

STATEMENT - P. M. Sprey

I wish to thank Chairman Aspin and the members of the Committee for inviting me to testify concerning weapons technology in the recent Persian Gulf war.

Let me begin by placing the role of technology in perspective. As General Schwartzkopf recently stated, if we had exchanged equipment with the enemy, the outcome would have been the same. Why? Because people and ideas are much more important in war than hardware. And by far the most significant development of this war is the widespread adoption of the maneuver warfare ideas of Col. John Boyd, as reflected in the innovative, precedent-shattering campaign plan of General Schwartzkopf and his staff.

Speaking from that moderate view on the role of technology, I do not propose to compare the combat results for high versus low technology, simply because I know of no way to make that distinction meaningful or useful. Instead, I will comment on the little we know at this point concerning the results for a small number of salient weapons which had not been combat-tested in previous wars. These include the Patriot, the A-10, the Tomahawk, the Stealth and the AV-8B. None of these can be thought of as new technology, since the newest, the Tomahawk and the Stealth, were started over 13 years ago. Indeed, the Patriot, the oldest of the lot, is really long in the tooth having been started in the late fifties as the Tactical Anti-Ballistic Missile System (TABM).

My purpose in commenting on these half dozen weapon systems is not to settle which ones worked and which ones didn't. Instead, I wish to convince you of three points of major importance:

- o Combat data and experience, objectively reported and analyzed, is of inestimable importance in shaping and improving the defense of the nation -- and is particularly crucial to the Congress in making decisions concerning the inevitably shrinking defense budget.
- o The country has been poorly served by the shamelessly doctored statistics and the hand-selected video clips of isolated successes that were pumped out to the media during the war in order to influence post-war budget decisions.
- o If the the HASC wants the benefits of the priceless insights available from the Desert Storm combat data, then it must take active measures to make sure that data is not distorted, censored or buried by procurement advocates grinding their budget axes. Specifically, the HASC needs to sponsor at least one -- preferably several -- groups of thoroughly independent scholars and analysts to interview combat participants and to compile, review and analyze the data of the war itself to draw the lessons that will help the Congress make the crucial defense decisions of the next few years.

PATRIOT

During the war, the media gave unquestioning coverage to the Raytheon/Army claim that the Patriot "successfully intercepted" 45 out of 47 incoming Scuds.

It now appears that:

- o 158 Patriots were fired at the 47 Scuds within Patriot coverage.
- o Very few of the "successfully intercepted" Scud warheads were prevented from successfully impacting the ground and exploding.
- o Numbers of Patriots, some fired at real Scuds and some fired at radar false alarms, came down and exploded within the defended area, thereby adding to the casualties and damage caused by the Scud.

The new evidence comes mainly from the Patriot operations in Israel, where disagreement between Israeli and American operators has allowed some uncensored information to leak out. The Israeli sources are alleging that only one Scud warhead was actually destroyed in midair and that less than 20% were deflected off course 'sufficiently' to land outside the defended area (the 'sufficiently' is a judgment call that in itself needs checking since the break-up of the Scud missile body on re-entry causes deflection of the trajectory on its own without any help from intercepting Patriot warheads).

The casualty and damage data for Scud with and without Patriot defenses will be easier to verify than the under-20% success rate. The currently published figures show that Israeli casualties per Scud fired increased by 80% after the Patriots started defending Israel. The number of apartments damaged per Scud fired increased by 400%. No one has yet published the number of Patriots that fell on defended territory and directly caused added casualties and extra damage. One reliable eyewitness saw 4 Patriots hit Tel Aviv in one night; films of the 4 impacts are here in Washington.

Given that the taxpayer has already spent nearly \$15 billion on Patriot, I think it would not be unreasonable for the Congress to demand a shot-by-shot accounting of Patriot versus Scud encounters, including full successes, deflections of Scud trajectories, failures, misfires, firings at false targets and numbers of Patriots exploding on the ground.

A-10 ANTITANK AIRCRAFT

Initially, the USAF and General Hoerner resisted deploying any A-10s in support of Desert Shield. Only the combined pressure of General Schwartzkopf and higher authorities forced the USAF to offer up 144 A-10s, still less than 10% of the combat aircraft in-theater. Air Force brass hostility to the A-10 has continued unabated since the A-10 concept's founding in 1968. Then and now, that hostility has stemmed from a) a dislike of the close support mission (i.e., a non-independent mission against targets selected by another Service); and b) an unshakeable belief that only speed (500 knots plus),
belief

not maneuverability or airframe ruggedness, could ensure survival against serious ground defenses.

