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Desert Shield and Desert Storm Implications for Future U.S. Force Requirements

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DESERT SHIELD AND DESERT STORM IMPLICATIONS FOR FUTURE U.S. FORCE REQUIREMENTS

SUMMARY

Desert Shield and Desert Storm were spectacular successes by almost any standards. Postmortem specialists who attempt to extract "lessons learned" from that experience nevertheless would be well advised to proceed cautiously, because campaigns against Iraq unfolded under conditions that may not again pertain.

This preliminary assessment summarizes U.S. Army, Navy, Air Force, and Marine Corps performance during the recent war, then relates it to past experience and potential threats in ways that might help decisionmakers determine the most suitable characteristics of U.S. armed forces for the rest of this decade. Significant findings include:

- Force reductions now under review should preserve sufficient flexibility to cope well with a wide range of realistic contingencies, because levels that cause potential adversaries to question U.S. capabilities could degrade deterrence and involve the United States in otherwise preventable wars.
- Needs for airlift and sealift forces that can function well under less favorable conditions in primitive areas seem more pressing than requirements for larger numbers.
- Strategic and tactical intelligence failures can be traced directly to the shortage of well-qualified, area-oriented human intelligence (HUMINT) specialists.
- Continued needs for division-sized parachute and amphibious assault capabilities are debatable, because neither has been employed since World War II.
- The rapid proliferation of ballistic missile delivery systems, some with nuclear and chemical warfare capabilities, indicates the probable need for expeditious development and deployment of tactical anti-ballistic missile (TABM) weaponry much superior to Patriot.
- The U.S. Navy may no longer be configured to deal best with the most likely threats, because it still emphasizes abilities to defeat Soviet rivals.
- Expeditious programs to develop and deploy advanced tactical aircraft may be difficult to justify during the impending period of budgetary constraint, because present models performed magnificently during Desert Storm.
- Redefinition of Army and Marine Corps roles and functions should be a high priority task, because it would fundamentally affect the future size, configuration, and capabilities of both Services.

Finally, the study is skeptical of contentions that Desert Shield and Desert Storm "proved" the permanent ascendancy of any strategy, tactics, or armed service. Requisite forces and formulas might be quite different at future times and in dissimilar places.

TABLE OF CONTENTS

DESERT SHIELD AND DESERT STORM IMPLICATIONS FOR FUTURE U.S. FORCE REQUIREMENTS

BACKGROUND, PURPOSE, AND SCOPE

> Armies are more often ruined by dogmas springing from their former successes than by the skill of their opponents.
>
> Major General J.F.C. Fuller
> "The Tactics of Penetration"
> *RUSI Journal*
> November 1914

Desert Shield and Desert Storm demonstrated military strategies, operations, tactics, and logistics that were brilliantly planned and smoothly implemented. Armed combat culminated in quick victory with incredibly few U.S. and allied casualties. Displays of air power and technological proficiency were especially impressive.[1]

Postmortem specialists who attempt to extract "lessons learned" from that experience nevertheless would be well advised to proceed cautiously, because Desert Shield and Desert Storm unfolded under conditions that may prove to be exceptions rather than rules. War with Iraq was a classic set piece. Both sides took 5 1/2 months to prepare for that particular conflict, beginning on August 2, 1990 when Saddam Hussein seized Kuwait. Then President Bush said, "Go!" It was conventional combat, for which U.S. armed forces are best organized, trained, and equipped. Technologically inferior opponents occupied static defensive positions, falsely anticipating frontal assaults similar to those they defeated during the eight-year war with Iran.[2] Most were in known locations, exposed to allied air and missile bombardment. Most remained passive, except for antiaircraft batteries. Allied airmobile and armored forces, aided by satellite intelligence, thus were able to maneuver at will on flat, featureless terrain to outflank foes entrenched in Kuwait. One Marine Corps pilot summarized the situation perfectly when he quipped, it was "like being in the Super Bowl, but the other team didn't show up."[3]

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[1]For a brief discussion of concepts and operations, see "Schwarzkopf: Strategy Behind Desert Storm," and "The Persian Gulf War: Schwarzkopf Answers to Reporters' Questions," *Washington Post*, February 28, 1991, p. 35-36.

[2]Cordesman, Anthony H., *The Iran-Iraq War and Western Security, 1984-87: Strategic Implications and Policy Options*, NY, Jane's, 1987, 185 p.

[3]"Stray Voltage," *Armed Forces Journal*, March 1991, p. 58.

Future U.S. conflicts, perhaps in mountains, jungles, or swamps, may call for quite different qualifications than Desert Shield and Desert Storm. The twofold purpose of this report therefore is to provide some perspectives that might help Congress to:

- Appraise Desert Shield and Desert Storm experience
- Correlate results with future U.S. force requirements

This preliminary assessment relates performance throughout the recent war (August 1990-February 1991) with past U.S. conflicts and potential future threats to put U.S. force requirements in perspective. It impartially questions proposed reductions in some categories and proposed increases in others, with particular attention to the continued value of assets that saw little action, remained unused, or appeared to be malemployed. The report also speculates about abilities of the U.S. military establishment to cope successfully with problems if situations had developed less advantageously. What if Iraqi forces had overrun Saudi Arabian ports and airfields before the U.S. vanguard arrived? What if a contingency had erupted in Korea during Desert Storm? What if Iraqi SCUDs had struck in salvos instead of single shots? Presentations cover overarching subjects first, followed by service-specific topics, but treatment throughout emphasizes interrelationships. [4]

COMBAT FORCE AVAILABILITY

The peacetime configuration of U.S. armed services strongly influenced options open to the United States and its allies during the confrontation with Iraq. The total inventory determined how many active combat forces of what type theoretically could assist Central Command (CENTCOM) in the Middle East, given competing commitments elsewhere. Readiness determined how rapidly reserve component forces could supplement the active establishment.

ACTIVE FORCE LEVELS

The active U.S. Army, Navy, Air Force, and Marine Corps, which total slightly more than 2 million uniformed personnel, comprised the world's third largest military establishment just before Iraq seized Kuwait.[5] Desert Shield and Desert

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[4]This document is designed to compliment two other CRS reports: Collins, John M., *New Directions for National Defense*, July 6, 1990, 29 p. and O'Rourke, Ronald, et al, *Persian Gulf War: Defense Policy Implications for Congress*, forthcoming.

[5]Only the Soviet Union and China maintain larger active military establishments than the United States (about 4.5 million and 3 million respectively, including internal security troops). *The Military Balance, 1990-1991*, London, Brassey's for the International Institute for Strategic Studies, Autumn

Storm nevertheless absorbed 40 percent or more of key U.S. combat forces (Figure 1), including an armored corps and seven air wings assigned to U.S. European Command. U.S. Atlantic and Pacific Fleets furnished six carrier battle groups and two battleship groups. The Department of Defense (DOD) could not establish unit rotation policies for U.S. elements in the Middle East, because U.S.-based replacements with comparable capabilities were too few.[6] Abilities to cope with a second sizable contingency that adversely affected U.S. security interests, such as conflict in Korea, were much abridged beginning in August 1990, and remained so for several months after Desert Storm subsided.

Several retrenchment proposals are open for deliberation.[7] The Secretary of Defense and Chairman of the Joint Chiefs of Staff, for example, have presented Congress a "six-year package that ... reduces U.S. military capability and force structure by very, very significant amounts." Defense spending, according to their plan, would contract to 3.6 percent of the U.S. gross national product by 1995-96. The DOD budget thereafter would fund an active force of 521,000 fewer military personnel (a 25 percent cut), 12 Army divisions vice 18, 26 tactical fighter squadrons instead of 36, and 150 fewer battle force ships rather than the 600 once envisaged.[8]

The residue must possess deterrent and defense capabilities that correlate well with present and projected threats to compelling U.S. interests. The Secretary of Defense and U.S. commanders-in-chief around the world identify few serious threats, but some indicators nevertheless may bear additional scrutiny before force level decisions become final. Five countries with large armed forces, listed on Figure 2, are long-time U.S. adversaries who still make neighboring U.S. friends nervous (North Korea, Vietnam, Iraq, and Iran, plus Syria, an unanticipated U.S. ally during Desert Storm). The Soviet Union and China are question marks that likewise cause some queasiness.

1990, 245 p.

[6]Maze, Rick, "How Long Can Troops Hang on in the Desert?", *Army Times*, December 17, 1990, p. 16; Willis, Grant, "New Call-up Kills Troop Rotations," *Army Times*, November 26, 1990, p.6.

