underlie so much of today's force structure.[4]

STRENGTHEN ANALYTIC TECHNIQUES AND DATA NEEDED TO ASSESS HOW WELL VARIOUS APPROACHES MEET ELEMENTS OF THE STRATEGY

Many independent experts specified particular assessment tasks that they believe DoD should begin to pursue, or pursue more aggressively, in preparing for the next QDR.

Representative suggestions in each major area of the QDR-97 strategy—Shaping, Responding, and Preparing--are set forth below.

Shaping

Four principal initiatives were proposed in the Shaping area:

- Specify measures and techniques to systematically assess the relative merits of alternative approaches to various Shaping objectives/activities

- Compare the cost-effectiveness of alternative presence/Shaping approaches

- Specify alternative "preventive defense" programs in some detail

- Quantify and compare alternative Shaping approaches where feasible, but recognize the continuing need for qualitative judgment.

Specify measures and techniques

Through the 1997 QDR itself, DoD described three major objectives of Shaping: promoting regional stability, preventing or reducing conflicts and threats, and deterring aggression and coercion.[5] Major subtasks, activities, and objectives are summarized in Table C-1, which distills elements identified by DoD as crucial to the Shaping component of strategy.

One significant immediate Shaping task comprises two steps: first to identify how DoD now goes about assessing the relative merits of alternative approaches to the various Shaping objectives/activities; then to propose options and decision-aids to make the evaluation process as transparent and timely as possible.

Compare the cost-effectiveness of alternative presence/Shaping approaches

Are there feasible alternative ways of achieving the objectives of overseas presence, and have they been compared systematically for their relative cost-effectiveness? The Commission on Roles and Missions of the Armed Forces of the United States, as well as a number of other organizations and observers, has encouraged DoD to push aggressively on this front over the last several years.[6] Several analyses have examined the cost-effectiveness of alternative ways to provide overseas military presence as well as options to promote the objectives of presence, e.g., Shaping and initial crisis response. A major conclusion from these studies is that a strong, ongoing research and experimentation program could move the Department closer to a more "output-oriented" presence and Shaping requirements and assessment process.[7]

Table C-1. First-Order Shaping Objectives and Activities (QDR-97)

Shaping Objectives/Activities	Performance Measures/Analyses
Promote Regional Stability	
Bolster security of key allies and friends	
Adapt and strengthen core alliances and coalitions	
Form relationships that increase military transparency and confidence	
Build constructive security relationships	
Help to promote democratic institutions	
Keep countries from becoming future adversaries	
Encourage adherence to international norms and regimes that provide basis for peace and stability, nonproliferation, freedom of navigation, respect for human rights and rule of law	
Prevent or Reduce Conflicts and Threats	
Reduce/eliminate NBC capabilities (as in U.S.-N. Korean Agreed Framework; Cooperative Threat Reduction Program with Russia, Ukraine, Belarus, and Kazakstan)	
Discourage arms races and proliferation of NBC weapons (as in Nuclear NPT and Missile Technology Control Regime)	
Prevent/deter terrorism	
Reduce U.S. vulnerability to terrorist acts (enhance U.S. intelligence capabilities; protect critical infrastructure)	
Reduce the production and flow of illegal drugs to the U.S. (support interagency task forces along our coasts and borders)	
Lessen the conditions for conflict (e.g., U.S. force deployment to Macedonia)	
Deter Aggression and Coercion	
Demonstrate will to uphold security commitments when challenged	
Demonstrate ability to uphold security commitments when challenged	
Establish declaratory policy that effectively communicates U.S. commitments and costs to potential challengers of efforts to breach them	
Maintain credible warfighting capabilities across the spectrum, as evidenced by (a) forces strategically stationed or deployed forward; (b) rapidly deployable power-projection forces; c) ability to gain timely access to critical infrastructure overseas; d) demonstrated ability to form and lead military coalitions	

Specify alternative preventive defense programs in detail

Several former senior DoD officials have called for dramatically increased focus and funding for what they call "preventive defense" programs. These are Shaping activities that are significantly different from traditional Shaping activities such as "steaming" or "flying" in (or into) an Area of Responsibility (AOR). Moreover,

supporters of these preventive defense programs contend that expenditures on military-to-military contact programs and Partnership for Peace programs may be at least as beneficial, dollar-for-dollar, as some of the more traditional Shaping activities. What analyses might be conducted to assess these claims?[8]

Quantify and compare alternative Shaping approaches where feasible, but recognize the continuing need for qualitative judgment

One senior analyst with whom we spoke expressed the perspectives of many respondents in strongly recommending that DoD accelerate efforts to quantify and compare alternative Shaping approaches. After noting that one of the easiest Shaping components to measure is the amount of forward presence a given force can "deliver," this observer recalled that one of the main tools for presence assessments came under fire during the QDR after the Navy discovered that the device did not adequately take into account real-world scheduling concerns. According to this analyst, improving that tool is certainly feasible and desirable in the time frame before the next QDR.

Other analytic aids he cited as likely to be useful in Shaping assessments are those that can measure crisis response. Good techniques in this area should be structured in stochastic terms, he argued, because "crisis responsiveness is a function of where the forward deployers are at the instant in time when they are called upon." He noted that the Center for Naval Analyses (CNA) has been working on such an analytic device, as has the Naval Post Graduate School.[9]

Finally, he reminds us that there are the intangible measures: How many crises have we avoided because of our Shaping policies? What is the effect of the goodwill that we have achieved by our humanitarian and other support operations? What is the value of the mil-to-mil contacts? These are the toughest to measure, he argues, adding that assessments of these latter questions are likely to remain much more qualitative than quantitative through the next QDR.[10]

Responding

Independent obsevers offered a wide range of suggestions for strengthening analyses of the Responding element of the strategy. These may be grouped in two broad

areas: those related to small-scale contingencies (SSCs), and those related chiefly to

major theater wars (MTWs). Some specific representative observations and suggestions in these areas follow.

Small-Scale Contingencies

Several decision aids were developed and exercised during the QDR. Approaches included the Dynamic Commitments Series, the Peacetime Engagement Workshop series, the Base Engagement Force, and the vignette process.[11] These approaches offered insights into such questions as what forces the Services or CINCs might choose to allocate to SSCs given alternative constraints of time, foresight, and competing demands for units' capabilities. The QDR-97 Dynamic Commitment Series did not provide much evidence into the relative effectiveness or costs of using one or another set of forces in the SSCs.[12]

Find ways to elaborate and exploit the potential of the Dynamic Commitment Series as soon as possible. A number of study respondents believe that efforts to elaborate and exploit the potential of the Dynamic Commitment Series should be undertaken as soon as possible.[13] Along these lines, IDA has identified several efforts now underway, both within the Joint Staff and some of the individual Services, that may help bolster the analytic structure for a new Dynamic Commitment Series as well as for a variety of related and important tasks. These efforts are initiatives to construct and refine devices to gauge the impact on forces, readiness, and costs of such SSCs and of other activities besides MTWs.[14] According to several senior independent experts, for example, the Department is currently building an application that can match mission tasks and the quantity of each task's workload to the appropriately trained unit(s)—by unit type. This tool will facilitate the generation of a mission-task-list-based SSC force structure. It will also generate the force structure necessary to sustain and protect the units performing the actual SSC tasks. This tool is known as the Contingency Analysis Planning System, or CAPS. It will be available in prototype form this summer (1998).[15] A second phase of this work could potentially integrate the CAPS analytic capabilities with the spreadsheet tool that was developed during QDR-97 by OASD (S&R) to assess the force structure implications of various SSC activity levels.[16]

The Department is also building a tool known as COST, which will take as inputs the specific units involved in a mission and estimate the cost of the mission based upon expenses that are above and beyond the normal operating costs for those units. This tool will also be available by the summer of 1998. The ability to understand the impacts of

SSCs in terms of dollars and force readiness/availability is necessary if we are to understand the relationships between SSC loads and force readiness.[17]

The overall impact of SSCs on OPTEMPO and PERSTEMPO (which affects force morale) is still largely unquantified. The Department needs to improve its ability, as soon as possible, to track these operations so that it can determine if OPTEMPO and PERSTEMPO levels are either adversely or positively impacting the overall force structure. The next QDR should be able to address these issues as the tools and databases become more mature.[18]

Major Theater Wars

Strengthen understanding of the campaign models that will be available for the next QDR, and identify what they can and cannot do to provide insight for decision-makers. Force structure and modernization decisions are two of the biggest issues that are likely to face QDR decision-makers. A richer set of campaign models that help provide insights into size and composition of our combat and support forces could be of immense value. Adequately representing maneuver warfare in campaign models, especially flank attacks and combat insertions, needs to be addressed. In addition, better representation of C4ISR in combat models is needed. If successful, the JWARS development effort could provide the common analytical framework needed to help resolve conflicting Service positions. However, it is unclear, at this point, how much of the planned development of JWARS will actually be ready, tested, and available to support the next QDR. We need to achieve a better understanding of the tools that may be used in the next QDR. Some work is being done to a limited extent in the Deep Attack Study, where the JCS has sponsored a task to compare alternative optimization models (e.g., WORRM vs. CTEM vs. CFAM).

Improve ability to link analyses from diverse areas. The tough decisions are often in the allocation of resources to different warfare mission areas. How can analysis help? Tradeoff analyses are commonly done within each warfare mission area. It is our belief that analyses can and should be used to provide structure and insights to the decisions associated with allocating resources across different warfare mission areas. However, more work needs to be done on this issue.

Strengthen data quality for analyses. Models without good data are useless. Several efforts are ongoing to ensure that useful data are available for the next QDR.

They include the Joint Data Support (JDS), operating within OSD/PA&E and with close

ties to JWARS, and the Deep Attack Study sponsored by OSD Acquisition, OSD/PA&E and J-8. The progress of these efforts needs to be closely monitored.

Clarify the roles of models and inputs (data, assumptions) to models in producing modeled results. One major frustration in the QDR-97 was that attacks on models often should have been attacks on the data inputs and assumptions.

Seek ways to improve evaluations of the contributions of dissimilar combat system. In this era of diminishing budgets, the typical stovepipe allocation to Services and combat areas within the Services may not be acceptable. Many in the Congress rejected the 1995 Heavy Bomber Study because it did not trade off B-2s with Air Force and Navy TACAIR. DAWMS Part II broke new ground in this area. The following questions need to be researched for the next QDR: What role should these types of studies play? How can DAWMS II be improved? Does the study serve as a useful model or should another approach be used?

Move toward methods that assess force and doctrinal options for their robustness and flexibility. "The most important single implication for warfare analysis that emerges…is the centrality of planning under uncertainty by emphasizing robust capabilities and adaptations. This will require fundamental changes in the paradigms under which the DoD, the military departments, and the analysts who serve them have typically operated for decades. Some of these changes are already noticeable in the QDR and JV2010, but the processes of change will take years…Planners and the analysts that support them should move away from methods that assume specific threats, environments and scenarios, and should move toward methods that assess force and doctrinal options for their robustness, flexibility, and adaptations."[19]

Enhance assessments of C4ISR. Many organizations are studying the C4ISR problem, but few deal with operational implications. Representations of C4ISR form the foundation of how objects perceive and interact with one another in the developing JWARS design. It is unclear whether the version of JWARS that is scheduled to be available to support the next QDR will be able to address the wide range of C4ISR issues that are of interest. A fallback position is to use the C4ISR capabilities that were incorporated into the IDA TACWAR model for the DAWMS and Decision Support Center studies. Another approach would be to investigate the C4ISR modifications incorporated into the latest version of DoD's Configuration Control Version of TACWAR (CC-TACWAR), dated early 1998.[20]

Conduct broader sensitivity analyses. In addition to the standard force tradeoff analyses, the next QDR could focus on restructuring the existing set of forces around specific theater (or MTW) force objectives and then evaluate the capability of these force options to meet their stated objectives. In this way both modernization and restructuring objectives could be considered together.[21]

Play logistics much more fully. The J8's use of the CC-TACWAR in QDR-97 did not include sufficient consideration of the logistics capability of or logistics constraints to friendly and enemy forces in the QDR analyses. U.S. forces go to great lengths to provide for such support. To ignore these requirements could give a biased view of the situation in favor of the enemy.[22] The current JWARS design holds significant promise of careful attention to logistics impacts; the challenge will be to actually conduct such assessments in the next QDR.

Strengthen WMD assessments. The QDR-97 combat scenarios assessed via CC-TACWAR included a very limited use of chemical weapon effects by enemy forces. The J8/WMD Study, which was started as an excursion to the DAWMS series of runs, was never able to take account of some key aspects of chemical or biological weapons use, such as incorporating variable levels of protection based on the type of agent being used and the associated degradation in combat capabilities from such protection. Impacts of biological attacks have been only partially assessed (mainly due to time constraints but also to limited analysis capability). The JWARS developers are working hard to find ways (time, people, money and CB-expertise) to incorporate some level of CB-defense into the version of JWARS that will be used in support of the next QDR.[23]

In the CB area, emphasize faster detection, diagnosis, and response. Deterrence and prevention are preferable whenever possible, but DoD needs to emphasize faster detection, diagnosis, and response. Such programs are absolutely crucial, including good training of response teams. There are lots of things that can be done, once you know what has happened and have the right people to respond."[24]

Develop key "forcing questions" in a variety of areas. For example, with regard to active-reserve tradeoffs, one independent observer recommended posing the following kinds of questions: How would the CINC use National Guard and Marine Corps Reserve combat battalions in the first 15 days of a campaign? In the first 30 days of a campaign? How many Active component combat battalions currently exist? How quickly must they be deployed to the first major theater of war according to current CINC plans? Can

existing strategic mobility resources deploy them in that time frame? How many such Active component battalions are expected to deploy to a second major theater war and how soon in a second MTW do current plans project their arrival? What measures would be required to enable National Guard and Marine Corps Reserve combat battalions to attain proficiency levels permitting their deployment in 30% less time? What barriers prevent them from attaining greater proficiency? What suggestions can you make for overcoming those barriers and how much do you estimate it would cost?