Although we have nothing approaching complete documentation of A-10 operations in the Gulf, the current evidence makes it clear that the A-10 may be, militarily, the most important technology success story of the air war:

- o The A-10 proved to be the most survivable airplane in the theater, significantly more survivable than any of the thin-skinned, 500 knot fighters. Simple gun defenses defeated the 500 knot fighters' ability to search for tactical targets; the theater command forbade them to fly below 8000 feet to keep losses down. The A-10 was the only aircraft capable of target-hunting at low altitudes for extended periods of time with only light losses -- a result of its unprecedented survival technology.
- o With only 144 of the 1800 combat aircraft flying, the A-10 force accounted for 1000 of the 1700 tank kills claimed during the air campaign. It accounted for 1200 of the 1300 artillery pieces claimed as air kills before the ground war.
- o The greatest surprise to USAF traditionalists was the A-10's dominance of the classical interdiction mission. It accomplished the lion's share of road interdiction and Scud launcher hunting. The bulk of truck and supply convoy destruction on the road network supplying the Kuwaiti theater was accomplished by A-10s because the 500 knot jets had neither the fuel nor the survivability to patrol the road network.
- o POW interviews quickly established that the A-10 was the airplane most feared by Iraqi soldiers. They feared it because a) it stayed long and low over the battlefield instead of hitting and running like the 500 knot fighters; and b) the 30mm cannon with its incendiary uranium armor-piercing rounds was devastating.

It is a tribute to General Hoerner's character and dedication to combat that he informed both his staff and higher headquarters that he was wrong about the A-10 and that it "saved" his campaign.

In the meanwhile, the Air Staff is still trying to retire all the active A-10s and to persuade the Congress to fund the A-16, an F-16 with a few survivability band-aids, in order to put up a pretense of fulfilling the USAF's close support obligations.

The value to the Congress of an independent, cleanly-documented account of A-10 combat experience in the Gulf could not be clearer.

TOMAHAWK

We fired nearly a half-billion dollars worth of Tomahawks during the Gulf war. To date, the only accounting available is an optimistic classified study by a Navy agency. An independent, shot-by-shot accounting is unlikely to ever be undertaken without outside stimulus.

The anecdotal evidence from foreign observers in Bagdad underscores the need for such an accounting -- and lends credence to some of the criticisms voiced during the highly inadequate operational tests of the Tomahawk:

- o The Tomahawk, flying a low, slow, visible and easy-to-hit straight path, looked like a made-to-order target for the lightest machine guns. Several were seen to be shot down.
- o The Tomahawk's terrain map-matching navigation system is vulnerable to getting lost in terrain that is either too featureless or too craggy; the optical scene-matching terminal guidance can be defeated by smoke or camouflage. Observers witnessed several Tomahawks crashing into militarily-irrelevant apartment buildings.

Whether these few incidents are representative or anomalous must await the results of the independent, shot-by-shot accounting.

The only overall comment we can make now is that, out of the 10,000 plus guided weapons fired during the war, the 200 or so Tomahawks cannot have had a dominant impact.

STEALTH

Despite the special security classification of the Stealth program, some insights concerning the combat performance of the F-117 are available:

- o The Stealth does not appear to be stealthy. It appears that a widevariety of ordinary search radars, French, Chinese and British, had no trouble tracking the F-117. It also appears that the F-117 pilots were more convinced of this than anyone. None of this is surprising to anyone who has looked at the physics of radar target reflectivity, as described in any standard radar textbook.
- o F-117 payload range capabilities are quite limited. The fuel status of F-117s attacking bagdad was clearly marginal, based on radio traffic from F-117 pilots coming off their targets in and around Bagdad. Again, this is not surprising to anyone with an understanding of the aerodynamic consequences of the stealth-compromised, high drag shape of the F-117.
- o Unexpectedly, it appears that the F-117 electronics (no special

stealth classification) for launching laser guided bombs performed unusually well and showed real advantages over the competing electronics in other fighters.

The HASC can certainly demand the relevant combat evidence and intelligence to determine whether the Stealth was or was not easy to track on radar. If its visibility to radar is confirmed, then several actions need to be considered:

- o Investigation of how the facts of Stealth vulnerability were covered up and why F-117 pilots' lives were needlessly risked in combat.
- o Cancellation of the special security status of the Stealth program, which has always been used more to prevent oversight than to protect national security-endangering information.
- o Cancellation of the B-2.