[7]*Meeting New National Security Needs: Options for U.S. Military Forces in the 1990s,* Washington, Congressional Budget Office, February 1990, 50 p.; Kaufman, William W., *Glasnost, Perestroika, and U.S. Defense Spending,* Washington, Brookings Institution, 1990, 85 p.; *Restructuring the U.S. Military: Defense Needs in the 21st Century,* A report by Defense Budget Task Force of the Committee for National Security and the Defense Budget Project, Washington, March 1990, 27 p.

[8]*Defense Secretary Dick Cheney and Joint Chiefs of Staff Chairman Gen Colin Powell Testimony Before the House Armed Services Committee,* Washington, Reuters Transcript, February 7, 1991, p. 6, 8, 10.

Figure 1

U.S. ACTIVE FORCES FOR DESERT STORM

	Total Inventory[1]	Desert Storm Deployments[2]	Percent of Total
Army			
Divisions	18	8	44%
Separate Brigades	4	1	25%
Separate Regiments	3	2	66%
Navy			
Carrier Battle Groups[3]	14	6	43%
Carrier Aircraft		375	51%
Fleet Air Defense[4]	(22) 260		
Attack[4,5]	(41) 466		
Battleship Groups[6]	4	2	50%
Attack Submarines	99	7	7%
Mine Warfare[7]	12	2	18%
Air Force			
Bombers[4,8]	(13) 139	(3)	23%
Fighter/attack[4]	(65) 1594	(32)	40%
Marine Corps			
Divisions	3	2	66%
Air Wings[4,9]	(3) 355	(2)	66%
Total Personnel	2,020,000	540,000	27%

1 Collins, John M. and Dianne E. Rennack, *U.S./Soviet Military Balance: Statistical Trends, 1980-1989 (As of January 1, 1990)*, Washington, Congressional Research Service, August 6, 1990.

2 Bowman, Steven R., *Persian Gulf War: Summary of U.S. and Non-U.S. Forces*, Washington, Congressional Research Service, February 11, 1991.

3 One aircraft carrier per group, plus escorts.

4 Numbers in parentheses indicate squadrons.

5 Total inventory includes 176 dual-purpose FA-18 Hornets.

6 One battleship per group, plus escorts.

7 Five MSO and MCM, 7 MSC. Two more reserve MSCs deployed.

8 Fifty-six F-111 (1 squadron) and 26 B-52G (2 squadrons) deployed.

9 Total inventory includes 156 dual-purpose FA-18 Hornets.

Figure 2
THE LARGEST FOREIGN ARMED FORCES

1 million or more		500 Thousand or more		250 Thousand or more	
Soviet Union	4.5	S. Korea	750	Egypt	450
China	3.0	Pakistan	550	Ethiopia	438
India	1.3	Iran	504	Syria	404
N. Korea	1.1	Iraq	500?	Taiwan	370
Vietnam	1.0			Brazil	324
				Indonesia	283
				Thailand	283
				Japan	249

Source: *The Military Balance, 1990-1991*, London, Brassey's for the International Institute for Strategic Studies, Autumn, 1990.

Not many potential predators, large or small, seem eager to risk retaliation like that against Iraq. Kim Il Sung, for example, may never find a more propitious time to invade the Republic of Korea, but took no advantage of U.S. preoccupation with Persian Gulf operations. Appearances, however, may be deceptive. Two of the last three major wars erupted abruptly and unpredictably (Korea, 1950; Iraq, 1990). U.S. military involvement in Vietnam expanded on short notice after mid-1965. Future U.S. force requirements may be equally unforeseen. Aggressors, moreover, may increasingly instigate small, exceedingly complex wars that avoid risks associated with mid- and high-intensity conflicts, yet achieve important objectives that undermine American interests. The U.S. record in such imbroglios is unimpressive.[9]

No one can calculate future needs exactly, but they are not infinitely adjustable. Force reductions now under review therefore should preserve sufficient flexibility to cope well with a wide range of realistic contingencies, because levels that cause potential adversaries to question U.S. capabilities could degrade deterrence and involve the United States in otherwise preventable wars that would be costly to win.

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[9]U.S. Congress, House, *U.S. Low-Intensity Conflicts, 1899-1990*, a study prepared for the Readiness Subcommittee of the Committee on Armed Services, 101st Congress, 2nd Session, Washington, U.S. GPO, September 10, 1990, 284 p.

RESERVE COMPONENT READINESS

Battalions, squadrons, and smaller reserve component combat forces performed well for the U.S. Army, Air Force, and Marine Corps during Desert Storm. Separate Army National Guard (ARNG) brigades did not. So-called "round out" programs, in effect since 1974, presently affiliate six of them with active duty divisions that lack one brigade apiece, largely for budgetary reasons. The concept calls for each designated ARNG brigade to receive arms and equipment compatible with that of the parent division, train regularly with that division, and be ready to deploy with it on identical schedules.[10] The gap between principle and practice, however, proved unbridgeable.

DOD called no ARNG brigades during early stages of the crisis, because the Secretary of Defense and his advisors believed they required considerable post-mobilization training to reach an acceptable state of combat readiness.[11] The 24th Infantry Division (Mechanized) therefore departed for Saudi Arabia in August 1990 with a separate active brigade from Fort Benning, rather than its Georgia National Guard roundout. A brigade from the 2d Armored Division at Fort Hood, Texas replaced a Mississippi National Guard roundout before the 1st Cavalry Division sailed somewhat later.[12]

Those substitutions seemed reasonable after the aforementioned ARNG brigades entered active service about December 1, 1990, along with one from Louisiana which was affiliated with the 5th Infantry Division (Mechanized) at Fort Carson, Colorado. Two-day training sessions per month plus a two-week summer camp were sufficient for platoons, companies, and probably battalions, but brigade requirements were too complex. Hardware shortages and mismatched skills made it impossible to take best advantage of the meager time available. Radios, for example, were in short supply. Officers and men often filled slots for which they were ill prepared. Vehicle maintenance, performed mainly by active forces or civilian contractors in peacetime, became a post-mobilization problem. Some critical ARNG items, such as computers, were incompatible with those of parent divisions. Personnel and logistic systems suffered in consequence.[13] Most

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[10] *Annual Defense Department Report,* James R. Schlesinger, FY 1975, March 4, 1974, p. 99, 100 and FY 1976, FY 197T, February 5, 1975, p. III-15, III-43, V-4; Rumsfield, Donald H., FY 1977, January 27, 1976, p. 131-132.

[11] Not all agreed at that time. See, for example, Aspin, Les, Beverly Byron, and G.V. (Sonny) Montgomery, *Iraq, Saudi Arabia, and Reserve Components: Missing Lessons for a Future Force Structure,* Washington, U.S. House of Representatives, October 16, 1990, 5 p.; Goldich, Robert L., *Iraq-Kuwait Crisis, U.S. Reserve Callup and Reliance on the Reserves,* Issue Brief IB 90144, Washington, Congressional Research Service, November 19, 1990, p. 10-12.

[12] *Ibid.*

[13] "Can Reserves Do the Job?," *U.S. News & World Report,* January 28, 1991, p. 40-41; Scicchitano, J. Paul, "Total Force Policy Takes a Beating," *Army Times,* February 25, 1991, p. 12-13; Naylor, Sean and Tom Donnelly," Guard Deployment

observers accordingly believe that the U.S. Army must devise new policies and procedures if it expects large ARNG elements to dovetail well with active combat forces on short notice.

Early mobilization of ARNG divisions to reconstitute a rudimentary Army rotation base in the United States might merit close scrutiny. That practice could permit six months to a year or more of predeployment training during protracted contingencies, depending on DOD rotation polices. ARNG divisions on active duty also could be committed piecemeal in emergency to facilitate unit replacements, if casualties dangerously depleted the Regular Army before ARNG post-mobilization preparations were complete.

At least three roundout options are open, as Figure 3 illustrates. Option 1 would replace one active brigade in designated divisions with an ARNG brigade in a much higher state of peacetime readiness than presently prevails. Option 2 proposes three active brigades in designated divisions, each with one roundout battalion, which would simplify training requirements. Option 3 recommends three active brigades with three active battalions apiece. Each battalion contains one ARNG maneuver company. All three options furnish every designated active division with nine roundout companies, which are basic combat elements and least difficult to prepare for action.