Strengthen the Weapon Optimization Resource Requirements Model (WORRM) for force optimization studies. A model like WORRM is the type of model one needs to have available when force optimization or weapon employment is the objective of the study. Effort needs to be spent in strengthening the tactical realism of the WORRM code.[25]

Probe CINC theater-level targeting goals. "What is the minimal target set destruction necessary to accomplish the objectives of each phase in the campaign?" "Are there specific target kills that, if achieved, reduce the need to destroy other target sets?" What if the mission can be accomplished by killing half as many targets? Exploring such questions is not easy, but some additional thought here could be productive.[26]

Simulate stochastic processes in deterministic models. In simulations of C4ISR, one problem consistently arises: "How do we handle stochastic processes in deterministic analyses?" The importance of C4ISR modeling is undeniable. The ability to provide adequate targeting information is more important today than it ever has been.[27]

Use "scripting" (of opposing forces' activity sequences in an MTW) very judiciously. The scripting of scenario events carried over to the actual timing of the counterattack in both DAWMS and the QDR. Launching the counterattack was dependent on sufficient forces being in theater to conduct a successful attack. But "sufficient" was subjectively defined. The relative value of alternative force sets in conducting counterattacks ought to be assessed in more detail for the next QDR.[28]

Assess alternative operational concepts. One analyst proposes a 7-step process for developing alternative operational concepts to be explored and evaluated in light of today's approaches. He argues this process can be used to generate innovative operational ideas in the QDR preparation phase, which could then be examined more closely in the next QDR.[29] A number of independent experts IDA contacted, as well as several within

DoD, suggest that DoD press hard now to design and test a variety of alternative operational concepts for consideration in the next QDR and in its ongoing planning and programming efforts.[30] Tracking and exploiting, systematically, the insights from experimental work being done throughout DoD, such as in DARPA, the Services, and the Joint Warfighting Center, as well as the experiments and simulations by independent organizations such as the Joint Advanced Warfighting Program (JAWP) at IDA, the "Focused Logistics" group at LMI, and the NDRI group at RAND, will be a significant challenge in both preparing for and conducting the next QDR. Secretary Cohen's May 15, 1998, establishment of the U.S. Atlantic Command as executive agent for joint warfighting experimentation as of October 1998 should help in such tracking and coordination efforts.[31]

Preparing Now for an Uncertain Future

QDR-97 emphasized the importance of preparing now and over the program period to acquire capabilities to address emergent challenges. Four activities were highlighted in the QDR: (1) pursuing a focused modernization effort; (2) continuing to exploit the Revolution in Military Affairs (RMA); (3) exploiting the Revolution in Business Affairs (RBA); (4) ensuring or hedging against unlikely but significant future threats to manage risk in a resource constrained requirement. This section summarizes the recommendations of a number of independent observers regarding this aspect of the QDR strategy.

Modernization and RMA Issues

Some study respondents wanted to know which alternative modernization programs were considered and what alternative mixes of R&D and procurement in the investment accounts were assessed? How robust were the simulation experiments that explicitly probed what range of capabilities (force structures, modernization levels, etc.) would be sufficient to meet various risk objectives in MTWs? Were alternative forces, such as James Blaker's RMA force, seriously examined, for example?[32]

Several independent observers also argued that more consideration should be given in the next QDR to assessing alternative schemes to acquire or develop the highly trained manpower that will almost surely be a crucial part of any truly effective system of systems, RMA, or JV2010.[33]

Several respondents recommended scrutinizing what could be called a "working hypothesis" of the "System of Systems" or RMA school, i.e., that a dollar is better spent, on the margin, on developing ways to link systems together—so DoD can take advantage of the synergies involved in exploiting the equipment as a super-system—than on buying more systems that are not better linked (or linkable) to each other. These respondents asked what evidence is available now or could be acquired to test this hypothesis sooner rather than later? Could such evidence be obtained, for example, through systematic simulations, or through experimentation at the National Training Center.[34]

Note that the NDP also urged DoD to devote more explicit attention to ways it can move ahead smartly to transform today's forces into something more like the JV2010 construct.[35]

RBA/Infrastructure Assessments

Several independent defense observers responding to this study urged fuller consideration of the RBA and infrastructure issues.[36] For instance, one expert spoke for quite a few in pressing for early, sustained infrastructure analyses that would address the following four tasks: (1) Identify information needed to understand how to reduce infrastructure expenditures; (2) Assess how much could be saved by contracting out base support services in big bundles instead of small ones; (3) Analyze why force management costs have not come down more; (4) Aggressively analyze how far DoD can privatize depots.

Identify information needed to understand how to reduce infrastructure expenditures. "This is important. People have been trying to find huge savings without really understanding what they are trying to cut and what services they will have to give up. The Services, especially the Army, are moving toward various activity-based costing schemes that will give a better understanding of what we're spending money on and where we are being more efficient. In addition, the FYDP improvement program is providing more information to OSD on some kinds of infrastructure costs. We need a

structured program looking at the whole range of infrastructure areas. If it isn't done, we're going to be guessing about how much we can save and whether the pain will be too great."

Assess how much could be saved by contracting out base support services in big bundles instead of small ones. "Traditionally, A-76 competitions in the Services have been for the provision of a narrow range of services at individual locations. This is very inefficient. It assures that we will maximize transaction costs, since it is more costly to monitor many contracts than a few. There is some awareness of the problem, but there are impediments to dealing with it. Small business regulations are a complicating factor. A concentrated effort to manage contracting out differently will have to be made....If nothing is done we will probably cut the potential savings from contracting out installation support at least in half."

Analyze why force management costs have not come down more. Looking at the eight main areas of infrastructure spending, force management is higher (relative to 1989) than any category except medicine. This seems strange, since there is a lot less force to manage. I know of no substantive work being done in this area. Finding proportional savings in this area could yield savings of around $3 billion per year.

Aggressively analyze how far DoD can privatize depots. Congress has very substantially constrained the Department in this area. At least half of depot repair must be done in DOD facilities. This has been the focus of much attention, but I am not convinced that any progress is being made.

Hedge Against An Unlikely But Significant Future Threat

In this category, several senior independent observers suggested that DoD first ensure that it has an explicit set of long-lead warning indicators of the emergence of near-peer competitors. After doing so, they believe DoD should then scope out some first-order contingency plans to be able to accelerate production of additional capabilities in time to cope with such potential threats.

ELABORATE ON EXPLICIT PROCEDURES TO IDENTIFY CAPABILITY GAPS ACROSS THE ENTIRE STRATEGY

According to a number of independent observers that IDA interviewed, estimating the gaps between the demands of a strategy and what DoD is likely to be provided by the Congress deserves intensive effort in preparing for the next QDR. They point out that the QDR-97 focused early on a major projected funding gap, and that attention to this issue was praised by many (though not all) participants. Looking ahead, several experts suggest

that at least two aspects of a strategy-resource comparison (or gap estimation process) be strengthened for the next QDR.

Major players need a better understanding of how such gaps evolve, beginning with a strategy, moving to a concept for implementing that strategy, elaborating a set of force and resource requirements to implement the strategy, preparing an estimate of projected resources needed to meet the requirements, and developing one or more estimates of the gap, if any emerges. An effort to elaborate the analytics and the data requirements for just such a process could be a very useful and comparatively objective task. What are the best ways to go about estimating such a gap? What do the various major players, and independent consultants, propose?

When gaps are projected to arise, major players also need to understand the causes or drivers of those gaps. Major DoD components have considerable control over some aspects of extra costs that arise, for example, and less control over others. On the one hand, individual DoD components have relatively little control over new costs when confronted with a more ambitious set of peacetime military activities, higher than expected inflation, a robust economy that is bidding up the cost of keeping military personnel of a given quality, etc. On the other hand, there are likely to be DoD components that progress relatively slowly, compared with others, in implementing previously agreed upon cost-savings measures, for example, with little tangible evidence to offer that the pace was beyond their control. The stronger the analytic understanding and evidence base within DoD for such comparisons, the more readily the Secretary will be able to evaluate the merits of various proposals to address gaps that may be identified.

PREPARE FOR CHANGE

Independent experts that IDA contacted offered a number of general suggestions regarding the preparatory stage:

- Conduct an extensive preparatory phase, led by a group of one to three dozen senior analysts. This phase should elaborate and test a process for identifying and estimating capability gaps, exploring a range of alternative strategy assessments and force structure options, within one or several budget top lines; and structuring and pre-testing a wide range of data bases and models

and issue papers on key topics believed to be of use to the incoming Secretary for the next QDR.

- Commission several independent efforts to propose alternatives and test them against benchmarks established by the preparation team.

- Press for the main phase of a next NDP to go before the QDR: Preparation teams within DoD could review and include valuable NDP alternatives among options to be prepared for QDR review.

- Develop an ongoing process enabling a Secretary of Defense to determine the costs and relative capabilities of various force structure alternatives to today's force. Said one senior independent expert with extensive experience in OSD (PA&E): "There is no ongoing process within DoD to be able to get consistent cost benchmarks for alternatives; that would be helpful."

- Develop more data bases that would enable the Secretary to evaluate independently more of the estimates provided by major DoD components. Ongoing difficulties along these lines are illustrated by the following comment from a QDR-97 DoD participant: "after the 1997 QDR we sought through the DPG to get the JS to acquire the data to be able to examine activities of specific MOSs and unit types over time. Our first effort did not work, so we are trying again through this next DPG."

- Adopt and elaborate on the new conceptual framework for readiness evaluations of alternative force and capability postures that is being developed for OSD (P&R).

- Encourage focused off-sites among senior DoD leadership to jointly consider approaches to alternative futures and various new concepts, e.g., network-centric operations;[37] RBA; RMA; changes in the threat, ways to jointly develop a strategy-resource comparison process and then to systematically and jointly employ it.

NOTES

[1] The independent observers and experts with whom IDA spoke are listed in Appendix A. Note that an additional major source of recommendations regarding useful analytic preparation activities for the next QDR may be found in the proceedings of a MORS mini-symposium, held April 7–9,1998, at the Johns Hopkins Advanced Physics Lab, Laurel MD. Mr. Michael Leonard was the MORS program chair. A strong theme of that MORS session was that DoD should prepare aggressively, well ahead of time, for the next QDR. Many specific suggestions made in that symposium are similar to those in this report.

[2] A recent article by the Deputy Director for Technical Operations, Force Structure, Resources and Assessment of the Joint Staff (J-8), provides a cogent illustration of the importance of efforts within the analytic community to strengthen the relevance and clarity of analyses that are prepared for the senior decision-makers in efforts such as a QDR. See Vincent Roske, "Making Analysis Relevant," *Phalanx*, Vol 31, No.1, March 1998.

[3] A new administration might have quite different declaratory priorities, including any or all of the following: (1) far more selectivity in overseas military engagement activities; (2) much greater emphasis on homeland defense; (3) far greater attention to WMD and counter-terrorism issues; (4) significantly greater reliance upon power projection capabilities to provide deterrent and response capabilities; (5) more aggressive emphasis upon force transformation; (6) greater reliance on reserve components for a second MTW; (7) greater reliance on tactical aircraft assets in the middle and latter phases of an MTW; (8) much more aggressive privatization efforts; (9) much more emphasis on joint, networked operations; and (10) a dramatically increased effort to explore and experiment with a range of advanced operational concepts.

[4] See, for example, Ashton Carter (forthcoming, 1998). Also see Julian Palmore and Paul Davis, "Warfare Analysis and the New Sciences," *Phalanx*, Vol. 30, No. 4., 1997. Also see the NDP Report, *Transforming Defense*, 1997.

[5] W. Cohen, QDR Report, pp. 9–10.

[6] See the CORM Report, p. 2-21.

[7] For example, if DoD were to rely much more heavily on power projection (plus expanded) mil-to-mil contacts in its Shaping efforts, how much riskier would that be for U.S. national security than the Path 3 approach selected in the QDR? What would be the comparative costs?

It could be useful to examine a range of alternative approaches with regard to their comparative strengths, limitations, and costs. One methodology for making such comparisons is contained in James S. Thomason et al., *Evolving Service Roles in Presence Missions*, IDA Paper, P-3146, 1995.

[8] One respondent set forth four major areas that he and several collaborators believe should be emphasized far more strongly, both in DoD's funding and its management: counter-proliferation; Partnership for Peace, military-to-military contacts, and countering grand, i.e., WMD, terrorism. (Private communication, March 26, 1998).

[9] A CNA effort was described in a presentation ("The SeaPWR Model") by John Clifford at the April 1998 MORS QDR Symposium. A working Monte Carlo simulation approach for assessing the crisis responsiveness of various force components (presence as well as power projection assets) is presented in James Thomason, Sean Barnett, Stan Horowitz et al., *Presence Analyses for the Commission on Roles and Missions of the Armed Forces*, IDA Document D-1707, April 1995. For information about the Navy's Force Presence Model (FPM), see Cdr Kirk Michaelson, OSD (PA&E), "The Force Presence Model," a briefing to MORS, 4/8/98, Johns Hopkins Advanced Physics Lab, Laurel, MD.

[10] Private communication, March 1998. Still, very little empirical work has been commissioned to try to systematically assess the benefits and relative costs of various activities.

[11] QDR Briefing II.2, cited in Table 2-1 of this report, describes the Dynamic Commitment series for QDR-97.

[12] Private conversation, April 8, 1998.

[13] In its useful review of Joint Staff participation in QDR-97, a RAND group argues for elaboration of the "promising" Dynamic Commitment series. See L. Lewis et al., "QDR Analysis: A Retrospective Look at Joint Staff Participation," a briefing, October 1997. While the RAND review also properly notes that current campaign models have many shortcomings, it goes on to argue that they are of "limited utility." Another perspective is that while there are many problems with existing models, more insights may be learned from them that are relevant for a QDR than is often recognized, if appropriate sets of inputs are used to assess the comparative performance of various forces and systems. See the discussion in the next subsection of this appendix regarding the importance of conducting critical sensitivity analyses in a review such as a QDR.

[14] Navy efforts include N81's prototype development work on a process to assist in determining which units are available and best suited to be assigned to SSCs (see Dean Free's brief to MORS, 4/8/98). Some of the important Army approaches are described in *Dynamic Strategic Resource Planning: Toward Properly Resourcing The Army in an Uncertain Environment*, Technical Report 97-03, Program Analysis and Evaluation Directorate, Office of the Chief of

Staff, Army, The Pentagon, Washington, D.C. 20310 (Draft), and in several efforts being sponsored by Dr. Robin Buckalew.

[15] J-8's Contingency Analysis Planning System (CAPS) study is building on J-7's efforts to specify a range of SSC missions as clusters of operational tasks mapped to the Joint Universal Task List (JUTL) and the Joint Mission Essential Task List (JMETL). CAPS is developing and testing ways to map unit types (from each Service) to tasks (further specified by duration, location, etc., at various levels of proficiency). CAPS will then link with another model (COST) that will estimate the projected incremental budget costs to DoD of assigning particular units to SSC missions. For details on CAPS see R. Atwell, "CAPS Prototype Brief," IDA, April 1998.

[16] See Lt. Col. William Roege, OASD (S&TR) " Small Scale Contingency Force Requirements Study: A Briefing," presented June 18, 1997.

[17] The COST model is being developed for the OSD Comptroller to improve the Department's ability to anticipate the extra costs of SSCs, such as Bosnia and unexpected Persian Gulf activities. For information about COST, see Paul Goree, "SSC COST Model Brief," IDA, April 1998.

[18] Several analytic approaches are being developed under contract for OSD (P&R). In one of these, J. Tillson is developing a "weakest link" approach to DoD readiness measurements that may be exploitable in an overall strategy-resource comparison process for the next QDR. (Private communication, April 1998).

[19] For details see Julian Palmore and Paul Davis, "Warfare Analysis and the New Sciences," *Phalanx*, Vol. 30, No. 4.