AV-8B

The AV-8B appears to have been a major disappointment. As has been known for a long time endurance and loiter were very short, too short to permit searching for tactical targets. But survivability in the Gulf proved to be considerably worse than the standard thin-skinned 500 knot jets, with 6 AV-8B's lost out of the small force of 60 on hand.

This leaves the USMC with a very serious deficiency in close support aircraft.

GROUND WEAPONS

The combat insights available regarding the crucially-important, untried-in-tank-combat ground weapons -- for instance, the M-1, M-2, Dragon, TOW and AT-4 -- will necessarily be much more limited than the combat results for the air war. After all, there were only a few days of ground war. The enemy was deserting and fleeing even before the ground attack began. Only sporadic resistance could be found, a setting that makes impossible a comprehensive evaluation of the combat effectiveness of these weapons in the face of serious opposition.

Nevertheless, there is some valuable combat data that needs to be retrieved and analyzed, particularly regarding:

- o The reliability and mobility of the M-1 and M-2 during the opening maneuvers.
- o The vulnerability and resulting crew casualties from the few hits registered on the M-1 and M-2.

- o The reliability of Dragon, TOW and AT-4 from the relatively limited sample of firings that took place.

LASER GUIDED BOMBS

The LGB is, of course, old technology that has already been used in four wars: Vietnam, Libya, Grenada and Panama. We already have a fair picture of how well they work in combat.

For Vietnam data, I analyzed a detailed data base of 200 LGB combat drops and found that "hits" -- even on relatively large area targets such as road intersections -- were in the area of 30% to 40% with the 60% to 70% misses tending towards the thousands of feet. GAO found similar, slightly worse results for Libya: the LGBs there actually had fewer percent "hits" -- again, defined against relatively large area targets -- than the unguided iron bombs.

In the Gulf, the percent successes for LGBs against bridges -- a target much smaller and harder than the above area targets-- appear to have been very substantially lower. The best currently available evidence comes from General Schwartzkopf's briefing of January 30th. Using his numbers, 24 sorties were needed to get one hit on a bridge. Early the next week, an RAF officer pointed out that only one third of the 33 bridges hit in General Schwartzkopf's briefing were actually destroyed. Thus, it took 72 attack sorties to destroy one bridge. This is equivalent to a success rate of less than $1\frac{1}{2}\%$, somewhat less than the widely-touted 85% -- and a measure of just how highly-selected the famous bridge-busting video clips shown on TV news were.

CONCLUDING REMARKS

The above comments were not meant to settle the question of which technologies worked and which ones didn't.

Instead, I was only hoping to convince the Committee that, first, there are extraordinarily important lessons waiting to be learned from the real experience of the war.

Second, these lessons are very different from the shallow picture of the Nintendo war that was fed to us on the TV evening news.

Third, if the Congress wants the benefit of the lessons of the war, we cannot leave the gathering of those lessons to the procurement advocates and the budget propagandists.

For these reasons, I urge the members of the Committee to consider supporting Mr. Franklin Spinney's published proposal to commission a new version of the Strategic Bombing Survey, the brilliant and scholarly analysis of the WWII bombing results. Specifically, I believe the Committee should consider selecting and funding at least one, preferably two or three groups of distinguished, unimpeachably independent scholars and scientists to collect and analyze the combat experience and data of the air and ground campaigns.

That experience and those data are priceless: they were bought with the blood of our troops and our pilots. What they bought will be squandered unless the Congress acts.

STATEMENT BY DONALD A. HICKS

CHAIRMAN, HICKS AND ASSOCIATES, INC.

BEFORE THE DEFENSE POLICY PANEL, HOUSE ARMED SERVICES COMMITTEE

30 APRIL 1991

THEME AND OVERVIEW

Thank you, Mr. Chairman. It's a pleasure to be with you today. I would like to make a brief opening statement, and then I'd be happy to answer your questions.

You've asked me to focus on the role of high technology in Desert Storm. Our success in that operation has shown that the combination of precision-guided weapons and stealthy aircraft, along with other high-tech intelligence, reconnaissance, and strike assets, offers a whole new approach to combat for the future. Stealth, PGMs, and other high-tech systems let us accomplish our strategic and tactical aims far more effectively, with higher confidence and lower cost -- both in lives and dollars -- than would otherwise have been possible. And the success of these technologies points the way on important programmatic decisions in our acquisition of future systems.