Roundout components, in accord with official concepts, should possess arms, equipment, and procedures that are fully compatible with those of parent divisions. Roundouts also should be located nearby to simplify continuous supervision by the division staff and facilitate frequent training with division troops. The 24th Infantry Division (Mechanized) and its Georgia National Guard roundout brigade clearly satisfy that criterion. The 1st Cavalry Division in Texas and its roundout brigade in Mississippi clearly do not. The 5th Division in Colorado and the 6th Division in Alaska are separated even farther from roundout brigades in Louisiana and Minnesota respectively.

LONG-HAUL TRANSPORTATION

Long-haul transportation moved forces farther at a faster pace than ever before during Desert Shield and Desert Storm. Elements involved all pressed to do their best beginning in early August 1990, because it was not clear whether Iraq would invade Saudi Arabia after seizing Kuwait, and if so how soon. CENTCOM put fighter/attack aircraft and a brigade-sized tripwire from the 82nd Airborne Division in place by August 8. Fully-equipped Marines began to bolster that vanguard the following week; two expeditionary brigades (each about the size of an Army division) were ashore early in September. The lead brigade of the 24th Infantry Division (mechanized) debarked about the same time. The first great surge, which deployed Desert Shield defensive forces, was complete before the end of October. A second surge from the United States and Western Europe

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Decision Postponed," *Army Times,* February 4, 1991, p. 3.

Figure 3

ARMY DIVISION ROUNDOUT OPTIONS

	Option 1	Option 2	Option 3
Brigades per Division			
Active	2	3	3
Roundout	1	0	0
Battalions per Division			
Active	6	6	9
Roundout	3	3	0
Companies per Division			
Active	18	18	18
Roundout	9	9	9
Total Roundouts per Division			
Brigades	1	0	0
Battalions	3	3	0
Companies	9	9	9

NOTE: Comparisons are based on a notional division with three brigades, each of which comprises three battalions with three maneuver companies apiece.

deposited U.S. reinforcements for Desert Storm during the next three months. Routine runs sustained operations thereafter,[14] although no U.S. airlift or sealift was available to handle a second sizable contingency.

Those impressive feats, however, transpired under nearly perfect circumstances that future U.S. conflicts may seldom duplicate. Ample time was available to assemble essential aircraft, ships, and crews then shuttle back and forth, because no enemy action interrupted the flow of U.S. forces and supplies aloft, ashore, or afloat while the buildup progressed. Modern seaports and air terminals were secure and plentiful. Prepositioned stocks were conveniently located. Allies arrived aboard their own or borrowed transports; some assisted U.S. movement. Saudi Arabia, the host country, was willing and able to furnish facilities plus substantial supplies, such as petroleum, fresh water, and food.[15] Future U.S. long-haul transportation requirements should be considered in context with circumstances that may be less lenient.

AIRLIFT

More than 90 percent of all C-5 and C-141 transports in the U.S. inventory, active and reserve, ferried personnel, equipment, and supplies to the Persian Gulf, but they were not enough. Thirty-eight aircraft from the Civil Reserve Air Fleet (CRAF) hauled two-thirds of the troops and 13 percent of all tonnage during the first full month (August 7 to September 7, 1990). DOD called more on January 18, 1991. Crew fatigue rather than aircraft availability eventually became the limiting factor, although extensive, prolonged reliance on CRAF could have caused problems for some U.S. airlines.[16]

No future contingency is likely to require more transoceanic airlift than Desert Shield and Desert Storm, which involved longer flights to and from the United States than any other conceivable objective area. Few countries, however, couple the airport capacity of Saudi Arabia with abilities to construct new terminals quickly and economically on hard, flat, bare surfaces. Continuing needs consequently exist for highly reliable passenger carriers and cargo aircraft that can land on and take off easily with heavy loads from short, improvised strips.

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[14] "Behind the Front Lines Is an Unprecedented Sealift," *Defense Week,* January 30, 1991, p. 3; Garner, David, *Operation Desert Shield*, a briefing, Washington, Logistics Management Institute, October 4, 1990, unpaginated; Donovan, Francis R., "Sealift: Rapid Response to the Persian Gulf Crisis," *Vital Speeches of the Day,* November 1990, p. 66-68.

[15] Prina, L Edgar, "Two If by Sea ... Are We Ready?," *Army,* December 1990, p. 12-13.

[16] Hyde, James C., "MAC Flying Nonstop to Support Desert Storm," *Armed Forces Journal,* March 1991, p. 12-14; Phillips, Don, "Cheney Orders Airline Alert," *Washington Post,* January 19, 1990, p. 19; "Gen. Hanford Johnson: Moving a Billion Pounds to the Middle East," *Government Executive,* October 1990, p. 68; Garner, David, *Operation Desert Storm.*

SEALIFT

Ships carried more than 90 percent of all material at an unprecedented clip. Critics nevertheless question whether "rapid deployment" is a contradiction in terms when applied to waterborne transport. Eight fast sealift ships, which steam at 30 knots or more, took almost a month to deliver the 24th Infantry Division (Mechanized). The first sailed on August 13, six days after President Bush issued Desert Shield orders; the last finished unloading on September 10. Most ships, somewhat slower (15-20 knots) and less well-equipped, took longer. Only 11 of the first 44 ships requested from the Ready Reserve Force (RRF) reported for duty on time. The 10 tardiest were 11-20 days late. Seventeen roll-on/roll-off (RO-RO) ships in the RRF were insufficient. Nineteen charters therefore were required. Ninety-one of 213 dry cargo ships that supported Desert Shield and Desert Storm (43 percent) flew foreign flags; crews in some cases had to be replaced, because they refused to enter the Persian Gulf. Fewer might be available for future wars.[17]

Plans that call for mobility forces able to project U.S. military power expeditiously to far distant places predate the Carter Doctrine (1980) and the Rapid Deployment Joint Task Force, which preceded U.S. Central Command. Sealift, however, still lags. Essential surge capabilities depend on speedy RO-RO and self-sustaining cargo ships that can load quickly and discharge across open beaches or through primitive ports that lack modern facilities. Eight "fast sealift ships," the best now available, are converted civilian container carriers. DOD accordingly might consider spending a larger share of its mobility budget for rapid deployment sealift. Innovative designs that could double or triple present speeds would be desirable. Rapid round trips, in turn, would allow fewer ships to transport requisite loads, and thereby reduce U.S. reliance on the RRF and foreign flags.

PREPOSITIONING

The initial Desert Shield surge depended heavily on equipment and supplies prepositioned near the objective area ready for use by U.S. military personnel delivered by air. Some was ashore in Saudi Arabia and Oman, but most was afloat. Two maritime prepositioning squadrons (MPS) supported U.S. Marines from locations in the Pacific and Indian Oceans. Each contained armored vehicles, artillery, other unit equipment, and supplies to sustain a Marine Expeditionary Brigade (MEB) for 30 days. The first of five ships from Diego Garcia reached Saudi Arabia in mid-August, followed by four ships from Guam. Two full MEBs were ready for action within three more weeks. Afloat Prepositioning Ships (APS)

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[17] O'Rourke, Ronald, *Sealift and Operation Desert Shield,* Washington, Congressional Research Service, September 17, 1990, p. 18-20; Donovan, Francis R., "Sealift: Rapid Response to the Persian Gulf Crisis," p. 67; "Behind the Front Lines is an Unprecedented Sealift," p. 3-4; Prina, L. Edgar, "Two If by Sea ...," p. 14-16.

at Diego Garcia began to furnish cargo handling equipment, fuel, and other useful items to early Army and Air Force arrivals.[18]

Defense Secretary Cheney presently is weighing whether money for more fast sealift ships "might be better spent buying equipment for a division and putting it in a key spot."[19] Several factors, however, influence such tradeoffs. Floating warehouses, for example, are susceptible to sabotage, especially by "frogmen" (techniques and technologies have improved immeasurably since Italian counterparts of SEALS penetrated British port defenses at Alexandria, Egypt on December 19, 1941, then planted explosives that put battleships Queen Elizabeth and Valiant on the harbor bed.)[20] Stocks prepositioned ashore may be tempting missile targets and are worthless if sites selected are remote from crises that erupt. Modernization and maintenance problems multiply over time, wherever storage takes place. Not many potential trouble spots offer transport points as convenient and secure as those in Saudi Arabia, where airlifted personnel were able to marry quickly with supplies and equipment. The value of prepositioning, in short, varies considerably with circumstances.[21]

MILITARY INTELLIGENCE

Top U.S. political-military decisionmakers urgently required timely, accurate strategic intelligence concerning Iraq's military capabilities and intentions before, during and after Desert Shield and Desert Storm. U.S. commanders at every level in all four services required detailed combat intelligence concerning enemy forces they faced. Collection capabilities limited the amount of information available. Analytical capabilities limited conclusions drawn therefrom.