[20] *Issue*: Most early simulation runs for DAWMS did not include an extensive use of C4ISR parameters. When these capabilities were incorporated into IDA TACWAR and WORRM, they were played in rather unconstrained fashion. That is, the level of battle intensity was driven by the number of enemy targets detected, but was only crudely related to the associated battle management capability that existed in the theater at the time. Much later the Decision Support Center Study (supported by CISA) attempted to include battle management issues and constraints on the number of targets that could be successfully attacked in a given period of time. Given these attack constraints, not all of the available weapon platforms could be fully employed. The end result of having these constraints in effect forced the theater commander (i.e., the user in this case) into making decisions about where in the theater the attack resources should be focused to gain the best combat results.

*Comment*s: (1) Almost everyone involved in campaign level simulation and gaming will agree that the C4ISR problem is about the biggest problem facing analyses of this type, both now and for the foreseeable future. The advent of precision munitions has put a premium on the theater commander having as much information as possible, in great detail and in real time,

about enemy targets so that these expensive weapons can be used effectively and efficiently. (2) There are many organizations involved in studying the C4ISR problem, but most tend to focus at the low end of the spectrum in terms of how large of a problem they can handle. They mostly deal in the technologies of the equipment; some may even view the high resolution, tactical implications of the equipment, but few want to deal with the "operational implications" of what that equipment will do. And that is where campaign level analyses need to be focused. (3) The representations of C4ISR form the foundation of how objects perceive and interact with one another in the new campaign level JWARS design. All tactical operations, and weapon system effectiveness measures, are dependent upon some functional level of C4ISR availability. It is unclear how much of the planned JWARS C4ISR structure will be available for the next QDR. (4) A fallback position is to use the C4ISR capabilities that were incorporated into the IDA TACWAR model toward the end of DAWMS, the beginning of the QDR, and throughout the Decision Support Center study. This capability is far from being what the JWARS design promises, but it is operational and the Services participated in the IDA TACWAR C4ISR data base development. Another approach would be to investigate the C4ISR modifications incorporated into the latest version of the Configuration Control version of TACWAR (CC-TACWAR).

[21] *Issue*: Some participants of the DAWMS and the QDR studies felt that too few sensitivity analyses were conducted on the important problems. Some felt the need to look in more detail and with a broader scope at such things as countermeasures to force capabilities; restructuring the forces vs. force tradeoffs; variability in force flows (for numerous reasons); and timing of combat events/scenario events (i.e., counterattack).

Comments: There was a general consensus at the end of the DAWMS effort that with more time to do the study it would have been possible to address more of these issues in greater detail. During the study there were a limited number of combat model runs that looked at the following issues: (1) The countermeasures example is of particular concern. Projecting enemy capabilities to develop new and successful countermeasures that could be used against U.S. or Allied forces in the 2014 time period is a rather risky exercise. But given the rate at which new technologies are developing, many thought that it would be better to err on the side of inclusion rather than exclusion. (2) There were some concerns that the QDR focused almost exclusively on trading off one element of force against another. Some of these tradeoffs were intra-service, while others were inter-service. Another approach, in addition to the force tradeoffs, would have been to restructure the existing set of forces around specific theater force objectives and then evaluate the capability of this new force structure to meet those objectives—a type of alternative operational concept analysis. In this way both modernization and restructuring objectives could be considered together. (3) The scripting of scenario events carried over to the actual timing of the counterattack. Launching the counterattack was dependent on sufficient forces being in theater to conduct a successful attack. To define "sufficient," the DAWMS accepted the force flows as projected by the

MIDAS model based on forces already available in the CONUS or elsewhere and then deployed them to required locations based on available strategic lift assets. Analyses for the next QDR could include a rich set of experiments as to what force sets would be sufficient.

22 *Issue*: Many have expressed concerns about how logistics are played in campaign level models. That is, questions surrounding the availability and the use of in-theater supplies and available re-supply to keep the forces fighting and moving forward. When are the force levels "logistically sustainable?" How do we address that issue in simulations ? The J-8's use of the CC-TACWAR included little to no consideration of the logistics capability of or logistics constraints to friendly and enemy forces in the DAWMS and QDR analyses. Modern warfare is a great consumer of logistics-class items. In addition, much force structure for service support units is required to make those items available to the consumers when and where they are needed. Without explicit play of logistics capabilities on both sides, the results of theater campaigns are not as believable as otherwise could be. U.S. forces go to great lengths to provide for such support, so to underplay these requirements gives a biased view of the situation in favor of the enemy.

Comments: (1) All versions of TACWAR, and most of the other legacy campaign models, have the capability to play logistics and tactical re-supply at some level of detail. But in most studies the play of "logistics" is turned off or in some manner not considered. Why is this if the inclusion of logistics is so important? The answer generally is that to play logistics at the level and the detail required takes too much data (which is very hard to get for enemy forces and sometimes for friendly forces as well). Other possible reasons: it takes too much time for computer simulation and analysis of the problem areas; or the models at hand are inadequate to address the complex issues of the problem. (2) The developing JWARS simulation is supposed to be of immense help in this area. Logistics assessments, based on the design concepts, are a major focus of the model. Data development is a major focus of JWARS via JDS. An initial data set, at least, is expected to be available when the model is released. But how far the interest will carry once the model is actually being used and/or applied in a specific study or at a specific site remains to be seen. Data demands of this more detailed model might be many times greater than current legacy models. Only time will tell how extensively this component will get used.

23 *Issue*: Future analyses need to analyze the operational impact that weapons of mass destruction (WMD), specifically chemical and biological weapons, have on the forces and force structure decisions. The DAWMS and the QDR combat scenarios assessed via CC-TACWAR included very limited chemical weapon effects. These effects were played as assumptions or general results that were input into the model instead of detailed assessments within the model. The J8/WMD Study that was started after the DAWMS effort but based on the DAWMS scenario, was never able to take into account all the elements and parameters of chemical or biological weapons use that should be considered, such as variable levels of protection that are based on one type of agent being used and the level of degradation in

combat effectiveness due to such protection. The J8/WMD study is now in its second iteration, having not fulfilled its total tasking the first time around. Impacts of biological attacks have been included, but only to a limited extent.

Comments: (1) The intent of these comments is to show that (a) chemical and/or biological attacks on U.S. and allied forces and installations can produce devastating effects; and (b) all existing campaign level combat simulations, with the exception of IDA TACWAR, have little capability to address these types of attacks and show the operational impact of limited or wide-spread use of chemical and biological weapons. (2) This is one area where the proposed JWARS simulation may be of limited help in addressing the problem for the 2001 QDR. The current JWARS developers are working hard to incorporate some semblance of chemical and/or biological or other WMD weapon effects in the version that will be available for the next QDR in 2001—the so-called Release 1. This should be closely monitored as a long-lead item. (3) Portraying the operational impacts on U.S. forces and installations of chemical and/or biological attacks by enemy forces (or terrorists) should be of major importance to most military planners given the intense publicity this subject has already created. (4) If the JWARS is not ready in time for the next QDR with its version of Chemical Defense, a reasonable approach to this problem area is to use the IDA TACWAR model to address the operational impacts of chemical and/or biological attacks on U.S. and allied forces. IDA TACWAR assesses not only the different employment options to offensive use of chemical biological weapons; it has an elaborate set of subroutines that determine the defensive equipment requirements for troops that are forced to operate in chemically contaminated environments. The model has also been used to assess the level of civilian casualties resulting from the use of chemical or biological weapons on the battlefield.

[24] For some background, see DoD, *Assessment of the Impact of Chemical and Biological Weapons on Joint Operations in 2010 (CB2010 Study), Summary Report*, November 1997. This report points out that the mid-1980s "Analysis of Chemical Operations" (The Kroesen Study), performed by 21 flag officers, developed a comprehensive assessment of the probable nature of a chemical attack, and allowed DoD to redress many already identified problems in chemical warfare readiness. The 1997 report cited here goes on to indicate that "at least a dozen nations are believed to have biological warfare programs." The report offers 12 major findings and associated recommendations: "Our group recommends that the focus of defense policies, Service doctrine, and chemical and biological defense programs be broadened to recognize that our nation's ability to project power is vulnerable to limited chemical/biological intervention in the force projection phase, including employment in CONUS. A major increase is required in attention to redressing vulnerabilities to chemical and biological weapons, including the following: clear vulnerability definitions and analysis; policy decisions and emphasis from the top leadership of OSD, JCS, the CINCs, and the Services; R&D balance to counter tailored and terrorist uses of CB weapons; force structure

attention to CB vulnerabilities at force projection nodes; and Service programs to address Service-specific vulnerabilities." (p. 32).

25   *Issue*: The WORRM is characterized as follows: when provided with a weapons budget, unit weapons costs, target inventories and locations, weapon inventories, available aircraft sorties, and many limitations on weapons system employment, WORRM solves a large linear-programming problem, based on these constraints, to provide the optimized mix of munitions that satisfies CINC target kill goals and maximizes target value destroyed. WORRM uses CINC target kill objectives as the driving force for targeting and relies on target value destroyed to gain value points beyond the CINC target kill goals. The DAWMS and QDR efforts were helped significantly by the availability of the WORRM.

Comments: (1) Although useful in both the DAWMS and the QDR, WORRM analyses are only as good as the key inputs. To begin with, what is the analytical basis for the CINC targeting goals? In addition, tactical realism is often difficult to capture in an optimization model. For the DAWMS and the QDR studies, the individual Services developed multiple weapon employment constraints for the model in order to add tactical realism. (2) Also, the model attempts to maximize target value destroyed while achieving CINC targeting objectives. Each target on the battlefield has been assigned a specific value for each phase of the war as established by the DAWMS target value working group. For the next QDR, alternative weighting schemes could be explored, e.g., schemes in which the value of the next target kill is a function of the targets already killed. (3) Another characteristic of the WORRM that limits its tactical realism is optimistic target kill rates. Each solution allocates the available weapons (and weapons budget) in a manner that maximizes the target values achieved. Thus, there is never any "wrong" weapon assigned to kill the target. Perhaps extra target sets should be introduced systematically to offset this characteristic. (4) A model like WORRM is the type of model one needs to have available when force optimization or weapon employment is the objective of the study. However, for a more effective use, the weapon employment constraints used in the model need to be applied more broadly than was done for DAWMS and QDR-97. It would be interesting if one could allow WORRM to buy platforms constrained to a budget in addition to munitions.

26   *Issue*: During the course of DAWMS and QDR-97, the WORRM and TACWAR simulation runs were required to kill/damage a CINC-specified percentage of targets, by type, for each phase of the campaign. These CINC-specified targeting goals reflect the opinion and experience of some of our best military leaders. However, the tactical and strategic benefits that are obtained from the destruction of these specified targets have not been thoroughly explored. Can we win the campaign with less destruction and/or with smaller forces?

Comments: (1) What minimal target set destruction would accomplish the objectives of each phase in the campaign? Are there specific target kills that, if achieved, can ameliorate the need to destroy other target sets? Note that there is broad community acceptance of the need to focus on key target nodes early on in a campaign. If these key nodes are indeed as

C-22

important as the community has been led to believe, then they should have some type of impact on other key target sets. What are those effects? How do they impact conflict resolution? How do they affect our tactics, forces, and the munitions required to accomplish the goals of the campaign? Answers to such questions may suggest alternative force structures capable of winning the MRC battle. (2) An analysis that allowed for variations in the Close Combat to Deep Attack kill ratio may help decision-makers identify alternative campaign solutions. We need to study when and where deep strike is an optimal approach and when and where close combat is an optimal approach. Can we focus more on close combat without significant losses using less expensive platforms and munitions? Do these results suggest shifts in the munitions requirements?

27 *Issue*: In representing C4ISR in combat models, it is not technically difficult to implement the backbone modeling, and operational rule sets can be defined for each sensor and node in the simulation. Yet a problem that consistently arises is, How do we handle stochastic processes in deterministic analyses? The basic detection processes interact with real world weather, terrain, and target sets that are not purely deterministic by their very nature. Moreover, the fusion and thus utilization of multiple pieces of information are often related to yet another set of statistical distribution functions and human preference. C4ISR modeling begins at the stochastic level, but for any given event our theater-level simulations typically require deterministic answers. The reality of computational limits and simulation runtime constraints requires much of the C4ISR modeling to be done off line prior to the actual theater simulation. This is a daunting process because the engineering models of C4ISR systems often are not configured to provide the types of outputs that will be required to model these systems deterministically. Additionally, these models often have long runtimes and the ability to run them hundreds or sometimes thousands of times for the event types that are modeled is a highly expensive process.

Comments: The importance of C4ISR modeling is undeniable. The ability to provide adequate targeting information is more important today than it ever has been. Many of our newer high technology weapons are no better than dumb munitions if they have inadequate and/or inaccurate information. A question that keeps coming up during large-scale analyses like the QDR is, Can we adequately provide the information that is required for our high tech weapons and the numbers of targets we expect to face in a timely fashion? An important follow-on question is, If we have to chose which weapons get what information, then how do we prioritize the acquisition and distribution of information to maximize our overall force effectiveness? During DAWMS and the QDR there was recognition of the problems associated with C4ISR modeling. Some attempts were made to account for C4ISR impacts in WORRM and in the IDA TACWAR model. These efforts focused upon deterministic modeling of target detection and fusion as a whole. The capability to model impacts of C4ISR in a better manner for the next QDR will require much effort. The JWARS model promises to

address these issues in a more realistic fashion but it is unclear how much of this will be ready for the next QDR.

28 *Issue*: Many concerns were voiced about the scripting of friendly and enemy ground operations throughout the course of the campaigns (both NEA and SWA) during DAWMS and the QDR. However, if this is acceptable, as some indicate**,** it may be necessary to have both sides evaluated by "teaming efforts" similar to war gaming to show how they would fight the campaign according to their CONOPS.

Comments: (1) The J8 portrayal of the two MTW scenarios as they were played in the Configuration Control version of TACWAR (CC-TACWAR) relied heavily on a scripted set of actions and reactions for the ground forces on each side. This scripting controlled when and where forces would move, and whether or not they would be committed to specific phases of the battle. The IDA TACWAR team felt that this scripting severely limited the capability of the TACWAR simulation to address a wide range of sensitivity analyses that could shed light on the best ways to employ both the ground and air forces and the resulting capability of those forces. At least that is one view of the situation. (2) Another view is that the J8 carefully gamed how the two sides would employ their ground forces given their respective concepts of operation (CONOPS) and ultimate objectives in the campaign. In this view, neither side would do anything foolish in terms of allocating ground forces to areas where they would not be effective, or would be destroyed, or cut off. But carefully gaming the situation at each phase of the war extends the time required for any one run and, thus, limits the number of simulation runs that can be made. In this process, where each simulation run is gamed, not as many sensitivity iterations or excursions can be made during the course of the study. (3) It is debatable which approach is more useful for the DAWMS/QDR type of study. If gaming each run is acceptable, then each side in the campaign needs to be gamed at the same scope and to same level of fidelity based on their campaign objectives. (4) If JWARS is to be the campaign model of choice for the next QDR, then the users of the model need to think about this issue of how to play and employ forces on both sides. It is one thing to play, in great detail, the correct concepts of operation (CONOPS), but it is another thing to adequately address a wide range of options that involve operations of both sides' forces. With limited time constraints to do the studies, one needs to choose the best options for the case at hand.

