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OPERATION DESERT STORM

Limits on the Role and Performance of B-52 Bombers in Conventional Conflicts



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The Honorable Sam Nunn
Chairman, Committee on Armed Services
United States Senate

The Honorable John Warner
United States Senate

At your requests, we evaluated the role and performance of B-52 bombers in Operation Desert Storm as well as the implications for its future conventional use. This letter contains an unclassified summary of our classified report on that subject.

Unless you announce its contents earlier, we plan no further distribution of this report until 30 days from its issue date. At that time, we will send copies to the Secretaries of Defense, the Army, and the Air Force. Copies may also be made available to others upon request.

This summary was prepared under the direction of Nancy Kingsbury, who may be reached on (202) 512-5074 if you or your staff have any questions. Other major contributors are listed in appendix I.


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Summary

Purpose

World events have offered policymakers an opportunity to reexamine the role of long-range strategic bombers. The cancellation of the bombers' 24-hour nuclear alert not only reflects the transformation of relations with the former Soviet Union but also the diminished threat of nuclear war. Consequently, the future contribution of bombers will center on their conventional capability. As the first conventional use of strategic bombers since Vietnam, Operation Desert Storm provides key insights relative to that contribution. At the request of the Chairman and former Ranking Minority Member of the Senate Committee on Armed Services, GAO evaluated the role and performance of bombers during the operation as well as the implications for their future conventional use.

Background

B-52 bombers were part of a team of air and ground forces assembled by the U.S. and its allies to compel Iraq to abandon its takeover of Kuwait. The Commander of the U. S. Central Command (CENTCOM) was responsible for developing the war plan that orchestrated coalition military efforts. The CENTCOM air component, Central Air Forces (CENTAF), exercised operational control over 1,900 combat aircraft—75 B-52s and the rest tactical aircraft. During the war, these aircraft flew nearly 50,000 combat sorties against both Iraqi ground forces and fixed targets.

The B-52's Desert Storm experience and the events that followed marked the beginning of the shift from the bomber's former nuclear role to its new conventional role. The Strategic Air Command (SAC) prepared, provided, and supported the B-52s that participated in the war. SAC, a major supporting command whose primary mission was nuclear deterrence, began placing more emphasis on conventional operations in the mid-1980s. Following the war, SAC was dissolved and responsibility for strategic bombers was merged with tactical aircraft under the new conventionally oriented Air Combat Command. Reflecting the significance of the changes confronting the strategic bomber force, in 1991, Congress directed the Department of Defense (DOD) to reassess bomber requirements and capabilities. In June 1992, the Air Force responded with "The Bomber Roadmap," a plan to enhance the B-52s and other bombers for conventional operations. The Air Force roadmap proposes an operational concept for bomber employment and outlines investments needed to support that concept.

Results in Brief

The limited role of strategic bombers in Desert Storm, coupled with employment, equipment, and training problems, precludes a definitive

assessment of the contribution they can make in a conventional conflict. The B-52's contribution during Desert Storm was not clearly discernable from that of other aircraft. The primary role assigned to both B-52 bombers and tactical aircraft was to help prepare the battlefield for an eventual ground assault. The objective of the B-52's role was psychological—to undermine the morale of Iraqi ground forces through periodic bombardment. The B-52 played a limited role in attacking fixed targets such as industrial facilities. The sheer number of other aircraft attacking the same targets and inadequate battle damage assessments make it difficult to isolate the B-52's contribution.

Despite the inconclusiveness of the B-52's specific contribution during Desert Storm, its employment surfaced several issues that should be addressed in deciding the future of the bomber force. First, because the B-52 was often employed like a tactical fighter aircraft, Desert Storm did not make full use of its conventional capabilities. While used primarily to attack mobile ground force targets involving last minute target changes, the B-52 was designed to attack fixed targets. Moreover, against fixed targets, CENTAF bomber planners indicated that the number of B-52s employed was often insufficient to achieve significant levels of damage. In this sense, the B-52 fulfilled the objectives of the theater commander without necessarily maximizing its inherent capabilities.

Second, the nuclear orientation of the B-52 force found it inadequately prepared for the demands of Desert Storm conventional missions. The nuclear role emphasized long-range, centrally planned strikes against fixed targets, in which lone bombers attacked from low altitudes with little communication. During Desert Storm, B-52s attacked from high altitudes, required tactical fighter support, and carried out strikes in closely coordinated groups of aircraft. Proximity to targets was key as the bombers based closest to targets carried out the majority of missions. Moreover, the assigned targets often changed, requiring frequent communications to update plans. In addition to planning, operations, and training problems, these different demands also revealed B-52 equipment deficiencies.

Finally, B-52 support during Desert Storm was at the same time a notable success story and an object lesson in the magnitude of the effort required to sustain B-52 operations overseas. While high readiness rates were maintained by B-52s throughout Desert Storm, this performance required a dedicated effort on the part of SAC because most bombers were located at bases remote from Iraqi targets. Additionally, the supply system was

barely able to keep pace with the B-52's high demand for munitions and in some cases, the mix of munitions was not well-suited to mission needs.