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[18] O'Rourke, Ronald, *Sealift and Operation Desert Shield,* p. 16-18; Donovan, Francis R., "Sealift: Rapid Response to the Persian Gulf Crisis," p. 66-67; Garner, David, *Operation Desert Shield;* Prina, L. Edgar, "Two If by Sea ...," p. 20; "Our Deployment into the Persian Gulf -- Three Views," *Army*, November 1990, p. 16, 17.

[19] Healy, Melissa, "Cheney Would Reduce Reserve Combat Role," *Los Angeles Times,* March 14, 1991, p. 1.

[20] Piekalkiewicz, Jamusz, *Secret Agents, Spies, and Saboteurs,* translated by Francisca Garvey and Nadia Fowler, London, David and Charles, 1969, p. 62-77.

[21] Brooke, George M. III and Frederick McCorkle, "Rapid Response Force Option," *Amphibious Warfare Review,* Summer 1986, p. 34-40; Newsham, Grant, "Should MPS Be Armed?," *Marine Corps Gazette,* September 1987, p. 30; Russell, James A., "Rapid Deployment Force Ammo Found Too Rusty to Use," *Navy News and Undersea Technology,* June 5, 1987, p. 1.

STRATEGIC INTELLIGENCE

The U.S. strategic intelligence community got off to a slow start, largely because the United States tilted toward Iraq throughout the Iran-Iraq war (1980-1988) and Iraq later was a low-priority U.S. interest.[22] Satellite sensors detected the Iraqi troop buildup that began along Kuwait's northern border on July 20, 1990, and signal intercepts probably led CIA to predict the August 2 invasion the day before it occurred,[23] but neither told how deeply Iraq would drive or how hard its forces would fight. Estimates predicated primarily on technological collection subsequently contained large loopholes concerning the overall strength, disposition, capabilities, limitations, and intentions of Iraqi armed forces. Debates about Iraq's abilities to withstand economic embargoes and naval blockades never were resolved.

Hindsight, for example, reveals that the vaunted Republican Guard was vastly overrated. Its will to fight was little better than other Iraqi forces. The original number of mobile SCUD launchers never was resolved (speculation spread from 18 to more than 200). Most knowledgeable observers believed that Iraq lacked nuclear weapons, but no one was certain and official debates about chemical warfare capabilities continued after combat ceased.[24]

COMBAT INTELLIGENCE

The U.S. theater-level combat intelligence apparatus for Desert Shield and Desert Storm initially comprised a few specialists who accompanied General Schwarzkopf to Saudi Arabia in August 1990.[25] Burgeoning capabilities, coupled with attacks that "blinded" Iraq, however, soon afforded coalition forces decisive advantages.

Space-based satellite sensors, employed for the first time in a large-scale conflict, furnished commanders and staff with unprecedented information, often in near real time. No mountains or vegetation obscured their view, which was

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[22] Oberdorfer, Don, "Missed Signals in the Middle East," *Washington Post Magazine,* March 17, 1991, p. 20-21; "U.S. Intelligence in the Gulf, and Into the 1990s," *Security Intelligence Report,* February 25, 1991. p. 2.

[23] Oberdorfer, Don, "Missed Signals in the Middle East," p. 37-40.

[24] General H. Norman Schwarzkopf in television interviews on February 28 and March 28, 1991; Donnelly, Warren H. and Zachary S. Davis, *Iraq and Nuclear Weapons.* Issue Brief IB90113, Washington, Congressional Research Service, February 8, 1991, 15 p.; Albright, David and Mark Hibbs, "Iraq and the Bomb: Were They Even Close?, *Bulletin of the Atomic Scientists,* March 1991, p. 16-26; Atkinson, Rick, "No Chemical Arms Found on Battlefields," *Washington Post,* March 7, 1991, p. 1; Tamayo, Juan O., "Along with Debris War Leaves Questions About Overestimation of Iraqi Might," *Baltimore Sun,* March 12, 1991, p. 4.

[25] "U.S. Intelligence In the Gulf and Into the 1990s," p.3.

crystal clear for the first several months. Sunlight during daylight hours cast strong shadows that were perfect for photo interpreters. Static targets were easy to identify and prioritize. Global positioning satellites helped allied land and air force pinpoint their locations and navigate trackless deserts. Other spacecraft assisted SCUD alerts and meteorological forecasts.[26] Two Joint Surveillance and Target Attack System (JSTARS) aircraft, plucked from development for Desert Storm employment, complemented Airborne Warning and Control System (AWACS) aircraft. The former monitored enemy ground force movement. The latter looked for Iraqi air attacks that never materialized. Both acquired targets for allied elements to engage.[27]

Technologically derived intelligence, however, has severe limitations. Satellite coverage was incomplete, even on clear days, because sensors were not always overhead. Only Lacrosse, which carries synthetic aperture radar, could see through clouds that were increasingly worrisome after Desert Storm started. Reconnaissance aircraft were too few to fill gaps. The distribution system in many instances was unable to disseminate available data rapidly enough for recipients to benefit. Post-strike damage assessment thus was far from scientific.[28] U.S. and British signal intelligence experts reportedly broke all Iraqi military codes and routinely monitored radio transmissions, but the dearth of skilled translators became a bottleneck.[29] The shortage of Arabic linguists similarly restricted U.S. abilities to interrogate prisoners of war. Reliance on remotely located Saudi specialists, who did not always share their findings, was a poor substitute. Special operations forces had to establish listening posts and patrols deep in hostile territory, designate targets and collect other useful intelligence, because well qualified human intelligence (HUMINT) agents were in short supply. They were

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[26] Smith, Marcia S., *Military and Civilian Satellites In Support of Allied Forces in the Persian Gulf War,* Washington, Congressional Research Service, February 27, 1991, 12 p.; Presti, Kenneth J., "Desert Storm Tests Warning, Spy Sat Systems," *Washington Technology,* February 21, 1991, p. 12; Sawyer, Kathy, "U.S. Spies in the Sky Focus in on Iraqis," *Washington Post,* November 25, 1990, p. A24; Miller, Barry, GPS Proves Its Worth in Operation Desert Storm," *Armed Forces Journal,* April 1991, p. 16, 20.

[27] Capaccio, Tony, "Air Force's Eyes in the Sky Alerted Marines at Khafji, Targeted Convoys," *Defense Week,* March 18, 1991, p. 7.

[28] Broad, William J., "Assessing Damage Can Be Fettered by the Weather and Pilot Hyperbole," *New York Times,* January 24, 1991, p. H12; Covault, Craig, "Recon Satellites Lead Allied Intelligence Effort," *Aviation Week & Space Technology,* February 4, 1991, p. 25; "U.S. Intelligence in the Gulf and Into the 1990s, p. 3; Fulgham, David, "Desert Storm Highlights Need for Rapid Tactical Intelligence," *Aviation Week & Space Technology,* February 11, 1991, p. 8. "U.S. Struggles to Distribute Satellite Data in Gulf," *Defense Daily,* November 30, 1990, p. 339.

[29] Adams, James, "SEAL Teams Try to Fill the Intelligence Gap," *London Sunday Times,* August 19, 1990, p. 12; "U.S. Intelligence in the Gulf and Into the 1990s," p. 5.

especially valuable during foul weather, but results suggest that abilities to locate mobile SCUD missiles were more or less hit or miss.[30]

FUSION AND FUTURE NEEDS

Slow starts which typified U.S. strategic and tactical intelligence during the recent conflict with Iraq were scarcely aberrations. Basic intelligence on the tiny island of Grenada, for example, can best be described as substandard before Operation Urgent Fury opened in October 1983, despite warning signs that exceeded a year (U.S. aircraft bombed a misidentified mental hospital).[31] Calls have continued for high performance reconnaissance and surveillance aircraft that could complement space satellites ever since SR-71 Blackbirds retired from the active inventory in 1989.[32] The lack of HUMINT professionals able to furnish otherwise unavailable information from high-priority areas has been obvious for many years. Not all need be U.S. citizens, if the U.S. intelligence community develops indigenous networks in appropriate countries during peacetime.