I have reviewed the testimony offered to this panel last week on the impact of Desert Storm. I strongly endorse Bill Perry's assessment that revolutionary military technologies, combined with combat support systems, were a force multiplier that played a crucial role in our victory. I also agree that our higher quality of leadership, training, manpower, and C3I contributed in important ways. It should be remembered, though, that other countries are quite capable of achieving well-led and trained forces, and even fielding some fairly complex C3I. The one thing they can't expect to achieve anytime soon is the degree of sophistication of our high-technology weapons. These weapons were the real key to our success in the Gulf.

In recent weeks critics have begun to question the role high technology played in the coalition victory. In testimony before this panel last week, Pierre Sprey, for example, downplayed both the role of technology and the effectiveness of specific systems. He and other critics would have us believe that our high technology wouldn't have had as big an impact if we'd been pitted against a more sophisticated, or more determined adversary, for instance, the North Vietnamese. For these critics, stealth and precision munitions represent an unnecessary and unjustifiably expensive military capability.

I strongly disagree with this revisionist assessment. Those of us who have been working on stealth and smart weapons all along see the issue far differently. For us, Desert Storm has confirmed what we've already learned through the development and testing of these systems -- namely, that these technologies work. So, even if the quality of our adversary had been much higher, these systems would have performed well. In fact, I believe that it was precisely the great performance of our high tech weaponry which deprived enemy troops of the will to fight.

In the remainder of my statement, I'll focus first on how high-tech systems changed the way we wage war. Then, I'll discuss the future programmatic implications of the war for these technologies.

OPERATIONAL IMPACT OF STEALTH, PGMs AND OTHER ADVANCED SYSTEMS

The increased role of air power in the war is attributable in large measure to stealth and PGMs. Although F-117s flew only about one to two percent of the total aircraft sorties in the war, they damaged about half of all fixed strategic targets. Hitting these critical functions early in the war set the tone for the rest of the campaign.

Stealth, sophisticated guidance and navigation systems, and PGMs allowed us to destroy targets with great precision and very high confidence. This means that we used less ordnance more effectively to hit those critical targets than ever before. These two qualities in turn combined to sap the morale of the Iraqi troops, who saw the ability of our forces to defeat critical assets in a very short time.

Using stealth and PGMs, we hit both the Baath Party headquarters and Saddam's palace in extremely heavily defended areas. Our ability to hit these targets with such accuracy sent a clear political signal to the Iraqi leadership that we could attack them with impunity.

On an operational level, the combination of stealth and PGMs tremendously simplified the process of planning and executing the air campaign.

They made it possible to attack highly defended military functions with high confidence. Many of these key strategic targets were in the Baghdad area. They included leadership, command and control, intelligence, communication nodes, airfields, and others. The confidence that the F-117 and Tomahawk could address all targets of concern in the priority order desired simplified the pre-war planning phases, as well as the restrike planning.

Using stealth and PGMs allowed us to achieve near simultaneous "shock" to the enemy's whole military nervous system and to deny gradual recovery. In the past, we had to "roll back" defenses and attack successive geographic areas of enemy territory. With stealth and PGMs, we planned and executed attacks against entire politico-military functions all over Iraq and Kuwait almost simultaneously.

Targeting the enemy's entire nervous system had a particular impact on our ability to move forces on the ground undetected. We've all heard about the "Hail Mary" maneuver, which began well before the actual ground war: over a period of weeks, General Schwarzkopf moved a large component of the coalition force out west of the Kuwait-Iraq border so that they could strike around and behind Iraqi forces when the ground war began. What we need to realize is that we could never have accomplished this impressive logistical feat without having blinded the Iraqi forces to what we were doing. We did that by keeping their reconnaissance aircraft out of the skies. We accomplished that aim by winning air superiority right at the start, and our stealth aircraft in turn were critical in achieving this early goal.

Using stealth with PGMs meant we had to worry far less about confirming bomb damage after the strike. We knew that stealthy aircraft would penetrate to the target with very low likelihood of attrition. Previously, we had to plan for attrition of aircraft carrying weapons to targets, and compensate for it. Damage to targets could not be guaranteed. We had to plan follow-up strikes and put additional aircraft at risk to assure we had inflicted damage. With stealth, the arrival and hit probabilities for a given target were nearly perfect.

ADDED BENEFITS OF STEALTH AND PGMS

Stealth and PGMs helped minimize U.S. casualties. With stealth, few or no support aircraft were required to conduct strike missions, putting fewer U.S. personnel at risk. And those personnel actually conducting the strike missions were at far less risk because their aircraft were untrackable by enemy radar-guided air defenses.

PGMs let us bomb from higher altitudes -- above the AAA level -- while still retaining high accuracy. This helped us accomplish our war aims with far lower loss rates.