29 His steps for "Good Force Planning" are as follows: (1) Seek to create military advantage; (2) Recognize that decisive victory is an inadequate criterion to guide force planning; (3) Recognize that forces incapable of achieving decisive victory can achieve key political objectives, that forces designed to win all-out wars against powerful foes sometimes cannot achieve key political objectives, and that forces designed to achieve decisive victory can be ill-prepared to achieve what political leaders view as limited political objectives; (4) Explicitly distinguish each of four levels in force planning—Political Objectives, Military Objectives, Operational Concepts, and Forces—and consider a range of alternatives at each

level; (5) Give free rein to imagination: "On both the horizontal and vertical dimensions, in short, planners should seek first to be innovative and imaginative; they or others can worry later about deciding which combination of ideas should comprise the desired logical progression…When thinking about operational concepts, planners need to have a clear understanding of the concepts in light of which current forces recruit, organize, train and equip. Such an understanding will help planners avoid the illusion that they can make fundamental changes in warfare simply by grafting new technology onto existing operational concepts. Since planners should continually seek to achieve fundamental change, they should seek to avoid such illusions, which might otherwise lead to unwarranted complacency"; (6) Focus on potential adversaries and conduct action-reaction analysis; (7) Iterate. See John C. F. Tillson et al., *Force Planning For the 21st Century, New Approaches to Scenarios, Operational Concepts and Forces* (U), IDA Paper P-2640, October 1992.

[30] Might alternative MTW operational concepts enable DoD to get more "mileage" from existing force structure? Could heavier reliance upon tactical aircraft or other precision strike capabilities during the traditional build-up and counter-offensive phases of a Korean MTW free up U.S. ground forces for important uses elsewhere, either in ongoing SSCs or in another MTW? Also see, for example, interesting concepts proposed by the Navy Strategic Studies Group 16: "The Navy should embrace unmanned vertical takeoff aircraft, high energy rail guns with ranges of 200-400 nautical miles, and targeting systems that will quickly find mobile missiles." David Fulghum, "Navy Study Tackles 21st Century Threats," *Aviation Week & Space Technology*, November 10, 1997. A controversial concept proposed by Maj. Gen. Charles Link (USAF retired) seems worth serious consideration too: "War plans assume that after we achieve a 'halt' phase, the Air Force goes off and plays volleyball during the build-up phase. I would maintain that from that point on, the enemy's strategic options decline. He is either leaving for home or dying in place, and a follow-on counter-offensive may not be necessary. The point is, our long-term preoccupation with ground forces has skewed this debate, and left unchanged, it will lead to unnecessary casualties or military failures in a future conflict." Quoted in James Kitfield, "The Air force Wants to Spread Its Wings," *National Journal*, November 8, 1997, p. 2264.

[31] See Elaine Grossman, "Cohen signs Plan Giving Atlantic Command Joint Experimentation Role," *Inside the Pentagon*, Vol. 14, No. 20, May 21, 1998.

[32] "The important point in all of this is not just the individual advances in the capacity to collect and process information about what is occurring in a battle. It's not only the growing capacity to pick out the most important targets in a rapidly changing conflict milieu, nor is it solely the dramatic improvements in the U.S. ability to destroy those targets with precision from ever-greater ranges. It is the interaction of these things—how the ability to see and choose targets better increases the leverage of precision guided munitions, and how a faster and more accurate capacity to assess the effects of violence makes the subsequent use of violence deadlier—that is the real significance of the system of systems and the heart of the American

RMA." See James Blaker, *Understanding the Revolution in Military Affairs: A guide to America's 21ˢᵗ Century Defense*, Progressive Policy Institute Defense Working Paper No. 3, January 1997.

[33] See, for example, Stephen Biddle, "Victory Misunderstood," *International Studies Quarterly*, Fall 1996. Biddle argues: "One should be wary of proposals to protect modernization funding at the expense of training and readiness accounts. A less-skilled military is more dangerous than less-advanced technology…(p. 177) It is far from clear…that building a skilled organization is quicker than fielding new equipment. The determinants of organizational skill are poorly understood, making it especially risky to allow a highly competent military to decay now in the hopes that it can be quickly rebuilt later." In this article Biddle also makes the interesting claim that the RMA's main value is that it provides *skilled* military personnel with unprecedented ability to exploit (punish) opponents' errors. An alternative, but complementary perspective (and a hypothesis that may be worth testing), is that the RMA will afford skilled military personnel unprecedented opportunities first to *induce* enemy errors and then to exploit them.

[34] Appendix B of this report includes several recommendations from QDR-97 DoD participants for ways to mine and distill the evidence from ongoing Service and Joint experimentation programs.

[35] "The panel calls for a $5 to $10 billion transformation strategy wedge. The panel wanted to call attention to the costs of investments that might have to be made—ACTDs, space, new technologies." See the NDP Final Report Press Conference, December 1, 1997.

[36] A second independent observer suggested a number of areas for accelerated examination: (1) making one Service responsible for management, administration, and maintenance on contiguous or nearby parcels of land to trim overhead; (2) exploring trades of land parcels among the Services to give each a larger block of property on which to perform testing and large unit training; (3) exploring land trades within states to close smaller posts, including National Guard posts in exchange for equal acreage adjacent to existing large posts; (4) developing specialized bases as joint large caliber ranges and others as maneuver space to maximize the latter; (5) reducing ONSR Stockpile (War Reserves) by greater reliance upon the industrial base, e.g., contingency contracts, accelerated production in U.S., dual-use possibilities; (6) increasing troop reliance on outsourcing for food and maintenance; (7) accelerating disposals of salable inventories through smarter auctioning techniques; and (8) aggressively utilizing Host Nation Support to reduce our infrastructure burden that is forward deployed.

[37] "'Network-centric warfare is the most sweeping change in the nature of maritime warfare since the introduction of the radio,' wrote Vice Admiral Arthur Cebrowski, the Navy's chief backer of the plan, in *Surface Warfare* magazine. During the Persian Gulf War, for example, U.S. forces tried in vain to destroy Iraq's highly mobile launchers for its feared SCUD

missiles, which rained down on Israel and Allied positions in Saudi Arabia. Because the launchers could be moved so quickly, a U.S. missile's programmed coordinates could be out of date before it ever struck the ground. 'We spent hours and hours chasing SCUD launchers, and we never caught any,' said a defense official who requested anonymity. 'With network-centric warfare, we can do that.'" See Larman, David, "Hampton Roads Navy Bases First for New Strategy," *Newport News Daily Press*, November 29, 1997, p. C1.

Appendix D
DETAILS ON INDEPENDENT RECOMMENDATIONS FOR LEADERSHIP AND GUIDANCE, FEEDBACK, AND REVIEW

Chapter 6 of this paper provided an overview of the recommendations we received from non-DoD, or independent, experts contacted for this study. The vast majority of their recommendations pertained to preparation for the next QDR, as elaborated in Appendix C. However, this group also offered some interesting insights on leadership and guidance, feedback, and review, which we detail here.

LEADERSHIP

Independent experts' comments regarding leadership in the next QDR synthesize into two primary recommendations: (1) establish strong, engaged leadership: ensure a vigorous, fair review; and (2) provide incentives for change.

Establish Strong, Engaged Leadership: Ensure A Vigorous, Fair Review

A Secretary interested in effecting significant change via a QDR process has one leadership task that predominates all others—setting up and conducting a vigorous and scrupulously fair review that elicits and rigorously tests rival approaches without bias toward any one major player or the status quo.[1]

Establishing a fair process is crucial to major players' willingness to support and implement the results. What is fair? Providing major participants an equal chance to propose alternatives in particular areas and have them seriously considered through as objective a process as possible. This is a very different concept from allocating available resources on a "fair-share" basis.[2]

In one important respect, the rules of scientific inquiry may offer a useful ideal to strive for in a QDR. That is, scientific inquiry may be viewed as carefully structured

---

[1] See, for example, Donald Campbell, *The Experimenting Society*, 1978.

[2] Fair in the sense of impartial, i.e., an absence of bias or prejudice.

competitions among rival explanations of identical or overlapping phenomena.[3] In another sense, though, vigorous scientific competition, even if objectively fair, can easily damage personal relationships among contestants. The scientific process is no great respecter of individual egos or of rule by tradition and authority. An important leadership challenge in such a process may thus be to maintain what might be called a good "light/heat ratio,"[4] which can be promoted by establishing fair rules of procedure in evaluating proposals but which will often call for efforts to make losers on one dimension feel like winners on others. Along these lines, several experts argue that sometimes approaches are available that can not only console losers in any given round but expand the pie available to all major players.[5]

Provide Incentives for Change

Three proposals were offered in this area: (1) develop and use a "bishop's" fund; (2) offer budget rewards for actual priority improvement; and (3) identify a military strategy, solicit feedback on implementation from the Services, and evaluate how well the Services could execute under alternative conditions.

Develop and use a "Bishop's Fund

The Secretary would reserve some funds from the budget for allocation—on a matching basis, for example—to DoD components that commit to using some of their own funds to promote programs of particular priority to the Secretary. The incentive here,

---

[3] See, for instance, Carl Hempel, *Philosophy of Natural Science*, Prentice Hall, Inc., Englewood Cliffs, N.J., 1966; Fredrick Kerlinger, *The Foundations of Behavioral Research*, Holt, Rinehart and Winston, Inc., 1964; and Eugene Webb, et al., *Unobtrusive Measures: Non-Reactive Research in the Social Sciences*, Rand McNally & Company, 1966. As Webb et al. put it: "The third general approach to comparison may be called that of 'plausible rival hypotheses.' It is the most general and least formal of the three….Given a comparison which a social scientist wishes to interpret, this approach asks what other plausible interpretations are allowed by the research setting and the measurement processes. The more of these, and the more plausible each is, the less validly interpretable is the comparison….The culture of science seeks, however, to systematize the production of rival plausible hypotheses and to extend them to every generalization proposed." [pp. 8–9]

[4] "Light" is shorthand for insight into how well one approach stacks up against others in vigorous, rigorous competition; "heat" connotes anger, defensive behavior, etc.

[5] Stephen Covey (1989) devotes a chapter of his *Seven Habits of Highly Effective People* to cultivating "win-win" opportunities and solutions to break out of bureaucratic zero-sum tendencies. Avinash Dixit and Barry Nalebuff (*Thinking Strategically: The Competitive Edge in Business, Politics, and Everyday Life*, New York and London: W.W. Norton and Co., 1991) describe systematic strategies, even beyond Robert Axelrod's "Tit-for-Tat," for breaking out of such classic sub-optimizing situations as the Prisoner's Dilemma. Aspects of such approaches may possibly be adaptable to the bargaining context of the next QDR.

for a Service or other organization within DoD, clearly, is the prospect of getting additional funds from the SecDef's "Bishop's fund." Such a procedure was tried within DoD in the early 1970s with some success.

Offer budget rewards for actual priority improvement

In this scheme the Secretary would base Services' *subsequent* top-line budget shares on the quality of their demonstrated improvements in areas of particular priority to him, rather than on historical shares. An explicit part of the QDR could consist of an effort to establish how such a scheme would work, in light of the new Secretary's priorities. Preparatory phase research could study the relative efficacy (both in theory and practice) of alternative incentive schemes for such an approach. Potentially promising contract incentive schemes for review and adaptation are described in *Thinking Strategically,* by A. Dixit and B. Nalebuff.[6]

Identify a military strategy; solicit feedback on implementation from the Services; evaluate how well the Services could execute under alternative conditions

Two potential situations for these assessments could be as follows: (1) each Service is allocated 90% of its current funds and can bid for the rest; (2) each Service is given 75% of its current share and can bid for the rest. Individual and cooperative (cross-service) proposals would be considered.

GUIDANCE, FEEDBACK, AND REVIEW

Consistent with their leadership recommendations, independent experts recommended that the Secretary provide explicit guidance that would elicit significantly different approaches, provide for their rigorous evaluation, and reward excellence. Mechanisms for feedback and review would include a control/tracking team, independent review groups, and an independent ombudsman.

Provide Explicit Guidance to Include Significantly Different Approaches

The Secretary could call for vigorous analytic challenges to the status quo in each area and announce plans to establish awards for the most compelling demonstrations. Awards could be made whether the results demonstrate that the status quo is the best

---

[6] A. Dixit and B. Nalebuff, *Thinking Strategically*. See chapter 12, Incentives, pp. 302–325.

approach after all or, alternatively, show that there are very important alternatives that should be more seriously considered. More specifically, the Secretary would—

- Ask an independent group to review the entries and submit their evaluations to the Secretary.

- Task each assessment team to specifically examine major alternative proposals summarized by a QDR preparation team in Assessment Guidance Books. There are many potential sources of raw material for these alternatives. One source is *Directions for Defense*, the 1995 CORM Report. A second is the 1997 National Defense Panel Report, *Transforming Defense: National Security in the 21st Century*, Phil O'Deen et al., December 1997. And a third potential source is *Key West Revisited, Roles and Missions of the US Armed Forces in the Twenty-first Century*, Barry M. Blechman et al., Reprint No. 8 of the Henry L. Stimson Center, March 1993.

- Task each QDR assessment team or panel to identify, for each problem/question they are asked to examine, the current DoD paradigm and range of solutions under that paradigm. Then ask each to identify at least two other paradigms for approaches to each problem and potential solutions or paths along those lines. Have participants, especially proponents, consider and describe, for each option developed in the QDR, what, if anything, would lead them to change their minds and propose something else i.e., ask them "Alexander's" question.[7]

- Have DoD components identify automation goals (e.g., robotics; automated data processing; direct linkages rather than middle men linkages); ask them to work out options that will achieve various benchmark targets. Have those benchmarks reviewed, by Pentagon and by independent panels, for quality, innovation, cost-effectiveness. The Secretary could offer rewards for the highest quality proposals.[8]

- Require diligent consideration of force structure alternatives as inputs to capability and effectiveness analyses for both MTWs and SSCs

- Establish guidance calling for logistics sensitivity analyses even if such sensitivity cases would involve changes to current programs.

---

[7] See R. Neustadt and E. May, *Thinking in Time*, Free Press, 1986.

[8] Considerable material exists, including S&T plans within DoD. An interesting set recently proposed may be found in the recent report of the CNO's Strategic Study Group. See David Fulghum, "Navy Study Tackles 21st Century Threats," *Aviation Week & Space Technology*, November 10, 1997.