Above all, strategic and tactical intelligence both would benefit from better integration. Concerted efforts to fuse electronic, signal, communications, photo, and human intelligence into an integrated whole greater than the sum of its parts almost surely would facilitate in-depth, synoptic coverage beyond current capabilities.[33]

FORCIBLE ENTRY FORCES

There was no need for U.S. armed forces to seize a foothold on well defended shores at the onset of Desert Shield, because Saddam Hussein instructed his troops to stop (perhaps temporarily) in Kuwait. The U.S. buildup and subsequent combat would have developed quite differently if Iraqi invaders had moved immediately to occupy principal Saudi ports, airfields, and coastal territory as far south as Dhahran, then consolidate their hold. The closest friends ready to receive Central

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[30] Gertz, Bill, "U.S. Commandos Steal into Iraq to Spot Mobile Missiles," *Washington Times*, January 25, 1991, p. B1; Healy, Melissa, "Special Forces: U.S. 'Eyes' Deep in Enemy Territory," *Los Angeles Times,* February 28, 1991, p. 1; "The Spies in the Sand Far Behind the Enemy's Lines," *U.S. News & World Report,* March 11, 1991, p. 34.

[31]Anderson, Jack and Dale Van Atta, "schwarzkopf: Grenada Invasion Botched," *Washington Post*, April 11, 1991, p. 11; Cushman, John H., Jr., "Pentagon Study Faults Planning on Grenada," *New York Times,* July 12, 1986, p. 14.

[32] Gertz, Bill, "House Kills Funds to Upgrade 9 Surviving SR-71 Spy Planes," *Washington Times,* June 12, 1987, p. 1. The last aircraft retired two years later.

[33]"U.S. Intelligence in the Gulf and Into the 1990s, p. 3.

Command (CENTCOM) contingents in such event would have been the United Arab Emirates (UAE) and Oman. Israel, far to the West, was politically inappropriate as well as remote. A survey of U.S. forcible entry capabilities thus seems advisable.

PARACHUTE ASSAULT

Paratroops are organized, trained, and equipped primarily to conduct vertical assaults, establish lodgments, and control critical terrain until forces moving overland or across beaches relieve them. Early linkups usually are required, because airborne units are lightly armed and lack much staying power.

The U.S. Army includes a single airborne division, based at Fort Bragg, North Carolina. Whether one would have been enough to secure points of entry in Iraqi-held Arabia is debatable (two were on alert throughout the Cuban missile crisis in 1962.[34]) One division in any case requires more C-141 aircraft for parachute assault than reasonably would have been available, given competition by other rapid deployment requirements. Lengthy delays would have accompanied any plan to stage division-size operations from the UAE, relying heavily on C-130 transports from the Air Force Reserve and National Guard.

Desert Shield experience, however, does not automatically indicate needs for more paratroops and supporting airlift. On the contrary, it extends a 45-year-old pattern, which suggests that less might be enough. The last large parachute assault for forcible entry purposes occurred in Normandy on D-Day, June 6, 1944, when General Eisenhower employed two U.S. and one British airborne divisions. The final parachute assault by a full airborne division of any nation for any purpose was the March 24, 1945 leap across the Rhine.[35] U.S. regimental- and brigade-scale drops since then have been few and far between: two during the Korean War; one in Vietnam (largely for show); and one to spearhead Operation Just Cause in Panama (1990). Two Ranger battalions also participated. General Schwarzkopf assigned the 82d Airborne Division no assault missions during Desert Storm.

U.S. defense decisionmakers, bearing that record in mind, should question whether one or more airborne divisions coupled with adequate airlift are required to cope well with present and projected threats. The existing airborne-qualified ranger regiment, perhaps supplemented by a separate brigade, is one possible alternative.

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[34]House, Jonathan M., "Joint Operational Problems In the Cuban Missile Crisis," *Parameters,* Spring 1991, p. 94-98.

[35] Devlin, Gerard M., *Paratrooper!*, N.Y., St. Martin's Press, 1979, p. 611-637.

AMPHIBIOUS ASSAULT

Amphibious assault forces are organized, trained, and equipped to establish beachheads that facilitate rapid buildups by follow-on formations from sea and air. Suitable landing sites improve prospects for success and lessen the likelihood of high casualties.

The U.S. Marine Corps contains three active division-wing teams -- commonly called Marine Expeditionary Forces (MEF) -- and one in the Marine Corps Reserve. Sixty-four amphibious ships dispersed around the world, however, are able to lift less than one at a time. Assemblage in the Persian Gulf, coupled with preparation time, probably would have consumed much more than a month (it took a month for two unopposed brigades to receive prepositioned equipment[36]). Shallow gradients and shoals characterized approaches to the 36-mile Iraqi waterfront, which consists mainly of mud flats. Kuwaiti beaches bristled with mines and other manmade obstacles. One Marine Expeditionary Brigade embarked on 34 amphibious ships within easy striking distance posed a threat that pinned many Iraqi defenders in place, but General Schwarzkopf never ordered an assault. All other Marines landed at secure sites.

Desert Shield/Desert Storm experience may not be typical, but seaborne assaults have been scarce since World War II. The last multidivision operation crossed Okinawa's beaches on April 1, 1945.[37] The 1st Marine Division, minus one regiment, stormed Inchon, Korea in September 1950.[38] All subsequent landings, like the one in Grenada (1983), have been much smaller. Decisionmakers who seek to determine the necessary number of MEFs might bear that lengthy record in mind and recall that army divisions (3 U.S., 2 British, 1 Canadian) conducted the most ambitious amphibious assault ever seen: D-Day landings in Normandy.[39] Soviet doctrine, which assigns assault operations to a few naval infantry regiments, may also be relevant; tank and motor rifle divisions aboard merchant ships expand the footholds they seize.[40] A thorough review of roles and missions perhaps should underpin future Marine Corps force structure (see subsequent section on that subject).

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[36]See footnote 15.

[37] Garland, George W. and Thurman R. Strobridge, *Western Pacific Operations: History of the U.S. Marine Corps Operations in World War II,* Washington, Historical Division, U.S. Marine Corps, 1971, p. 502-527.

[38] Appleman, Roy E., *South to the Naktong, North to the Yalu,* Washington, Office of the Chief of Military History, Dept. of the Army, 1961, p. 488-514.

[39] Harrison, Gordan A., *Cross-channel Attack: United States Army in World War II, The European Theater of Operations,* Washington, Office of the Chief of Military History, Dept. of the Army, 1951, p. 190-193, 300-335.

[40]*The Soviet Naval Infantry,* Washington, Defense Intelligence Agency, April 1980, p. 23, 34 and *Handbook on the Soviet Armed Forces,* Washington, Defense Intelligence Agency, 1978, p. 9.

FIRST LINE DEFENSES

Demands for air and missile defenses to protect U.S. and allied command posts, forces, ports, airfields, and logistic installations arose as soon as Desert Shield started. An umbrella over civilian population centers and selected oil installations also enjoyed a high priority. Interceptor aircraft and surface-to-air missile units accordingly were among the first arrivals. Reinforcements that phased in later augmented initial capabilities.

AIR DEFENSES

The Iraqi Air Force, with few exceptions, showed little fight. Allied attacks immobilized most fighter-bombers before they took flight, by cratering runways and wrecking revetments. No fixed-wing aircraft or helicopters lasted long in the air except 130 some that fled safely to Iran. U.S. terminal air defenses thus were scarcely tested.

Such success may be elusive in future conflicts, because some potential opponents possess impressive tactical air combat capabilities and existing U.S. defenses are not well balanced. Ground-based apparatus ideally should comprise a complementary array of mobile surface-to-air systems, each with unique characteristics that make it impossible for enemy aircraft and cruise missiles to elude the envelope of one weapon without becoming vulnerable to others, regardless of altitudes and angles from which they elect to attack, day or night, in favorable or foul weather.[41]

U.S. point and area defenses are somewhat less synergistic than that model, and most systems (even Patriot) incorporate 1960s or 1970s technologies, long since eclipsed.[42] Studies to ascertain what corrective actions (if any) seem reasonable should start with threat assessments beyond the scope of this unclassified study. Progress meanwhile remains imperceptible.

TACTICAL BALLISTIC MISSILE DEFENSES

Iraq launched 81 SCUD surface-to-surface missiles at targets in Saudi Arabia, Israel, and Bahrain during Desert Storm. U.S. Patriot missiles intercepted 42

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[41]Soviet diversity is instructive. See, for example, Zaloga, Steve, "The Soviet Antidote to NATO Tactical Air," *Armed Forces Journal*, January 1989, p. 26, 38; Schneider, Wolfgang "Soviet Army Air Defense: Effectiveness Through Numbers," *International Defense Review*, March 1988, p. 237-241.