Key issues confront policymakers concerning the future of the strategic bomber force. Consolidation of responsibility for all combat aircraft in the Air Combat Command has the potential to improve the conventional utility of strategic bombers. Nevertheless, GAO believes that the need for theater commanders to play a more active peacetime role in identifying bomber equipment and training priorities was a major lesson learned during Desert Storm. However, the bomber priorities embodied in the Air Force roadmap—such as fixed targets and long range, autonomous operations—do not reflect the theater commander's use of B-52s in Desert Storm. Nor did the Air Force seek input from theater commanders in developing its roadmap. The B-52's experience, by itself, is not sufficient to answer the question of how bombers can best be used in a conventional role. This question must be answered for all strategic bombers before resources are devoted to enhancing their conventional mission capabilities.

Principal Findings

B-52's Desert Storm Contribution Is Difficult to Isolate

The B-52's contribution during Desert Storm does not stand out since its role was similar to that of the far more numerous tactical aircraft. Had the bomber's role been more tailored to its strengths, its contribution may have been more discernable. However, the B-52's role reflected the needs of the theater commander in that the aircraft did what was asked of it.

During the war, B-52s flew just over 3 percent of the total air combat missions but accounted for 30 percent of the munitions tonnage released. Mirroring the employment of tactical aircraft, about 70 percent of B-52 sorties were directed against Iraqi ground forces, with the remainder against fixed targets. According to the CENTAF commander, the B-52 was effective against ground forces by maintaining constant pressure through regular bombing strikes. However, it was not possible to isolate the contribution of B-52s from the considerably greater tonnage released by tactical aircraft in a far larger number of strikes against the same or similar targets.

The B-52's contribution against fixed targets should be more readily apparent since the objective was to inflict damage and the aircraft was designed with such targets in mind. But because fixed targets were a lower B-52 priority and because they were also attacked by a greater number of tactical aircraft, a unique contribution by the B-52 force is not discernable. Other factors also limited the B-52's contribution against fixed targets. First, because intelligence personnel supporting B-52 operations were not directly involved in mission planning, planners often selected targets without really knowing the number of bombers needed to produce significant target damage. As a result, the number of B-52s used to strike fixed targets was often insufficient and the targets had to be struck over again. Second, a bombing system bias, coupled with unanticipated side effects from the high altitude employment tactic, produced bombing inaccuracies.

A final factor that clouds an assessment of the B-52's contribution against either kind of target was the inadequacy of battle damage assessments. The lack of accurate and timely assessments hampered feedback on bombing damage throughout the air campaign and precluded making a sound determination of when damage was inflicted and by what aircraft. As a result, such determinations are largely subjective.

Nuclear Orientation of B-52 Force Impeded Conventional Performance

The B-52 force was not adequately prepared to meet all of the demands placed on it by Desert Storm operations. The force was optimized for long-range nuclear strikes that entailed different training and equipment priorities than a conventionally oriented force. In fact, many of the assumptions implicit in the profile of a nuclear mission are immaterial in a conventional setting. These differences created significant problems both for SAC, as it attempted to react to emerging problems prior to and during the war, and for deployed B-52 units. Ultimately, most adjustments were made during, rather than before, the conflict.

Perhaps the most significant and widely discussed B-52 training deficiency was the almost exclusive focus on low-altitude operations. Both prior to the invasion of Kuwait and in the months preceding the war, SAC emphasized low-altitude training as the best way to increase bomber survivability. Despite the warnings of a predominately high-altitude war, B-52 crews that flew during Desert Storm had limited exposure to high-altitude bombing. Aircrews continued to use techniques and maneuvers appropriate to the low-level environment or were less

proficient at procedures such as radar tuning that were affected by the higher altitudes.

The limited high-altitude exposure of B-52 crews was compounded by SAC's assumption that B-52s would operate autonomously, flying alone or with a few other bombers. Thus, there was no emphasis on operating with fighter support packages provided to help defeat the threat. The first time many SAC crews were exposed to airborne warning aircraft or Air Force and Navy tactical fighters was during the war. Even within a B-52 strike package, SAC's approach tended to view each bomber in the package as independent. Because SAC lacked standardized procedures for attacking in formations, crews from different units were reluctant to fly together.

Adapting the B-52 force to its high-altitude Desert Storm missions revealed equipment limitations as well. Problems in the bombing system resulted in bombs missing their intended fixed targets by a greater-than-expected distance. Furthermore, the recently upgraded defensive system—intended to jam enemy radar and provide protection from enemy threats—had to be supplemented with Vietnam-era jammers that had been in storage. Since enough jammers could not be located for all Desert Storm B-52s, some aircraft could not be used in strikes against certain fixed targets.