Establish a control/tracking team

The control/tracking team would enable the Secretary to make key decisions in the next QDR on a timely basis, drawing upon explicitly scheduled assessments of alternatives to the status quo (baseline). The team would develop, in advance, and monitor a detailed schedule of inputs and outputs from the different QDR components, as well as feedback, integration, and decision timetables. One option would be to conduct the next QDR largely on-line (in a secure environment as appropriate), providing guidance to teams interactively and allowing the QDR coordination team to field questions, requests for clarification, etc., on-line as much as possible. In this way, innovative proposals could be received—relatively rapidly—from the worldwide DoD community and tracked/ integrated efficiently.

Institute Challenge/Red Teams

Commission independent review group(s) appointed by the Secretary to comment privately to him on emerging proposals during the QDR.

Designate an Ombudsman

Establish an independent ombudsman to track and monitor proposals emerging from assessment groups and forward them to the Secretary and the oversight group. The Secretary would appoint an ombudsman to give feedback from each group concerning innovative proposals that were (or were not) being developed. In one variant, the ombudsman could make suggestions to assessment panel chiefs as well as provide feedback to the Secretary.

CONCLUSION

Compared with past DoD performance as well as that of other nations' military establishments today, many aspects of the U.S. Department of Defense work extremely well. But there is still no reason for complacency. Lives are at risk, very large amounts of scarce resources are at stake, and the groundwork for future U.S. security is being laid today. The words of a well-known analyst of corporate and government change processes seem apt: "Never underestimate the magnitude of the forces that reinforce complacency and that help maintain the status quo."[9]

---

[9]   John Kotter, "Why Transformation Efforts Fail," *Harvard Business Review*, March 1995.

Appendix E
PREPARING FOR QDR-01

This appendix proposes a structure for work in preparation for QDR-01. Topics for preparatory work were drawn from DoD's *Report of the QDR*, from interviews conducted for this report with participants in QDR-97, and from a conference held in April 1998 by the Military Operations Research Society (MORS) on analytical problems that arose during QDR-97. The proposed structure provides an opportunity to address most of the concerns and recommendations presented in appendixes B and C. Doing so successfully will, however, require a significant amount of preparatory work, much of which should begin as soon as possible.

Three types of deficiencies in the analysis done for QDR-97 are identified in the sources cited. The first are fundamental problems with the conceptual framework for analysis in certain areas, with data, or with analytical tools. The second are difficulties in doing analysis quickly using data and models that are not familiar to all participants. The third are failures to examine a sufficiently wide range of alternatives.

Better preparation can address the first and second types of problems by improving conceptual frameworks and analytical tools and by providing an opportunity for likely participants in QDR-01 to become familiar with these tools. The third type of problem results from model deficiencies in some cases, so solving it depends, in part, on solving the first type. In the final analysis, however, it will depend on the interest that the decision makers for QDR-01 have in examining a wide range of alternatives.

Since the scope of QDR-01 will not be finalized until just before actual work begins, the structure for the preparation phase described here would support the most ambitious effort: a review of wide scope, such as QDR-97.

This report suggests not only that the formal preparatory phase for QDR-01 begin in March 2000 but also that a small Steering Group be formed sooner to guide and monitor very long lead-time initiatives. This appendix addresses both the long lead-time and formal work.

The proposed structure reflects the current strategy—Shape, Respond, Prepare. It could be used to examine variations within the current strategy (e.g., a different emphasis on near term vice future capabilities or different force sizing criteria). If QDR-01 examines a radically different strategy, however, additional new work and some modification of the structure would be necessary. Such changes are discussed further in appropriate sections.

LONG LEAD-TIME WORK

Areas for Examination

The sources cited above suggest several areas in which conceptual frameworks, analytical tools, and data need improvement. (Conceptual frameworks include objectives, strategies, concepts of operations, and measures of effectiveness [MOEs[1]]). Many of these efforts are likely to require more time than the 11 months proposed in this report for the formal preparatory phase. In addition, much of this work is needed for the normal PPBS. Therefore, work should be initiated as soon as possible (if it is not already underway) in the six areas that follow.

Use of Forces Short of Major War

Data on how forces have been used for presence and in small-scale contingencies (SSCs) of various types are spotty, inconsistently defined across the Services, and not automated to facilitate analysis. Analyses of the cost-effectiveness of alternative force packages for these types of activities should be strongly encouraged too. Data should be collected on support as well as combat forces, by unit type and weapons system, and for individual skills that are in high demand. Additionally, more analysis is needed of the relationship between numbers of units or skilled individuals and sustainable levels of activity. In particular, DoD needs to understand what can be accomplished by using different force management policies and when force size is the limiting factor. Work already has been started on all these topics, including three efforts initiated by the

---

[1] Throughout this appendix, the term "MOE" is used to denote any evaluation criterion. It could be a scenario or scenario variant, some objective within a scenario, cost, a measure of uncertainty or risk, etc.

Defense Planning Guidance and a jointly sponsored tasking to IDA entitled "Alternative Approaches to Reducing the Impact of OPTEMPO and PERSTEMPO on DoD Personnel."

Shaping

Commentators noted a lack of objectives, strategies, and MOEs for Shaping and a need for methods to determine requirements for forces or other Shaping tools. Commentators also suggested that additional analysis be done of the historic value of presence, presumably including coercion.

Responding to SSCs

Commentators noted a lack of objectives, strategies, and MOEs for responding to SSCs of various types. They also noted a lack of analytical tools for assessing capabilities, except for QDR-97's dynamic commitment games (DCG), which focused on the availability of forces. They suggested documenting the DCGs before institutional memory is lost and expansion of that methodology. They saw a need to—

- Select design points
- Assess the adequacy of (or requirements for) forces, not just their availability
- Include the contributions of other government agencies and allies
- Assess backfill and rotational requirements for long SSCs
- Determine the requirements of multiple, concurrent SSCs

Responding to Major Theater Wars (MTWs)

Commentators mentioned a long list of deficiencies in available models including:

- Inability to model a range of operational concepts
- Inability to represent the new capabilities that will be produced by new technologies and new operational concepts (presumably the manifestation of the revolution in military affairs [RMA])
- Inadequate representation of C4ISR capabilities and threats
- Inadequate consideration of the contribution of naval forces, Special Operations Forces, and other power projection forces
- Inability to model warfare in space and urban areas, National Missile Defense (NMD), and, presumably, theater ballistic missile defense

There also was concern that DoD does not have good estimates of casualties in SSCs and MTWs. Finally, current models were criticized as too complex to adapt and run quickly, thus limiting the number of cases that can be examined.

Some of these problems are being addressed in ongoing model development work such as JWARS. Concern was expressed, however, that JWARS will not be completed in time[2] for use in QDR-01. Should that be the case, additional analysis of how best to represent new operational concepts and capabilities in existing models such as TACWAR would be beneficial. If a Steering Group for long lead-time work is established, it should determine if there is sufficient concern about each problem to initiate work to develop or improve capabilities. In the case of the RMA, the problem may be not so much modeling the new capabilities as defining them.

Preparing

Fundamental conceptual work is required to define objectives, strategies, and MOEs for the prepare aspect of the overall strategy. (One commentator noted that the only MOE available during QDR-97 was reaching $60 billion in procurement.) The structure proposed in this appendix is based on the assumption that there are at least four aspects to a Preparing strategy:

- A technology strategy for staying ahead of opponents and hedging against uncertainty

- Programs of experimentation with new technologies and operational concepts

- An acquisition strategy for developing and fielding new capabilities in new or existing systems

- A strategy for acquiring, retaining, and training individuals with the skills to effectively employ the new technologies

Long lead-time work should include defining program options for the various aspects of whatever strategy is selected.

Infrastructure Costs

Commentators on QDR-97 did not suggest many specific examples of infrastructure deficiencies. There is widespread recognition, however, that DoD lacks data on the costs of various goods and services provided by the infrastructure. As a

---

[2] Or will be of limited design

result, it cannot determine where inefficiencies exist and how to become more efficient. Basic research also may be needed on how to package work for public-private competition to minimize the amount of effort involved in the competition and maximize savings. Additionally, basic research into the reasons for growth in the cost of force management may be required. Finally, assistance might be sought from business leaders who have led change in their corporations but who also understand the peculiar legal constraints within which government executives must act.

Organizing the Long-Lead Work

The Steering Group for long lead-time work could be limited to senior representatives of the Under Secretaries of Defense and the Joint Staff. Its primary task would be to agree on what long lead-time work was important and to ensure that such work was begun if not already underway. One major challenge would be to catalog all ongoing studies and analytical tool development efforts that are addressing these problems.

To maximize the acceptance of products for later use in QDR-01, the Steering Group could encourage opening ongoing efforts to interested organizations and providing opportunities for those organizations to review and comment on interim products or progress reports.

PREPARATORY PHASE

Framework for Analysis

The primary purpose of the preparatory phase would be to develop and exercise an analytical framework for use during the QDR itself. Several commentators noted the utility of identifying working-level participants from the Military Departments and the non-political OSD staff early and of familiarizing them with (and allowing them to vet) data, models, MOEs, and integrating techniques. (Obviously, any decisions on these matters would be reviewed after the final decision makers have been identified in 2001.)

This phase could evaluate the baseline program (i.e., the Five-Year Defense Plan [FYDP] extended by the Defense Program Projection [DPP]) and several prototype options). With careful choice, some of these prototypes would be of interest in the QDR itself.

Figure E-1 provides an overview of the major elements of analysis. An option to be evaluated might be a different strategy, or operational concept, or aspect of the defense program. In any case, both performance and affordability would be assessed, and the latter would be affected by assessments of the top line and various cost uncertainties or risks.
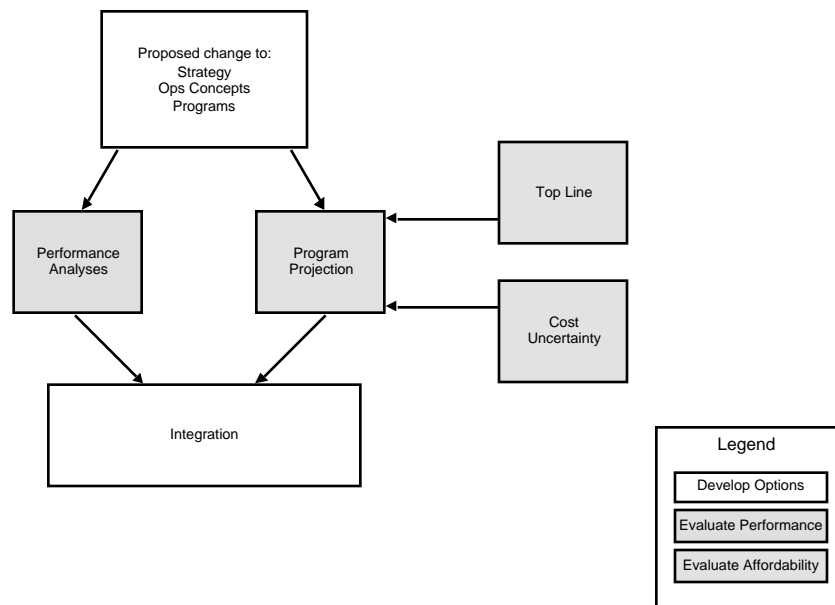

Figure E-1. QDR-01 Overview

Figure E-2 provides a more detailed structure for tasks and the flow of products. It does not imply the need for 20 separate working groups, however, since several related tasks likely would be assigned to one group. Although the flow is shown as linear, in most cases, a lot of feedback and iteration would be necessary to develop and evaluate several types of options. This point is illustrated by showing how the process might work for particular issues in a later section. The following paragraphs describe the domain and output of each task (box) on the detailed diagram.

Developing Options for Evaluation

The first group of tasks develops options in sufficient detail for evaluation. An option is any departure from extant defense policy and programs. It could be as simple as the introduction of a new type of unit employing advanced technologies to provide increased operational capabilities or as complex as an entirely new strategy implying significant changes in many aspects of the program. As Figure E-2 shows, the tasks in

this group pertain to intelligence, strategy, new technologies, operational concepts, force

posture, and acquisition. The work would begin in the task area most appropriate for the proposed option.

Intelligence. Projections of possible threats as well as the global security environment will be required for many parts of the work. These should include both the conventional capabilities of potentially hostile nations and unconventional threats such as chemical and biological capabilities in the hands of nations and terrorist groups.
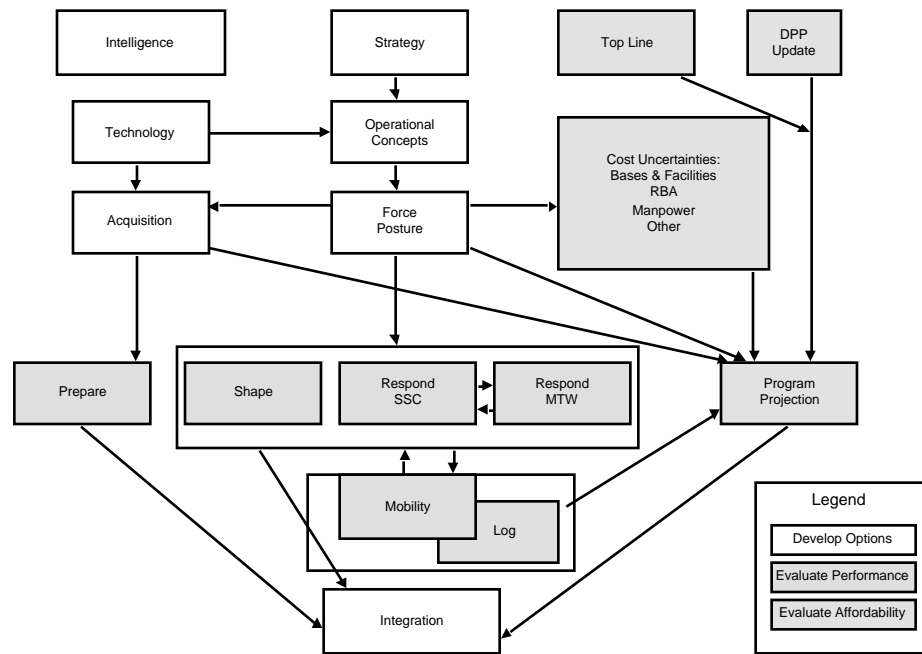

Figure E-2. QDR-01 Framework for Analysis

Strategy. Several commentators mentioned the need for stronger links among objectives, strategy, operational concept, tasks, and programs. For the current grand strategy of shape/respond/prepare, this task would describe objectives and detailed strategies for each of its elements (e.g., a Shaping strategy), drawing on whatever long lead-time work had been done and supplementing it as necessary.

If a radically different grand strategy is proposed for evaluation, this task would define each of its elements in enough detail that an evaluation scheme appropriate to it can be specified.

New Technologies. This task would identify (to the Operational Concepts task below) new technologies that could be inserted into existing or new systems within the period to be covered in QDR-01. It also would provide a program for maintaining a lead in technology and for hedging against unanticipated advances by opponents. In concert

with the Operational Concepts task, this task would define programs for experimenting with new technologies and operational concepts to produce the new capabilities that will constitute the Revolution in Military Affairs (RMA). This task (or the Cost of Manpower task) would provide the program for acquiring, retaining, and training individuals with the skills to effectively employ the new technologies.