[42]Lussier, Frances M., *Army Air Defense for Forward Areas: Strategies and Costs*, Washington, Congressional Budget Office, June 1986, 68 p. Several Current options and opinions are covered under the rubric "Ground Air Defense" in *Defense News*, January 29, 1990, p. 12-14, 16, 18-20, 40.

of them in flight and disregarded others too far off course to do any damage. Overall performance received high marks.[43]

Euphoria, however, may be unjustified. Patriot, designed primarily for terminal defense against aircraft and cruise missiles, displayed only modest anti-tactical ballistic missile (ATBM) capabilities.[44] The system performed fairly well against single-warhead, unsophisticated SCUDs, which never were launched in salvos that made Patriot engage many targets simultaneously or in rapid succession (one at a time was the norm, with long intervals between). No SCUD released decoys to deceive defenders. Twenty-two missed intended marks by large margins. Nevertheless, intercepts occurred at such short range that debris sometimes rained down on targets that Patriot tried to protect. Untouched SCUD warheads seeped through when Patriot hit the missile's fuel tank instead of its lethal payload. Patriot never touched the SCUD that killed 28 U.S. military personnel and wounded 100 in a Dhahran barrack on February 25, 1991.[45]

The rapid proliferation of intermediate-, medium-, and short-range ballistic missile delivery vehicles and rockets among countries on every populated continent except Australia suggests that DOD should seriously consider versatile, reliable ATBM capabilities beyond the capacity of Patriot (Figure 4). Some of those missiles currently can carry nuclear or chemical warheads. Others may attain that status in the foreseeable future. Adequate defenses appear quite expensive, but the value of targets protected should make essential ATBM systems cost-effective.[46]

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[43]Lenhart, Warren W. and Todd Masse, *Persian Gulf War: Iraqi SCUD Ballistic Missile Systems*, Washington, Congressional Research Service, February 14, 1991, updated through February 28, p. 10-11; "U.S. Army Patriot Proven in New Role As Anti-Tactical Ballistic Missile Weapon," *Aviation Week & Space Technology*, February 18, 1991, p. 49-51.

[44]Hildreth, Steven A. and Gary Newsome, *Persian Gulf War: Patriot Missile*, Washington, Congressional Research Service, forthcoming; "M1M-104 Patriot/T-16 (JTACMS)/ATM," *Forecast International/DMS Market Intelligence Report*, June 1990, 6 p.

[45]Safire, William, "The Great SCUD-Patriot Mystery," *New York Times*, March 7, 1991, p. A25; Lenorovitz, Jeffrey M., "Poor Workmanship Discovered in SCUD Missile Fragments," *Aviation Week & Space Technology*, March 11, 1991, p. 16.

[46]Nolan, Janne E., *Trappings of Power: Ballistic Missiles in the Third World*, Washington, Brookings Institution, 1991, 209 p.; Shuey, Robert D. et al, *Missile Proliferation Survey of Emerging Missile Forces*, Washington, Congressional Research Service, February 9, 1989, 107 p.; "JDW Interview (with Henry Cooper)," *Jane's Defence Weekly*, March 16, 1991, p. 416.

Figure 4

TACTICAL BALLISTIC MISSILE PROLIFERATION

Missile Forces

NATO

Belgium	SRBM
France	IRBM
Germany	SRBM
Italy	SRBM
Netherlands	SRBM
United Kingdom	SRBM
United States	SRBM

FORMER WARSAW PACT

Bulgaria	SRBM
Czechoslovakia	SRBM
Hungary	SRBM
Poland	SRBM
Romania	SRBM
Soviet Union	SRBM

OTHERS

Afghanistan	SRBM
China	IRBM
	SRBM
Egypt	SRBM
Iran	SRBM
Iraq	SRBM
Israel	MRBM
Korea, N.	SRBM
Korea, S.	SRBM
Libya	SRBM
Saudi Arabia	IRBM
Syria	SRBM
Yemen	SRBM

SRBM = Short-range (43-620 mi.)
MRBM = Medium-range (621-1860 mi.)
IRBM = Intermediate-range (1861-3100 mi.)

Countries Reportedly Developing Missiles

- Argentina
- Brazil
- Egypt
- India
- Libya
- Pakistan
- South Africa
- Taiwan

Nuclear and Chemical Weapons Reported Outside Europe

Burma	CW
China	CW & Nuke
Egypt	CW
Ethiopia	CW
Iran	CW
Iraq	CW
Israel	CW & Nuke
Korea, N.	CW
Korea, S.	CW
Libya	CW
Syria	CW
Taiwan	CW
Thailand	CW

Nuclear Weapons Within a Decade?

- Argentina*
- Brazil*
- India
- Iran
- N. Korea
- Pakistan
- South Africa
- South Korea
- Taiwan

* Program suspended

Source: Shuey, Robert, *Missile Proliferation: A Discussion of U.S. Objectives and Policy Options*, Washington, Congressional Research Service, Feb. 21, 1990, p. 3-6, updated orally as of April 1991.

ARMY DIVISIONS

Debates about the balance between heavy and light Army divisions began almost a decade ago. Champions of heavy divisions contend that Desert Storm confirmed the validity of their cause. Other evidence indicates that compromise positions may be preferable to either pole.

HEAVY DIVISIONS

U.S. armored and mechanized divisions performed admirably during Desert Storm. Tanks and Bradley fighting vehicles executed precision maneuvers rapidly on the open plains (3d Armored Division advanced 120 miles in one night), then easily defeated the Iraqi Republican Guard in battle. Only 4 of 1,956 M1A1 tanks and 3 of 2,200 Bradley's were disabled. Operational readiness rates exceeded 90 percent.[47]

Armored and mechanized divisions, which are much heavier than predecessors, nevertheless would have limited value if the next major contingency occurred in Korea's mountainous terrain or in jungles and swamps elsewhere. Many bridges, even in Europe, refuse to bear great weight (M1A1 tanks tip the scales at 67 tons combat loaded; the recovery vehicle currently under development weighs almost 70 tons, 13 tons more than the present model). Many roads that lack convenient bypasses are too narrow for heavy tank traffic. U.S. main battle tanks and armored fighting vehicles also preclude rapid deployment to meet emergencies. C-5 transports, the only U.S. long-distance cargo aircraft that can carry outsize loads, normally accommodate just one tank or four Bradleys per sortie. Heavy divisions consequently must travel largely by sea, a time-consuming process.[48]

LIGHT DIVISIONS

The U.S. Army's four light infantry divisions (LID) were conspicuously absent during Desert Storm, basically because they lacked sufficient firepower, mobility, and staying power to contribute significantly, unless augmented in many ways. The 82d Airborne Division, among the first arrivals, was largely relegated to rear area security roles for similar reasons after the Desert Shield buildup was well under way.

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[47]*Army Weapons Systems Performance in Southwest Asia*, Washington, Army Legislative Liaison Programs Division, March 15, 1991, p. 1-2.

[48]Segal, David, "Whatever Happened to Rapid Deployment?," *Armed Forces Journal*, March 1991, p. 39-40. "Armor Against Fire: The Pendulum Slows," *Army*, July 1987, p. 36-37; Roos, John G., "Seven Years After Fielding, Army Still Can't Yank Tanks," *Armed Forces Journal*, October 1989, p. 90, 92.

How many (if any) light infantry divisions should remain if the active Army total dwindles to twelve, as Defense Secretary Cheney proposes, is a controversial issue. The original rationale, which persists, postulates rapid deployment capabilities, plus utility against comparably equipped forces anywhere in the world or against heavy divisions under favorable conditions.[49] Critics from the beginning, however, have questioned the combat capabilities of light divisions. Common complaints contend that LIDs likely would be outgunned by most Third World adversaries, many of whom possess Soviet arms and equipment (one battery of eight 155mm howitzers comprises the largest LID artillery); that they are poorly protected (no armored vehicles and scant air defense); that they are mainly foot-mobile (only one of nine infantry battalions can be heliborne and one more motorized at any given time); and that scenarios which call for more than one LIC are unrealistic.[50]

MIDDLEWEIGHT DIVISIONS

Some observers, bearing in mind the disadvantages of too many heavy or light divisions, believe the best future mix might combine heavy armored and mechanized infantry forces with rapidly deployable, agile, and lethal middle-weight divisions that feature tanks and fighting vehicles able to fit into tactical air transport easily, and preferably tolerate parachute delivery.[51] Senior commanders might form expedient light divisions by temporarily stripping selected accoutrements and personnel from heavy and middleweight formations to handle low-intensity threats, then reverse that process when needs cease. U.S. Army divisions in Vietnam, for example, left most vehicles in motor pools for the

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[49]Hollingsworth, James F., "The Light Division: Light Enough to Get There--Mobile Enough to Survive -- Lethal Enough to Win -- We Need It Now," *Armed Forces Journal*, October 1983, p. 84-85,88,90; Wickham, John A., Jr., "Light Divisions' Effectiveness Will Grow From 'Soldier Power'," *Army Times*, November 16, 1984, p. 10,12; DuPuy, William E., "The Light Infantry: Indispensable Element of a Balanced Force," *Army*, June 1985, p. 26-29, 32-33, 36-37, 39-41.