Large Effort Required to Sustain B-52 Operations at Remote Bases

Both before and during Desert Storm, all deployed forces placed enormous demands on the Air Force airlift system. Because of the resulting airlift delays, SAC used its own tanker aircraft whenever possible to move B-52 personnel and cargo to forward operating locations rather than waiting for other support. SAC tankers moved 46 percent of the equipment and parts needed by deployed SAC assets and were critical to maintaining high B-52 readiness rates. SAC's support effort was further complicated by the fact that three of the four B-52 bases used during the war were over 3,500 miles away from the combat theater. With the Air Force's decision to dissolve SAC, the bomber has lost a strong advocate unilaterally able to underwrite that sizeable logistics effort. In the future, theater commanders will have to assign a high priority to bombers if a similar level of readiness is to be achieved.

The movement of munitions is another example of the extensive support required for B-52 operations. An early buildup of munitions was mandated by the volume of bombs consumed by each B-52 strike. Prepositioned stocks in the CENTAF theater contained only a small quantity of older B-52 bombs and components intended for low-altitude operations. Bombs using

such components descend unpredictably, and they were not considered suitable for the war's high-altitude tactic. However, CENTAF did not authorize the shipment of B-52 munitions until late December 1990, about 17 days before the war started. The consequence of this delay and rapidly dwindling stockpiles in theater was heavy reliance on airlift to support B-52 munitions needs during the war. Without airlift, B-52s at one base would have run out of munitions by the end of January.

An issue related to the overall availability of munitions was their suitability for the specific targets being struck by B-52s. Operational planners at two Desert Storm B-52 units believed that they lacked an appropriate mix of munitions that would have given them a better chance of achieving mission objectives. Frequent, last-minute target changes also resulted in B-52s dropping less than the optimum munitions on some targets.

Matter for Congressional Consideration and Recommendations

GAO believes that Congress should consider setting aside any major proposals to modify bombers for conventional operations until DOD determines how best to employ strategic bombers in conventional conflicts.

To assist DOD in making such a determination, GAO recommends that the Secretary of Defense direct the Chairman of the Joint Chiefs of Staff to (1) reconcile the different priorities reflected in the B-52's Desert Storm experience and the Air Force Bomber Roadmap and (2) ensure that theater commanders are a major player in defining the bomber's role and the subsequent training and equipment priorities.

Additional recommendations are contained in GAO's classified report.

Agency Comments

DOD noted that the report contained many valid and useful observations concerning DOD's efforts in Desert Storm. However, DOD took exception with many of the report's conclusions and recommendations.

At the heart of DOD's concern are (1) the report's scope was broadened to include the utilization of systems other than the B-52 and systemic problems that affected the conduct of the war, (2) DOD's perception that GAO believes Desert Storm established a standard for all future conventional conflicts, and (3) DOD's disagreement that new policy directives and procedures are needed to address Desert Storm

shortcomings and foster development of a consensus on the bomber's utility in future conventional conflicts.

Regarding the first concern, the scope of the report is necessarily broad because a fair and objective assessment of the B-52's role and performance requires an understanding of the context in which bombers operated. For example, since both bombers and tactical fighters were used to attack Iraqi ground forces, it was important to understand their respective roles and the underlying objectives. Similarly, because poor feedback affected the performance of both B-52 crews and mission planners, GAO examined how bomb damage information was collected, assessed, and communicated. In short, understanding Desert Storm air combat operations was a prerequisite to assessing the bomber's contribution.

Second, GAO agrees that Desert Storm is not the only standard for measuring future bomber capabilities. Rather, as stated in the report, it represents the first conventional use of strategic bombers since Vietnam, and the first such use in the post-Cold War era. Accordingly, GAO believes Desert Storm provides key insights relative to the contribution of bombers in future conventional conflicts. The Air Force asserts that its roadmap incorporates and applies Desert Storm experience to future conflicts. Yet in developing this plan, the Air Force did not seek input from theater commanders who would ultimately have to employ bombers to respond to potential military threats. Nor did the Air Force take into consideration the role and contribution of tactical fighters and carrier-based aircraft that might also be employed against these same threats. While GAO agrees that the use of the B-52 in Desert Storm should not necessarily serve as the prototype for future conflicts, GAO does not agree that the roadmap adequately reflects the B-52's experience. Rather, the roadmap embraces the long-range, precision-strike perspective for future conventional conflicts—a perspective that limited the B-52's contribution in Desert Storm.¹

DOD's comments express optimism that existing policies and procedures are adequate and will result in a fully coordinated DOD position on bomber roles and capabilities. As DOD acknowledged, however, divergent viewpoints about the bomber's conventional role predate Desert Storm. GAO believes that additional steps must be taken to ensure that planned modifications to the bomber force will maximize the force's ability to

¹For a more detailed description of the Bomber Roadmap, see *Air Force Bombers: Adding Conventional Capability Will Be Complex, Time Consuming, and Costly* (GAO/NSIAD-93-45, Feb. 5, 1993).

perform the role most likely to be asked of it. In addition, DOD's position that existing procedures are adequate regarding command and control, the use of reconnaissance assets, or other problem areas is inconsistent with the Desert Storm shortcomings identified in GAO's classified report.

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