Operational Concepts. This task would define operational concepts for each element of a strategy for the near term (i.e., end of the FYDP) and long term (i.e., when new capabilities could be available from some combination of new technologies and new operational concepts). To the extent possible, it would describe the specific tasks (from the Universal Joint Task List when relevant) necessary to implement the operational concept.

Force Posture. This task would provide alternative force postures for the near and long terms to match operational concepts and tasks. A posture would include force units, systems, new technologies, readiness, and mix of Active and Reserve component units. Forces would include support as well as combat. (For example, this task might describe in detail the more strategically mobile force with leaner logistics requirements that has been postulated for JV2010.)

Several methods for developing posture options have been suggested. The working group might solicit ideas (as described later), it might develop alternatives itself, or the Services could be asked to develop a core program at some percentage of current funding and then bid for the remaining funds.

Acquisition. This task would provide alternative acquisition programs for achieving the long-term force postures at different times in the future. If, in some options, older systems are to be retained longer than now planned, this task would identify any service life extension program or increased maintenance requirements for costing. This task also would identify any industrial base concerns that would arise in specific options.

Evaluating Performance

The next group of tasks evaluate options in relation to the elements of the strategy and costs. Options would be evaluated both at the end of the FYDP and at some point in the future when advanced capabilities would be fielded. They also would be evaluated against variations in threats (e.g., chemical and biological weapons) and other key variables or uncertainties.

Prepare. Programs proposed to support the Prepare aspect of the strategy would be evaluated against MOEs for that part of the strategy. If MOEs were not developed prior to the preparatory phase, a primary task would be to develop some.

Shape and Respond. Programs proposed to support the Shape and Respond aspects of the strategy would be evaluated against MOEs for those parts of the strategy. If MOEs were not developed prior to the preparatory phase, a primary task would be to develop some. Commentators suggested that analyses include—

- Tradeoffs between marginal capabilities for MTWs and specialized forces for SSCs

- Tradeoffs between forces and information (intelligence)

- Continuing lift and other support to ongoing SSCs after an MTW begins

Depending on the extent of long lead-time efforts, these analyses may have to adapt and use models that are less than satisfactory.

Mobility, Logistics, etc. A number of supporting analyses will be needed to round out each force option and its evaluation. In addition, there may be specific aspects of support functions that participants will want to examine. The QDR itself noted a need for analysis of strategic lift when there is use or the threat of use of chemical or biological weapons. As another example, the focused logistics concepts called for in JV2010 may have been described in enough detail for their implications to be assessed.

Evaluating Affordability

A major objective of QDR-97 was formulating a program that could implement the strategy and fit within likely fiscal constraints There are uncertainties in the cost of any program as well as in its performance in carrying out the strategy. Thus, cost and performance uncertainties and risks need to be assessed, as was done in QDR-97.

In assessing costs and cost uncertainties or risk, the QDR used the Defense Program Projection (DPP). This projection is done annually based on the President's Budget FYDP. It projects the cost, in the 12 years beyond the FYDP, to maintain the selected force structure at desired operating tempos, complete ongoing acquisition programs, and carry out other current policies and programs. The DPP used in QDR-97 included an analysis of several areas in which there was some reason to expect cost growth: contingency operations, depot maintenance, real property maintenance, military construction, military personnel, planned efficiencies, and acquisition programs.

In balancing the risk that a smaller force structure and acquisition program would not be adequate to carry out the strategy against the risk of under-funding O&S costs, decision makers for QDR-97 directed the following steps:

- Implement modest reductions in force structure

- Correct some of the known shortfalls in funding for O&S costs, primarily in depot maintenance

- Request authority for additional rounds of Base Realignment and Closure (BRAC) in 2001 and 2005

- Take additional measures to reduce other O&S costs

- Reserve funds to improve acquisition stability

Thus QDR-97 hedged against some, but not all, of the cost risks inherent in the FYDP and may have increased the risk of cost growth from unrealized efficiencies. Decision makers in QDR-01 will face these and several other uncertainties about the cost of the baseline program and the options they consider.

By the summer of 2000, DoD will have data from three program and budget reviews to use in accomplishing the tasks in the upper right on Figure E-2, a process that would update its assessment of cost uncertainties.

DPP Update. If possible, the DPP should be completed early in the preparatory phase of QDR-01. This DPP should be staffed more broadly than usual, so that the incoming Secretary hears alternative views of the range of costs of the baseline program.

Top Line. QDR-97 assumed a DoD top line that is relatively constant in real terms. Any number of events may make it prudent for DoD to examine alternative top lines in QDR-01 (e.g., it has become an issue in the campaign of 2000 or the economy is less robust but there still is a consensus to balance the budget). This task would produce alternative estimates of the DoD top line.

Cost Uncertainties. This task will evaluate cost uncertainties and risks, if such an evaluation was not a part of the DPP update itself.

Bases and Facilities. By 2000, it should be apparent whether DoD will get BRAC authority for 2001, and there will be a better idea of the probability it will get such authority thereafter. If authority is granted, then costs will rise in the short run. Additionally, there will be more insight into the Services' ability to reduce excess capacity without BRAC authority (e.g., through regionalization, which was one of the

uncertainties included in QDR-97). This task would provide an estimate of the range of costs and savings possible from reductions in excess base and facility capacity.

Revolution in Business Affairs. The revolution in business affairs is intended to produce economies and efficiencies in the provision of supporting services within DoD. A number of initiatives, including public/private competitions and process reengineering, are underway or planned. Additionally, DoD is asking for several changes in law to deregulate its activities. This task would provide an update on the uncertainty in our estimate of savings from these initiatives. (Most of the infrastructure initiatives included in the uncertainty analysis for QDR-97 fit in this category.)

Cost of Manpower. QDR-97 included risk in military personnel costs. QDR-01 might broaden that analysis by examining the extent to which DoD will be competing with the private sector for skilled military and civilian workers. It also could examine the effect on average rank or grade of initiatives like privatization. These analyses would provide the basis for estimating any likely increase in the unit cost of manpower. (The analysis should be related to specific force options if possible.) Analysis could include studies of measures that might reduce these pressures, such as hiring people to be pilots only for fewer than 20 years with delayed retirement benefits.

Other Factors Affecting Costs. This task would provide an estimate of the effect of other upward pressures on costs and of any downward pressures that can be identified. The QDR-97 analysis included examination of contingency costs, the politically acceptable level of military construction, real property maintenance, and real growth in new systems costs. Analysis for QDR-01 might also examine real growth in maintenance costs for existing systems, inflation, and health care (if it has returned to its historic pattern).

Program Projection. This task will determine how costs will be displayed (e.g., the period of time covered, the type of dollars, and discount rates). It also will develop or review costs for the various pieces that make up force and preparation options to ensure reasonably consistent costing of alternatives. Finally, it will develop a variant of the DPP for each alternative program.

Integrating Evaluation Criteria

The main task for the Integration task during the preparatory phase is to develop a framework for organizing the body of material produced in all the individual analyses into options for decision makers. According to commentators, the framework should—

- Ensure that all issues of interest to those decision makers are addressed

- Produce results quickly

- Provide executive level displays with detailed backup, include objective and subjective evaluations

- Use several MOEs

- Include costs (perhaps in both constant and discounted dollars)

- Address risk, uncertainty, and sensitivity

- Show relationships and synergies within alternatives

Several potentially suitable methodologies were discussed at the MORS conference. Most were variations of scorecards. Some could include weighting factors. The one described in most detail was RAND's DYNARANK. It has been set up for the current strategy and can display a number of MOEs for each element of strategy at several levels of detail. Whatever integrating method is selected, the Integration group will need to adapt it to the strategies being examined and the MOEs selected. If long lead-time work has been successful in defining MOEs, the task will be relatively easy. If not, MOEs will have to be developed during the preparatory phase, as mentioned in the discussions of the Shape, Respond, and Prepare groups.

Organizing the Preparatory Work

If the primary purpose of the preparatory phase is to develop and exercise an analytical framework, it also should attempt to exercise the framework using options that may be of interest during QDR-01 itself. This section addresses three topics: the roles of the Steering and Working Groups during this formal preparatory phase, how options might be selected for examination during the preparatory phase, and how the work might be assigned.

Roles of the Steering and Working Groups

The small Steering Group established to guide long lead-time work could also guide the formal preparatory phase. To maximize acceptance of the products, however, it might be wise to expand it to include a representative from each Service. The Steering Group would approve a framework for analysis, adjudicate disagreements about the scope of work (or priorities as time runs short), and approve an integrating framework.

This report suggests two options for a Working Group for this phase: a group of about a dozen analysts drawn from OSD and the Joint Staff *or* a group of about three dozen analysts that also includes members from Service, CINC, and other staffs. Either group would have to establish the framework for analysis (the one suggested here or some other), select options for consideration, monitor progress, and redirect efforts as external circumstances changed (e.g., after the election) or as the work on one task affected the work of another. Either group also would need to specify a summary form and content for packaging work.

Neither size group is likely to have the time or the subject matter expertise to do much of the detailed work outlined above. The smaller group is likely only to be able to manage the flow of work. The larger group could also do the Integration task itself.

Selecting Options

As is evident from the scope of proposed long lead-time work, much may change in DoD's understanding of the current strategy by the spring of 2000. This improved understanding may, by itself, suggest specific options to be examined during the preparatory phase. A variety of changes in the external world also might motivate reexamination of some aspect of policy or programs. Additionally, decision-makers in the new administration may disagree with some QDR-97 decision(s) or, at least, be interested in reopening one or more of them.

Unfortunately, the views of those who will make final decisions in QDR-01 are not likely to be known until after the election in November 2000. A key variable in the scope of the preparatory analysis is, therefore, the extent to which work is done on radically different strategies and programs *if* there has been no change that would motivate the incumbent decision makers to examine such options.

The following paragraphs outline a proposal for how options and other specific topics might be selected for examination during the preparatory phase for QDR-01.

The working group would develop (or have developed by an appropriate organization) short papers on changes since QDR-97 in at least the following areas: the global security environment including potential threats and allies, success or failure in implementing the QDR-97 program and legislative agenda, new opportunities or requirements, and the fiscal environment.

These papers would be circulated for review. Comments on accuracy and completeness would be accepted, but the primary purpose of circulation would be to obtain views on what aspects of defense policy or programs ought to be reexamined in light of these changes and what options should be considered.

Additionally, reviewers who believe QDR-97 reached the wrong conclusion or did not consider a wide enough range of options could nominate aspects of the policy or program for reexamination on that basis and could suggest options for consideration.

Obviously, the wider the participation in this step the greater the probability of identifying the issues and options that will be of interest to those who make the final decisions. On the other hand, wide participation risks the premature development of strong opposition to certain options, the nomination of options that will not be of interest to the final decision makers, and the nomination of a very large number of options. The scope might be controlled by insisting that areas for examination and options be sponsored at a high level, e.g., Under Secretary, Service Vice Chief, and above.

To ensure that out-of-the-box ideas were nominated, the Working Group could solicit ideas from noted defense analysts or analytical organizations outside DoD. These could include the FFRDCs, private "think tanks" like Brookings or the American Enterprise Institute, and the Congressional Budget Office. Before the election, the Working Group could identify options of interest to those who may make or influence the final decisions. This could be done from the work of a National Defense Panel (NDP), if one precedes QDR-01, and from the public statements and writings of leading candidates for President and congressional leaders in national security affairs. Once a new President is elected, of course, his defense advisors likely would be consulted directly.

The Working Group would review suggestions and select topics for further work. The culling process should consider at least who or how many individuals nominated the topic, how much work already is available or ongoing and whether additional useful work can be done in the time available, and the amount of money in the defense program that might be affected. The Steering Group would adjudicate disagreements and priorities, if necessary.

Assigning the Work

The Working Group would identify completed or ongoing studies that could be used and any expansion of those efforts necessary as well as the best organization to lead any entirely new efforts required and the scope of those efforts. As a general rule, tasks

would be assigned to groups that normally do such work (e.g., the group that has done a series of joint mobility studies).

To balance concerns that new or controversial ideas may not get a fair examination from those who normally do such work, and concerns that the proponents of the proposed ideas exaggerated their benefits, the Working Group would specify that—

- A particular option be evaluated

- Its proponent be included in the analysis

- The proponent must describe the option in sufficient detail for the analysis methodology

- The evaluation must include the MOEs in the agreed integration framework

As a general rule, any organization would be allowed to participate in any task, and the inputs or evaluation criteria (or alternative points of view in non-quantitative analyses) of interest to participants would have to be examined, within the limits of time and analytical capability. The Working Group might want to specify what would be considered to be an organization; how many representatives an organization could have; and whether those representatives could have one or different voices.

They also might cover the level of effort expected of participants and the degree to which they are expected to represent their organization's views vice providing their own expertise.

In some cases, there will not be requisite expertise (e.g., projecting inflation or the availability of skilled manpower) in enough organizations to warrant establishing a multi-organization study group. In such cases, the Working Group could task a single organization to do unilateral work, which would be circulated for comment.

EXAMPLES

This section uses several hypothetical examples to illustrate how the framework for analysis might be employed to evaluate options proposed during the preparatory phase of QDR-01 (or in the QDR itself). The analyses described represent the type of work that might be done if the long lead-time efforts are successful in significantly improving DoD's understanding of and ability to analyze several aspects of the current strategy. For this to happen, long lead-time work must be started soon.

Variations in Strategy

Greater Emphasis on Preparing

The next administration might be interested in examining the strategy variant supported by the NDP of 1997, which put greater emphasis on preparing for the future at the expense of near-term capabilities. One or more alternative programs with this emphasis might be developed and evaluated as follows.

If the long lead-time studies have been successful, then the Technology group should be able to provide one or more alternative programs for greater emphasis on the Prepare aspect of the strategy. With input from the Technology and Operational Concepts groups, the Forces groups would construct future force packages with a richer mix of new capabilities. The Acquisition group would develop an acquisition plan for acquiring new capabilities on the fastest reasonable schedule. The Costs group would determine the time-phased requirement for additional spending for all these additions to the program. It also would assist the Forces group in developing one or more options for reducing near-term capabilities to pay the bill.

The smaller (than the current baseline) forces at the end of the FYDP and smaller (probably) but more advanced forces at some point in the future would be evaluated by the Shape and Respond groups. The more robust (than the current baseline) Preparing programs would be evaluated by the Prepare group.

The Integration group would compare the option (or options if more than one Preparing program is developed) with the baseline program for each element of the strategy. For example, the option likely would have less Shaping and responding capability than the baseline at the end of the FYDP and might have less Shaping capability in the future as well if it maintained significantly smaller forces. It should, however, provide more responding capability in the future, especially against threats employing new technologies or asymmetric threats.