[50]Senior Army officers have declined to criticize light divisions openly unless protected by pseudonyms. See, for example, Damon, Sam and Ben Krisler, "Army of Excellence: A Time to Take Stock," *Armed Forces Journal*, May 1985, p. 86-87, 90, 92, 94. Other views are typified by Segal, David, "Army Light Division: Are They Fit to Fight?," *Armed Forces Journal*, October 1988, p. 82, 84,86,88.

[51]Metamorphoses are described in Mazarr, Michael J., *Light Forces and the Future of U.S. Military Strategy*, Washington, Brassey's, 1990, p. 121-162. See also Tusa, Francis, "Increased Firepower Weighs Heavily on Light Armor," *Armed Forces Journal*, March 1991, p. 42; Adams, Peter, "Tracked, Wheeled Vehicles to Share Battlefield," *Army Times*, November 30, 1987, p. 25,28 and Judith Kohn Brown, "Marines to Take Lead in Light Tank Program," p. 28; Segal, David, "Whatever Happened to Rapid Deployment?," p. 39.

duration of that conflict, but would have been ready for Desert Storm - style operations if required.

NAVAL COMBAT CAPABILITIES

The 7-ship U.S. Middle East Force based at Bahrain was on the spot when Desert Shield started. Naval reinforcements augmented that nucleus rapidly.[52] Five carrier battle groups enforced the UN - imposed embargo against Iraq, acting in loose collaboration with ships from 14 other nations. Aircraft from six carriers participated in combat operations during Desert Storm from stations in the Persian Gulf, Red Sea, and eastern Mediterranean. Two battleships and perhaps seven attack submarines launched Tomahawk cruise missiles.[53] Battleships and their escorts also furnished naval gunfire support for allied forces and U.S. Marines near the Kuwaiti coast. Minesweeping deficiencies predictably provided the only notable disappointments.[54]

U.S. naval warfare during Desert Storm conformed to a pattern that has persisted since World War II. The last "blue water" surface battle took place off Kyushu on April 6-7, 1945. The last enemy warship sunk by a U.S. submarine was the Japanese destroyer *Nokaze* near Saigon on February 19, 1945. The last victim of a U.S. submarine was a merchant ship in the Sea of Japan the following August.[55] All subsequent engagements constitute two categories. Representative ship-against-shore operations include those connected with the Korean War, the Vietnam War, the Dominican Republican (1965), Lebanon (1983-84), Grenada (1983), and Libya (1986). All ship-to-ship encounters, excluding Cuban missile crisis confrontations, were small scale and close to coasts. The North Korean seizure of *USS Pueblo* (1968), the *Mayaguez* incident off Cambodia (1975),

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[52]Bowman, Steven R., *Persian Gulf War: Summary of U.S. and Non-U.S. Forces*, Washington, Congressional Research Service, February 11, 1991, p. 5-8.

[53]Vice Admiral Roger F. Bacon, Assistant Chief of Naval Operations (Undersea Warfare), in unclassified testimony before The House Armed Services Committee on March 20, 1991 announced that 13 attack submarines participated in Desert Storm. Not all were present at one time, however, and some never engaged in combat, according to amplifying information from his office.

[54]Schmitt, Eric, "Gulf Is Swept for Mines In The Aftermath of War," *New York Times*, March 19, 1991, p. 14; Rumsey, Anne, "Navy Lacks Hunter for Shallow-Water Mines," *Defense Week*, March 13, 1989, p. 1,12; Truver, Scott C. and Jonathan S. Thompson, "Navy Mine Countermeasures: Quo Vadis?," *Armed Forces Journal*, April 1987, p. 70,72,74.

[55]Morison, Samuel Eliot, *The Two-Ocean War: A Short History of the United States Navy in the Second World War*, Boston, Little, Brown, and Co., 1963, p. 509-510, 537-541.

altercations in the Gulf of Sidra (1981, 1989), and Persian Gulf escort duty (1987-88) are typical.

America's maritime strategy until quite recently emphasized abilities to deter and, if need be, defeat the Soviet Navy.[56] U.S. Naval forces are still configured to perform those tasks, although most authorities, who include the Secretary of Defense, JCS Chairman, and the Chief of Naval Operations, believe Soviet threats are much muted.[57] Decisionmakers therefore should determine whether basic changes in composition should accompany proposed naval force reductions. Fewer carrier escorts and submarines,[58] for example, might be appropriate in the new context, if experience since 1945 remains relevant. More mine warfare ships seem advisable. Attention to underway replenishment ships could increase, if the U.S. Navy loses access to forward bases, such as Subic Bay in the Philippines.

TACTICAL AIR COMBAT FORCES

U.S. tactical air combat power was spectacular during Desert Storm. Army Apache helicopters fired the first shots when they destroyed two Iraqi early warning sites in the wee hours of January 17, 1991. Unarmed EF-111s, which specialize in electronic warfare, widened the corridor into Iraq when they jammed antiaircraft radars and fire-direction centers.[59] Bombers, attack aircraft, and Tomahawk cruise missiles then began the systematic destruction of command-control-communications facilities, military airfields, and air defenses. Resultant air supremacy, swiftly achieved, thereafter allowed U.S. aircraft to strike at will from medium altitudes, almost with impunity. SCUD launchers, missile storage sites, electrical power plants, nuclear development facilities, and chemical/biological warfare factories were lucrative targets before coalition air forces turned their

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[56]Watkins, James D., "The Maritime Strategy" and John F. Lehman, Jr., "The 600 - Ship Navy," both in *The Maritime Strategy*, a supplement to the *U.S. Naval Institute Proceedings*, January 1986, p. 2-17, 30-40.

[57]See Note 4.; also Trost, Carlesle A. H. , "Maritime Strategy for the 1990s," *U.S. Naval Institute Proceedings*, May 1990, p. 92-97; Collins, John M. and Dianne E. Rennack, *U.S./Soviet Military Balance: Statistical Trends, 1980-1989, (As of January 1, 1990)*, Washington, Congressional Research Service, August 6, 1990, p. 90-123.

[58]Lacy, James L., "Attack Submarines: The Case for Negotiated Reductions, *Arms Control Today*, p. 8-12; Keller, John, "Submarine Threat Didn't Vanish With the Cold War," *Military & Aerospace Electronics*, February 1991, p. 11.

[59]Grier, Peter, "U.S. Army Opened Way for Air War," *Christian Science Monitor*, March 27, 1991, p. 8; Fulghum, David A., "EF-111s Jammed Radars to Open Air War Against Iraq," *Aviation Week & Space Technology*, February 4, 1991, p. 26.

attention toward the Iraqi Army.[60] Air-to-air encounters were short and conclusive: the score was 42-to-0 in favor of allied forces. Ground fire downed 32 U.S. aircraft of all types during 43 days of Desert Storm. Other coalition forces lost 9. Those figures are phenomenally low, considering a combat sortie rate that averaged more than 1,000 per day (U.S. Army Air Forces lost 60 B-17 bombers, each with a crew of 10, during the Schweinfurt-Regensburg raid of August 17, 1943 -- 19 percent of the force -- and 60 more on a second raid two months later).[61]

AIRCRAFT MODERNIZATION

Tactical air operations against Iraq continue trends in motion for many years. Official Air Force, Navy, and Marine Corps accounts of air war in Korea and Vietnam concentrate on bombardment. Air-to-air combat received scant attention in comparison.[62] Subsequent aerial encounters have been confined to minor altercations with Libya in 1981 and 1989.[63] Carrier aircraft made substantial contributions, but land-based squadrons predominated.