Stealth and PGMs allowed us to minimize civilian casualties. The imperatives of war dictated that we hit key targets in heavily populated areas. Thanks to stealth we did it far more accurately and with far fewer civilian casualties than would otherwise have been possible. F-117s could operate undisturbed at altitudes above AAA defenses allowing them to approach their targets on attack

headings which helped reduce collateral civilian damage from their weapons.

The Gulf War showed stealth technology to be a real bargain. According to Brigadier General Buster Glosson, who was in charge of putting together the daily air tasking order, the cost of a strike package with conventional aircraft and all their support would be at least ten times the cost of using stealthy aircraft against heavily defended targets. In Congressional testimony, Air Force Secretary Rice has also showed how stealth aircraft significantly cut operational costs by reducing support requirements.

OTHER TECHNOLOGIES

I'd like to mention a couple of other achievements in technology which greatly aided in our victory. First, night vision was critical for our forces. LANTIRN and FLIRs let us operate at night, removing the ability of the enemy to reposition forces unmolested under cover of darkness. Night vision capability allowed the Apache helicopter to attack Iraqi early warning radars in the campaign's earliest phase. Night vision capabilities on our tanks let us target and destroy Iraqi tanks before they knew we were even in the area. Another area where revolutionary technology gave us the edge was in intelligence and reconnaissance. While the Iraqis were blind to our movements, we had comprehensive knowledge of their movements thanks to JSTARS, UAVs, and various other intelligence assets.

PROGRAMMATIC IMPLICATIONS

The great performance of high-technology systems has some important programmatic implications. The Gulf War offered a glimpse of what's possible when we have weapons which hit their targets most of the time. Combining that with stealth gives us a synergy that assures us effective capability in both the near and far terms.

Buying PGMs now allows us to get maximum leverage from our existing assets in the near term. We've seen that aircraft using PGMs performed basically as intended. F-117 was the star in terms of the percentage of targets hit and damaged. F-111s, Tornados, and Navy A-6s were also highly successful in using laser-guided munitions. Our F-16s were by and large not equipped with PGMs, and their performance really suffered as a result. These aircraft are "smart" in the sense that they have the superior guidance and control to drop dumb bombs with great accuracy. Unfortunately, they can only achieve this accuracy at fairly low altitudes in benign threat environments. Because of all the Iraqi AAA, the F-16s couldn't go low to deliver dumb ordnance as intended.

It is very important to note that the F-117's success in Desert Storm depended on some critical factors: 1) we had sufficient time, both to get the F-117 force in place and to plan for its use, and 2) Iraq's air defenses were highly centralized and vulnerable to shut-down. In future contingencies, we may have to respond in only days, and we may face far more robust air defenses. In such contingencies, a long-range bomber would offer the only means for shutting down an enemy's air power and defenses early in a contingency so that the required build-up of friendly forces in the area could be accomplished at low risk. To avoid unacceptable attrition, this first strike phase would have to be done with stealthy aircraft.

I believe the quantum leap in capability offered by long-range, stealthy strike aircraft could yield a powerful conventional deterrent to aggression in distant areas. A long-range stealthy strike capability would have allowed us to go in during the early stages of Iraqi aggression and hit a few critical targets. This might have deterred further aggression.

Stealth also provides tremendous advantages in air-to-air combat and naval strike missions. It is very important that the Navy's A-X program maintains the stealthy specifications of the A-12 or better.

In the coming years, we have options to develop, deploy, and maintain a combination of air forces with various mixes of platforms and munitions. The proliferation of sophisticated air defenses around the world means we'll likely require some fairly sophisticated ordnance and delivery systems to be militarily effective and keep loss rates at a low level. A mix of stealthy aircraft of various ranges and payloads should be part of the total package.

In summary, Mr. Chairman, I believe the combination of stealth and precision munitions and much of the other sophisticated military equipment we deployed to the Gulf proved its worth and has wrought a fundamental change in the way the military does business at all levels. In a time when we need to get maximum value for scarce resources, we should continue that trend.

Mr. Chairman, that concludes my prepared remarks. I'd be happy to take your questions.

WE CAN WIN
ANY WAR
WITH A

STEALTHY ~~SCHWEINFURT~~
DRESDEN

I recommend you have hearings
to:

- ① Investigate the board that dumped Mike Wiley and why
- ② Find out how much or how little the present promotion system suppresses innovative officers
- ③ Determine whether we need to have a quota system that sets aside the standard Efficiency Report system for a small number of unconventional officers