Reduced Vulnerability to Simultaneous MTWs

A combination of new technologies and operational concepts might provide the opportunity to reduce our vulnerability to nearly simultaneous MTWs by providing forces that were relatively easily deployed yet could provide adequate capabilities for a holding phase. As in the previous example, the Technology, Operational Concepts, Forces, and Acquisition groups would have to flesh out the alternative program; the

Forces group, with help from Costs, would have to identify program offsets; and the Shape, Respond, and Prepare groups would have to evaluate the new program with help from the Mobility and Logistics groups.

As in the previous case, the Integration group would oversee all of these efforts and integrate the results.

Improvements Within the Strategy

Lean Logistics

By 2000, the Army may be able to define the more strategically mobile force module with leaner logistics requirements that has been postulated. As in the previous case, a program to develop and field such a force would have to be described, its cost estimated, and offsetting reductions within the FYDP described. The resulting forces, both near and long term, would have to be evaluated by the Shape and Respond groups. In this case, the Mobility and Logistics groups also would be heavily involved in the assessments.

Improved SSC Capabilities

Participants may suggest alternatives that reduce capabilities at the margin for MTWs in order to strengthen capabilities for SSCs. Alternatively, a combination of new technologies and new operational concepts might provide equal capabilities in MTWs from fewer forces, freeing resources to improve capabilities for SSCs. In either case, the Cost group would have to ensure that costs and savings were balanced, and the resulting programs would have to be evaluated by the Shape, Respond, and Prepare groups.

Accommodating Increased Costs

For any number of reasons, it may be apparent by 2000 that the program will cost more than projected. (For example, planned reductions in infrastructure costs may not have materialized or system costs for a major program like the Joint Strike Fighter may be higher than now projected.) If this increase is large enough, QDR-01 may wish to examine alternatives for accommodating it. (A similar situation would exist if a lower top line were to be examined or a significant new funding requirement (e.g., NMD) had to be accommodated within the program.)

Faced with similar problems in the past, DoD has delayed modernization and/or reduced forces more-or-less equally across the services. Options along those lines likely would be proposed in this case. Especially during the preparatory phase, however, the Working Group might wish to examine more radical options like asymmetric force reductions or alternative force sizing criteria. Such analysis might convince a wider group either that such alternatives were worth inclusion in QDR-01 or that they really do not offer significant benefits.

However the program reductions were selected, each would be evaluated by the Prepare, Shape, and Respond groups and results provided to the Integration group.

Changes in Requirements

QDR-97 noted the need for further analysis of strategic mobility with limited en route basing for airlift or when there is use or the threat of use of chemical or biological weapons. Analysis of these problems would begin in the Mobility group. It might conclude that deployment rates would be slowed so significantly in a particular scenario that the preferred operational concept could not be implemented. At this point two solutions might be possible. The Technologies and Operational Concepts groups might be able to suggest new capabilities that would again permit implementation of the preferred operational concept. In this case, offsets to field these new capabilities would have to be found and the resulting program evaluated by the Shape, Respond, and Prepare groups.

If no such solution could be found, the Operational Concepts and Strategy groups would have to develop an alternative way of dealing with the situations. The baseline program would have to be reevaluated for the new strategy and operational concept. In addition, participants might identify other options that seemed better suited to the new situation, and each of these would have to receive a full evaluation.

Appendix F
PROCESS DESIGN OPTIONS FOR QDR-01

Based on the feedback received from DoD and independent defense experts, in this appendix we present, in summary form, four overall QDR 2001 process design options for consideration.

The options offered here all share a number of features with regard to preparation, leadership, participation and buy-in, guidance, feedback and review, links to the PPBS, and timing issues. All four options feature relatively broad preparation, beginning at least a year before the QDR itself; strong, engaged leadership from the start of the QDR itself; open participation by all the major players in the process—OSD JS, Services, CINCs and Defense Agencies—beginning in the preparation effort and continuing through the QDR; early and extensive guidance provided to the participants, aimed at creating a vigorous, rigorous and fair review of alternative ideas and approaches; assessment teams (panels) led by OSD and appointed by the Secretary (with JS vice chairs appointed by the Secretary based on the nominations of the CJCS); relatively streamlined feedback, review and integration structures; and a QDR scheduled to permit the Secretary both to lead it from the start as well as to use the results of the review as guidance for the regular PPBS events in 2001.

The four options vary in two major respects: (1) the scope of the QDR envisioned in each, and (2) the size (and membership) of the QDR preparation teams in each case. As to scope, options 1 and 2—shown in Table F-1—focus most heavily on strategy and what may be called "special topics." Options 3 and 4, by contrast, are broader, encompassing strategy and special topics—as in options 1 and 2—but also incorporating an intensive programmatic review.

As to the preparation teams in these options, while OSD chairs them in each case, (with a vice chair from the JS), options 1 and 3 feature a comparatively small team, about a dozen members, drawn from OSD and the Joint Staff. Options 2 and 4, on the other hand, have relatively large preparation teams, approximately three dozen members, that are also more inclusive than those in 1 and 3—drawn not just from OSD and the Joint Staff but from the Services, CINCs, and the Defense Agencies as well.

Table F-1. Four QDR Process Design Options

	Scope: Emphasis on strategy and special topics	Scope: broader focus, more programmatic
Smaller preparation team (OSD/JS)	Option 1	Option 3
Larger preparation team (OSD/JS/Services/CINCs Defense Agencies)	Option 2	Option 4

These four options are alike in many ways and vary on two dimensions. After describing their principal similarities and differences, we will highlight what we believe to be the chief merits of these options and then identify some potential concerns that have been raised about them.

OPTION DESCRIPTIONS

Shared Features

Preparation

All four options feature a preparation period starting earlier, relatively, i.e., in March 2000, than did most of the preparation for QDR 1997. The preparation would also be more extensive than that in QDR-97, spread over three distinct phases. The three phases could be thought of as A, B, and C (Initial Preparation, Post-Election, and Final Preparation, respectively). Phase A would start in March 2000 and last until the election in November, about 8 months. Phase B would run from the election until the confirmation of the new Secretary, or 2.5 to 3 months. The new Secretary would lead Phase C in February, making final decisions on the QDR's agenda, process design, scope, special topics, explicit guidance, feedback and integration mechanisms, and timelines for intermediate and final products. (If the previous Secretary should be staying on, the QDR could almost certainly start, and potentially end, earlier than shown here.)

If an NDP is to be convened, its main phase (assessments of alternative strategies and force postures) would be held, in these options, in the year prior to the QDR, finishing that phase by December 2000. Thus the NDP's main work would be available as an input for consideration during the next QDR, rather than as a product completed after the QDR process is over, as was the case last time.

Even before this formal preparation effort is kicked off, a small, OSD-led steering group would be established, as early as the summer of 1998, to conceive, initiate, guide, and monitor *very* long lead-time efforts for the next QDR.

Leadership (and Option Development)

The Secretary and the Deputy Secretary would lead the QDR process, with advice from the CJCS and the other Joint Chiefs. Deliberate steps would be taken to elicit a wide range of views and analyses for the Secretary to consider. The general concept here is that the more vigorous, rigorous, and wide-ranging the alternatives that are developed and used to challenge current approaches and paradigms within DoD, the better informed the Secretary will be as to how sound the *current* course is, what plausible alternatives exist, and whether any of them compare especially favorably with the current path. [1]

Participation in the QDR

Each option would include regular, open meetings similar to those of the QDR 1997 SecDef Review Group and the Senior Steering Group.

Assessment Team (Panel) Structure

Each QDR assessment team, or panel, would feature a civilian chair and a military vice chair, both appointed by the Secretary based on nominations and advice from key civilian aides and from the CJCS.

Review/Integration Structure of the QDR

The review and integration structure for the next QDR in these options would consist of a small, senior group, explicitly empowered by the Secretary to guide and integrate the process from the start, chaired by a civilian, with a military vice chair.

---

1   A number of steps could be taken to promote vigorous evaluation of alternatives both in the preparation phase and in the QDR itself: (1) Establish independent review and feedback from one or two small groups appointed by the Secretary from outside the current the DoD structure, e.g., former Secretaries and/or FFRDC presidents; (2) Commission, during the preparation phase, several independent studies to develop and assess concrete, alternative approaches in half a dozen key areas of strategy, force structure, approaches to shaping, responding, and preparing; (3) Establish one or more "challenge teams" whose job it would be to encourage consideration of promising alternative points of view and analyses—during the preparation phase as well as in each of the assessment teams in the QDR; (4) Establish at the outset, as part of the Secretary's guidance, several explicit alternatives that each group would at a minimum be tasked to assess and compare with the status quo as part of their charter; (5) Structure rewards that could be offered to teams or individuals with the most compelling analyses (as judged by an independent panel appointed by the Secretary).

Linkages to PPBS

This process would draw upon the best available PPBS products and processes as important inputs; it would also be structured and timed to provide clear, timely, strategic and programmatic guidance to participants in the regular PPBS process.

QDR Timing

The QDR itself would run from March through June 2001. In the March–June timeframe, the last two QDR components—Integration and Sec Def's Decisions—would culminate in guidance to DoD components for the next PPBS cycle as well as issuance of an interim QDR report for Congress, e.g., a strategy document and a summary of major program implications. The *final* QDR report to the Congress (along with programmatic detail resulting from the PPBS program review) would be submitted in February 2002 as a companion to the President's budget and program submissions for FY 2003.

VARIATIONS IN SCOPE AND PREPARATION TEAMS

While the four options all share the features just described, they differ in two key respects: 1) the scope (or emphasis and level of detail) of the proposed QDR, and 2) the size (and composition) of their proposed preparation teams.

Options 1 and 2 would concentrate on both a comprehensive strategy assessment as well as a small set of studies of special topics to be specified by the Secretary, e.g., "How to Transform the Force," or "Implementing the Revolution in Business Affairs." These two options (1 and 2), would assess very major program implications of the new strategy as well, but they would defer detailed program development and evaluation to the normal programming cycle, based on guidance to be provided by the Secretary (presumably on the basis of decisions made within the QDR).

Options 3 and 4, by contrast, would address more than strategy and special topics; they also develop and analyze programs in some detail, much as was done in QDR 1997.

The preparation teams for Options 1 and 3 would be comparatively small as well as select in composition, comprising approximately a dozen relatively senior OSD and Joint Staff members. By contrast, the preparation team concept for Options 2 and 4 would involve roughly three dozen members, including experts from OSD, the Joint Staff, the Services, the CINCs and the Defense Agencies.

There are, of course, many possible QDR process options beyond those we have outlined here. Chapter 5 of this report offers a rather sizable menu. Beyond those, for example, a three–dozen member preparation team comprised of OSD and Joint staff personnel is another possibility. Still another is a QDR of scope close to that in options 3&4, but not necessarily involving nearly as many DoD participants as did QDR-97.

The four options we have outlined in this appendix all have potential down-sides, as suggested by some of the types of concerns cited in the tables of this appendix. Overall, however, it is our belief that the strengths of the features described in Table F-2 are likely to outweigh the concerns about them for the next QDR.

As for the scope of the next QDR, the Secretary of Defense during the next QDR will most likely make the final decisions regarding agenda and priorities. But the strength and impartiality of the QDR preparatory effort that is, or is not, conducted over the next several years within DoD, are likely to be extremely important determinants as to how well positioned the next Secretary will actually be when the time arrives to take advantage of the next QDR. Accordingly, the construction of an excellent QDR preparation process, and the selection of an outstanding group to build and oversee coordination of it, appear to be vitally important tasks for the current leadership of the DoD to address as soon as practicable. A process that engages the most outstanding analytic talent from throughout the Department in a collaborative effort to build a DoD-wide strategy-resource comparison process should provide the best chance to conduct a QDR of whatever scope the next Secretary ultimately deems best.

STRENGTHS OF THESE PROCESS OPTIONS AND SOME RELATED CONCERNS

What are some of the key strengths of these four QDR process design options? What are the chief concerns? Since the options are alike in many respects, this section addresses their shared features. Table F-2 summarizes many of their key strengths; it also lays out some concerns that various observers have raised.[2]

---

[2] Chapter 5 of this report laid out the strengths and concerns regarding many of the process elements discussed in this appendix. Accordingly, in this part of the paper we present the key points in tabular form, rather than describing them again at length.

**Table F-2. Strengths and Concerns regarding Shared Features of
Four QDR Process Options (Page 1 of 2)**

QDR Process Feature	Strengths	Concerns

Extensive Preparation Period	• SecDef better prepared whatever the scope
	   Pre-tests
	   Data preparation
	   Issue development
	• Good chance to build on QDR-97 strategy-resource assessment process in DoD-wide, collaborative mode
	• SecDef leads, guides QDR from start
	• Less waiting-around time at start of QDR
	• If NDP main phase precedes QDR, results could be key QDR inputs for explicit consideration
		• What is the benefit to the current team of focusing on the next QDR?
		• If this preparation effort is an in-house effort only, what important changes will result? Will they be worth the effort?

Strong Engaged Leadership	• SecDef leadership essential–demonstrate importance of vigorous, rigorous, impartial review • Establish and implement SecDef's priorities • Other DoD component leaders should not be expected to make some tough calls	• New SecDef will have a very full plate; it will be difficult to find free time; SecDef will need a deputy or deputies for this effort; will new OSD deputies be on board?
Inclusive Participation	• All DoD components have smart, experienced experts whose participation can make a better QDR product • Fair, impartial processes call for sufficient openness	• Harder to get actual work done/decisions made • Higher opportunity costs
Assessment Panels: OSD Chair; JS Vice Chair	• Underscores SecDef leadership and relies heavily on CJCS advice • Gives SecDef clearer lines for coordination	• Places great premium on skilled OSD leadership and collaboration with JS

**Table F-2. Strengths and Concerns regarding Shared Features of
Four QDR Process Options (Page 2 of 2)**

QDR Process Feature	Strengths	Concerns
Small, Streamlined Guidance/Integration/Review Group	• Small groups can lead better than large, and strong guidance, feedback integration essential	• Small groups can more easily shut out important alternatives
QDR Serves Strong Forcing Function for PPBS	• Vigorous, impartial review of issues PPBS doesn't often get to is key to charting the best course	• Major change difficult from within a bureaucracy • Fix PPBS if there's a problem with it (versus adding another "band-aid")
QDR Timing: March-June 2001	• SecDef leads, guides from start • Ends in time to feed FY2003 budget/program process	• Who in OSD besides SecDef will be in place by then? • Even with great preparation, too short

Table F-3 presents strengths and concerns regarding both the "scope" options for the next QDR that we outlined above as well as for the alternatives described earlier with respect to the size and composition of the QDR preparation teams.

**Table F-3. Strengths and Concerns Regarding Scope and Preparation Team
Alternatives for the Next QDR (Page 1 of 2)**

Process Feature	Strengths	Concerns
Scope of the QDR: Strategy and Special Topics (Options 1 and 2)	• Focuses on major directions, priorities, special topics • Doesn't duplicate regular PPBS process • Doesn't micro-manage	• May not allow visibility into enough detail to identify good ways to make progress • Broad strategy without specifics risks being empty rhetoric
Scope of the QDR: Strategy, Special Topics, and Programmatic Analyses (Options 3&4)	• Allows more joint program development at start of an administration than regular PPBS may allow • Gets to details that may be necessary to make significant progress	• Risks doing program review twice without adding much value • Risks diverting many people from other important tasks without a clear pay-off

**Table F-3. Strengths and Concerns Regarding Scope and Preparation Team
Alternatives for the Next QDR (Page 2 of 2)**

Process Feature	Strengths	Concerns
Preparation Team: relatively small, comprised of OSD and JS (Options 1&3)	• DoD-wide/joint perspective • Easier to assemble	• Will group have sufficient access to expertise, best data and analytic devices that non-members have? • Will non-members buy in sufficiently? • More work to do per member
Preparation Team: relatively large, comprised of OSD, JS, Services, CINCs, Agencies (Options 2&4)	• Engages all major components in collaborative effort • Increases group access to important expertise, other resources • Less work per member	• Larger, more diverse groups often harder to coordinate • Larger effort is more costly in time, people • Larger potential for leaks, paralysis

Appendix G
GLOSSARY

AAAV	Advanced Amphibious Assault Vehicle
AC	Active Component
ACTD	Advanced Concept Technology Demonstrations
AOR	Area of Responsibility
BEF	Base Engagement Force
BRAC	Base Realignment and Closure
BUR	Bottom-Up Review
C4ISR	Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance
CAPS	Contingency Analysis Planning System
CC-TACWAR	Configuration Control Version of TACWAR
CFAM	Conventional Force Assessment Model
CINC	Commander-in-Chief
CJCS	Chairman of the Joint Chiefs of Staff
CNA	Center for Naval Analyses
CORM	Commission on Roles and Missions of the Armed Forces
COST	Contingency Operations Support Tool
CTEM	Conventional Effectiveness Targeting Model
CVBG	Carrier Battle Group
DAWMS	Deep Attack Weapons Mix Study
DIA	Defense Intelligence Agency
DPG	Defense Planning Guidance

DPP	Defense Program Projection
DRID	Defense Reform Initiative Directive
FFRDC	Federally Funded Research and Development Center
FY	Fiscal Year
FYDP	Future Years Defense Program
GPS	Global Positioning System
IDA	Institute for Defense Analyses
IG	Integration Group (QDR)
IOC	Initial Operational Capability
JCS	Joint Chiefs of Staff
JMETL	Joint Mission Essential Task List
JROC	Joint Requirements Oversight Council
JS	Joint Staff
JSPS	Joint Strategic Planning System
JSR	Joint Strategy Review
JSTARS	Joint STARS
JUTL	Joint Universal Task List
JV2010	Joint Vision 2010
JWARS	Joint Warfare System
JWCA	Joint Warfighting Capability Assessment
LMI	Logistics Management Institute
MEADS	Maintenance Engineering Analysis Data System
MIS	Management Information System
MOE	Measure of Effectiveness
MORS	Military Operations Research Symposium
MOUT	Military Operations in Urban Terrain

MTI	Multi-Terminal Interface
MTW	Major Theater War
NDP	National Defense Panel
NMD	National Missile Defense
NSSM	National Security Study Memorandum
O&S	Operations and Support
OPTEMPO	Operational Tempo
PERSTEMPO	Personnel Tempo
PPBS	Planning, Programming and Budgeting System
QDR	Quadrennial Defense Review
RBA	Revolution in Business Affairs
RC	Reserve Component
RMA	Revolution in Military Affairs
SO	Special Operations
SSC	Small Scale Contingency
SSG	Senior Steering Group (QDR)
START	Strategic Arms Reductions Talk
TACWAR	Tactical Warfare Simulation
THAAD	Theater High Altitude Area Defense
UAV (HAE)	Unmanned Aerial Vehicle (High Altitude Endurance)
WMD	Weapons of Mass Destruction
WORRM	Weapon Optimization Resource Requirements Model

Appendix H
BIBLIOGRAPHY

Air Force Publication 1. *Joint Staff Officers' Guide*. 1997.

Altshuler, Alan, and William Parent. Breaking Old Rules: Four Themes for the 21st Century. *Innovations: Achieving Excellence, Building Trust.* 1997.

Atwell, Robert. CAPS Prototype Brief, IDA April 1998.

Biddle, Steven. Victory Misunderstood: What the Gulf War Tells Us about Future Conflict. *International Security*, Vol. 21, No. 2. Fall 1996:139–179.

Blaker, James. The QDR: An Assessment. *Progressive Policy Institute Backgrounder.* May 20, 1997.

Blaker, James. *Understanding the Revolution in Military Affairs: A guide to America's 21st Century Defense*. Progressive Policy Institute Defense Working Paper No. 3. January 1997.

Blechman, Barry M., William J. Durch, David R. Graham, John H. Henshaw, Pamela L. Reed, Victor A. Utgoff, and Steven A. Wolfe. *Key West Revisited, Roles and Missions of the US Armed Forces in the Twenty-first Century*. Reprint No. 8. Washington, DC: Henry L. Stimson Center. March 1993.

Bovey, Robert. *National Security Study Memorandum 3 (NSSM-3): A Pivotal Initiative in U.S. Defense Policy Development*. IDA Document D-2147. Alexandria, VA: Institute for Defense Analyses. September 1998.

Cahlink, George. Congress May Extend NDP Through the End of 1998. *Inside the Army.* March 2, 1998.

Campbell, Donald. *The Experimenting Society*, 1978.

Cebrowski, VADM Arthur (USN), and John Garstka. Network-Centric Warfare: Its Origin and Future. *Naval Institute Proceedings.* January 1998:29–35.

Clifford, John. The SeaPWR Model, a briefing presented at a MORS QDR Symposium, Johns Hopkins Advanced Physics Lab, Laurel, MD, April 7-9, 1998.

Coats, Dan and Joseph Lieberman. A Reformed Military for the 21st Century. *Washington Times.* December 1, 1997.

Cohen, William S. Speech to the 1998 Eisenhower Institute Leadership Dinner, April 28,1998.

———. "Defense: Getting Down to Basics," *Washington Post*, April 22, 1998: A23.

———. *Defense Reform Initiative Report.* Department of Defense. November 1997.

———. *Report of the Quadrennial Defense Review*. Department of Defense. May 1997.

Commission on Roles and Missions of the Armed Forces, *Directions for Defense*, May 1995.

Covey, Stephen R. The *Seven Habits of Highly Effective People*. Fireside Press, 1989.

De Geus, Arie. Planning as Learning. *Harvard Business Review*. Mar–Apr 1988:70–74.

Department of Defense. *Assessment of the Impact of Chemical and Biological Weapons on Joint Operations in 2010 (CB2010 Study), Summary Report*. November 1997.

Deptula, Dave, and Doug Crowder. Strategy Development (Task 3) Overview. *NDP Strategies and Capabilities, Pre-Decisional Material.* Session held at RAND, August 4, 1997.

Deputy Chief of Naval Operations. *Force 200: Vision...Presence...Power...* Washington, DC: Resources, Warfare Requirements, and Assessments (N8), 1997.

Dixit, Avinash, and Barry Nalebuff. *Thinking Strategically: The Competitive Edge in Business, Politics, and Everyday Life.* New York and London: W.W. Norton and Co., 1991.

Durch, William J., and Barry M. Blechman. *Keeping the Peace: The United Nations in the Emerging World Order*. Washington, DC: The Henry L. Stimson Center, 1992.

Fischer, Roger, and Scott Brown. *Getting Together.* Boston: Houghton Mifflin Co., 1988.

Fulghum, David A. Navy Study Tackles 21st Century Threats. *Aviation Week & Space Technology*. November 10, 1997:32.

Gaddis, John Lewis. *History, Grand Strategy and NATO Enlargement*. International Institute for Strategic Studies. Spring 1998.

Gates, William. *The Road Ahead*. Viking, 1995.

———. In the PC Industry, Innovation Feeds Success. *Internet*. January 1, 1998.

Goble, Frank G. *The Third Force, The Psychology of Abraham Maslow*. New York: Grossman Publishers, 1970.

Gore, Albert, Jr. *From Red Tape to Results: Creating A Government that Works Better and Costs Less, Report of the National Performance Review*. Washington, DC: Government Printing Office.

Goree, Paul. COST Model Brief. Alexandria, VA: Institute for Defense Analyses, April 1998.

Graham, Bradley. U.S. Studies New Threat: Cyber Attack, *The Washington Po*st, May 24, 1998.

———. Pentagon Orders Base Contracting Reviewed. *Washington Post*. May 6, 1998: A10.

———. Experts Urge Upgraded Defense of U.S. Territory. Washington Post. December 2, 1997:15.

———. Local Authorities Train to Handle New Threat. *Washington Post.* January 1, 1998:A1.

Graham, David, and Herschel Kanter, et al. *Linking Acquisiton Decisionmaking with National Military Strategy*, IDA Report R-366. Alexandria, VA: Institute for Defense Analyses, October 1990.

Grossman, Elaine. Cohen signs Plan Giving Atlantic Command Joint Experimentation Role, *Inside the Pentagon*, Vol. 14, No. 20, May 21, 1998.

Hart, B.H. Liddell. *Strategy*. Signet, 1974.

Hempel, Carl. *Philosophy of Natural Science.* Englewood Cliffs, NJ: Prentice Hall, Inc., 1966.

Huey, John. The New Post-heroic Leadership. *Fortune.* February 21, 1994.

Jaffe, Lorna S. *The Development of the Base Force, 1989-92.* Office of the CJCS, Joint History Office 6.86.

Kennedy, John F. *Profiles in Courage*. New York and London: Harper and Row, 1964.

Kerlinger, Fred N. *The Foundations of Behavioral Research.* Holt, Rinehart and Winston, Inc., 1964.

Kitfield, James. The Air Force Wants to Spread Its Wings. *National Journal*. November 8, 1997:2264.

Kotter, John. *Leading Change.* Harvard Business School Press, 1995.

———. Why Transformation Efforts Fail. *Harvard Business Review*. March 1995.

Larman, David. Hampton Roads Navy bases first for new strategy, *Newport News Daily Press*, November 29, 1997:C1.

Melese, Francois. Gain-Sharing, Success-Sharing and Cost-Based Transfer Pricing: A New Budgeting Approach for the Department of Defense. *Military Operations Research*, Vol. 3, No. 1, 1997:23–50.

Michaelson, Cdr Kirk, OSD (PA&E). The Force Presence Model, a briefing presented at a MORS QDR Symposium, Johns Hopkins Advanced Physics Lab, Laurel, MD, April 7-9, 1998.

NDP Final Report Press Conference, December 1, 1997.

Neustadt, Richard, and Ernest May. *Thinking in Time: The Uses of History for Decision-Makers*. The Free Press, 1986.

Nye, Joseph Jr., *Bound to Lead, The Changing Nature of American Power*. New York: Basic Books, Inc., 1990.

O'deen, Philip, et al. *Transforming Defense: Report of the National Defense Panel*. December 1997.

———. *Assessment of the May 1997 Quadrennial Defense Review, A Preliminary Report of the National Defense Panel*. May 15, 1997.

Office of the Assistant Secretary of Defense (Public Affairs). Department of Defense Budget for FY1999. *News Release No. 026-98*. February 2, 1998.

Office of the Chief of Staff, Army, Program Analysis and Evaluation Directorate. *Dynamic Strategic Resource Planning: Toward Properly Resourcing The Army in an Uncertain Environment*, Technical Report 97-03. (Draft)

Palmore, Julian, and Paul Davis. "Warfare Analysis and the New Sciences," *Phalanx,* Vol. 30, No.4., 1997.

Personnel Decisions. Inc., *Successful Manager Handbook*, 1992.

Peter, Dr. Laurence J. *The Peter Prescription*. New York: Bantam, 1973.

Pexton, Patrick. Cohen focuses sights on Terrorism. *Navy Times*. September 22, 1997.

RAND. *QDR Analysis: A Retrospective Look at Joint Staff Participation*. Draft Working Paper NDRI. October 1997.

Ricks, Thomas. Panel Calls for the Pentagon to Change the Way it Thinks About Future Operations. *Wall Street Journal*. December 1, 1997.

Roege, Lt. Col. William, OASD (S&TR). Small Scale Contingency Force Requirements Study: A Briefing, presented 18 June 1997.

Roske, Vincent. Making Analysis Relevant, *Phalanx*, Vol. 31, No.1, March 1998.

Scarborough, Rowan. Pentagon Eyes Cuts, Peacekeeping Focus. *Washington Times*. December 13, 1996:1.

Serwer, Andrew. Lessons From America's Fastest Growing Companies, *Fortune*, August 8, 1994.

Shalikashvili, Gen. John., Chairman of the Joint Chiefs of Staff. *Joint Vision 2010*. Department of Defense. 1996.

Smart, Tim. Getting the F-22 Off the Ground, *Washington Post*, April 20, 1998 (Business Section, p.12.).

Stubbing, Richard A., with R. Mendel. *The Defense Game.* New York: Harper & Row, 1986.

The Spending Outlook. *The Economic and Budget Outlook: Fiscal Years 1999-2008*, January 1998.

Thomason, James S., et al. *Evolving Service Roles in Presence Missions*, IDA Paper, P-3146. Alexandria, VA: Institute for Defense Analyses, 1995.

Thomason, James S. et al. Presence Analyses for the Commission on Roles and Missions of the Armed Forces, IDA Document D-1707. Alexandria, VA: Institute for Defense Analyses, April 1995.

Tillson, John C. F., et al. *Force Planning For the 21st Century, New Approaches to Scenarios, Operational Concepts and Forces* (U)*,* IDA Paper P-2640. Alexandria, VA: Institute for Defense Analyses, October 1992.

U.S. Congress, Defense Authorization Act for FY1997.

Van Creveld, Martin. *Technology and War: From 2000 B..C. To the Present*. New York: The Free Press, 1991.

Webb, Eugene, et al. *Unobtrusive Measures: Non-Reactive Research in the Social Sciences*. Rand McNally & Company, 1966.

Weigley, Russell. *The American Way of War, A History of United States Military Strategy and Policy*. Bloomington, Indiana: Indiana University Press, 1973.

Weiner, Tim. Two-War Strategy is Obsolete, Panel of Defense Experts Says. *New York Times*. December 2, 1997.

Wildavsky, Aaron. *The Politics of the Budgetary Process.* Boston: Little, Brown and Company. 1964.

Wills, Garry. What Makes a Good Leader? *The Atlantic Monthly*. April 1994.

Wilson, George C. Reimer: Guarantee Deployed Soldiers Time at Home Base. *Army Times.* November 17, 1997:16.

Womack, James, et al. *The Machine That Changed the World*. New York: Harper Perennial, 1991.