Current generation U.S. tactical aircraft far outstripped expectations throughout the war with Iraq. Readiness rates for all types exceeded those recorded in peacetime, despite accelerated sortie rates and time aloft.[64] Expeditious programs to develop and deploy advanced tactical fighters and

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[60]"Schwarzkopf Declares Air Supremacy Over Iraq," *Aerospace Daily*, January 31, 1991, p. 169; Morrocco, John D., "U.S. Tactics Exploit Advances in Avionics, Air-to-Surface Weapons," *Aviation Week & Space Technology*, February 18, 1991, p. 52-53; Bird, Julie, "Horner: Further AF Role in Gulf Not Needed," *Air Force Times*, March 18,1991, p. 8.

[61]"Allies Shoot Down 42 Iraqi Aircraft, 81 Others Destroyed on Ground," *Aviation Week & Space Technology*, March 11, 1991, p. 22; *The Army Air Forces In World War II*, Vol. Two, Europe: Torch to Pointblank, August 1942 to December 1943, Ed. by Wesley Frank Craven and James Lea Cate, Chicago, University of Chicago Press, 1949, p. 682-683, 704.

[62]See, for example, Futrell, Robert F., *The United States Air Forces in Korea, 1950-1953*, Rev. Ed., Washington, Office of Air Force History, 1983, 823 p; *The United States Air Force in Southeast Asia, 1961-1973*, Ed. by Carl Berger, Washington, Office of Air Force History, 1977, 365 p.

[63]"U.S. Navy Fighters Down 2 Libya Jets," *Facts on File Yearbook*, 1989, p. 1-2; "U.S. Navy F-14s Down Two Libyan Jet Fighters," *Facts on File Yearbook*, 1981, p. 589-591.

[64]"Tac Mission Capable Rates Up 7% for War, Even As Sorties Doubled," *Aerospace Daily*, April 2, 1991, p. 9.

improved interdiction aircraft, as presently proposed,[65] therefore may be difficult to justify during the impending period of budgetary constraint, unless perceived threats clearly indicate requirements for immediate and major improvements. Replacements for SR-71 "spy planes" and close air support aircraft able to perform well at night and in bad weather might deserve higher priorities.[66]

Future U.S. armed conflicts may not always favor Air Force and Marine aircraft with adequate bases ashore. Carrier air power sometimes might predominate. Vertical takeoff and landing capabilities could be more in demand by tactical air combat forces ashore. The current interservice mix therefore merits review. Navy officials moreover might reconsider the proportion of shipboard aircraft dedicated to fleet defense, if they wish to contribute more effectively to land battles.[67]

AIRCRAFT-CRUISE MISSILE MIX

Decisionmakers concurrently could reconsider tradeoffs between manned aircraft and land attack cruise missiles. Tomahawks, for example, demolished heavily-defended hard targets without endangering air crews during Desert Storm. Featureless plains imposed no obstacles between launch sites and precisely located targets. Terrain-following computers, however, might not work so well on short notice in poorly mapped regions that feature rough topography. Computerized data also are difficult to update rapidly after initial strikes obliterate landmarks. Some Tomahawks consequently became confused after bombardment levelled tall buildings in Baghdad.[68] Reusable manned aircraft are much more versatile. Variable payloads can be tailored for particular targets. Crews can maneuver

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[65]Schine, Eric and Russell Mitchell, "The $75 Billion Question: Whose Fighter Will Win?" *Business Week*, April 8, 1991, p. 64; Cooper, Bert H., Jr., *Advanced Tactical Fighter (ATF) Aircraft (Weapons Facts)*, Issue Brief IB87111, Washington, Congressional Research Service, March 21, 1991, 9 p.

[66]Morrocco, John A., "Nighttime CAS to Pose Challenge for Air Units Once Ground War Begins," *Aviation Week & Space Technology*, February 11, 1991, p. 20-21; Heppenheimer, T.A., "Revealed! March 5 Spy Plane," *Popular Science*, November 1988, p. 70-73.

[67]Reconfiguration may already be in the offing. See Holzer, Robert, "Navy to Revamp Carrier Wings," *Defense News*, February 25, 1991, p. 4.

[68]Anderson, Jack and Dale Van Atta, " 'Confused' Tomahawks Missed Targets," *Washington Post*, March 27, 1991, p. F11. For a more sanguine view, see "Tomahawk War Effectiveness Reduces A-X Stealth Requirement," *Aerospace Daily*, April 15, 1991, p. 85.

to avoid enemy air defenses, assess situations on-the-spot, and adjust accordingly.[69] Some mix of manned aircraft and land attack missiles thus seems mandatory.

MARINE CORPS ROLES AND MISSIONS

Two Marine divisions, in concert with other coalition forces, breached Iraqi barriers on February 24, 1991 and quickly liberated Kuwait. Their performance, in General Schwarzkopf's words, was "absolutely superb ... a textbook, and I think it'll be studied for many, many years to come as the way to do it."[70] Marine aviation furnished direct support.

Those admirable actions, however, were remotely related to statutory Marine Corps roles and missions, which are to organize, train, and equip forces "for service with the fleet in the seizure or defense of advanced naval bases and for the conduct of such land operations as may be essential to the prosecution of a naval campaign." A DOD directive further stipulates that those duties "do not contemplate the creation of a second land Army." Marines ashore nevertheless performed tasks that were indistinguishable from those of the U.S. Army, which prepares "primarily for prompt and sustained combat incident to war on land" (more specifically to "defeat enemy land forces and to seize, occupy, and defend land areas.")[71] First, Marine divisions guarded Saudi Arabian oil installations and port facilities;[72] second, they defeated Iraqi land forces in Kuwait; third, they remained in Kuwait as a security contingent after the shooting war ceased.

Marine duplication of Army roles and missions is nothing new. Overlaps started early in the Twentieth Century with lengthy employments in Haiti, the Dominican Republic, and Nicaragua. Marine Major General John A. Lejeune commanded a composite Army-Marine division in France during World War I. Few Marines in Korea or Vietnam ever smelled salt water after the Inchon

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[69]Tradeoffs between cruise missiles and tactical aircraft are contained in Collins, John M., *Strategic Nuclear Delivery Systems: How Many? What Combinations?* Washington, Congressional Research Service, October 7, 1974, p. 52-68.

[70]"Schwarzkopf: Strategy Behind Desert Storm," p. 35.

[71]*Title 10, United States Code*, Sections 3062 and 5063; *DOD Directive 5100.1: Functions of the Department of Defense and Its Major Components*, September 25, 1987, p. 13,16.

[72]Moore, Molly "U.S. Troops Just Starting to Get Feet on Ground," *Washington Post*, August 26, 1990, p. A21.

landings.[73] That practice perpetuates a larger Marine Corps with different purposes than otherwise might be required.

Neither *Title 10* nor DOD's amplifying directive presently address contingency roles and functions. Those deficiencies foster competition between the Marine Corps and Army over respective responsibilities.[74]Early decisions seem advisable, because they would fundamentally affect the future size, configuration, and capabilities of both Services.

SPECIAL OPERATIONS

Special operations during Desert Shield and Desert Storm were shrouded in secrecy, but even a handful of declassified details indicate that the missions they performed were diversified and important. Skilled linguists accompanied more than 100 coalition formations to facilitate coordination with English-speaking forces on their flanks, arrange U.S. air strikes, and reduce the likelihood of casualties from "friendly fire." Special Forces collected intelligence, designated targets for U.S. aircraft using laser "pointers," searched for mobile SCUD missile launchers, severed land lines of communication, helped organize resistance inside Kuwait, and destroyed suspected terrorist safe houses in Kuwait City. Soil samples they provided the U.S. Army's VII Corps identified surface materials that would support armored traffic. SEALs conducted raids, reconnaissance, and sabotage operations closer to the coast. They also cleared some naval mines. Aircraft manned by crews skilled at clandestine infiltration and exfiltration participated in most special operations that penetrated hostile space. They comprised the only resource able to rescue downed fliers who otherwise would have fallen into enemy hands.[75]

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[73]Millett, Alan R., *Semper Fidelis: The History of The United States Marine Corps*, NY, MacMillan, 1980, 782 p.

[74]*Contingency Forces*, statement before the Defense Policy Panel of the House Armed Services Committee by General Carl E. Vuono, Chief of Staff United States Army, March 14, 1990, 16 p. and by General Alfred M. Gray, Commandant United States Marine Corps, same date, 21 p.

[75]"The Persian Gulf War: Schwarzkopf Answers to Reporters' Questions," p. 36; Capaccio, Tony, "A Barrage of Commando Missions Crippled Saddam," *Defense Week*, April 8, 1991, p. 1,7,12,13; Diaz, Tom, "Special Forces Busy in Kuwait," *Washington Times*, March 20, 1991, p. 1; Gerz, Bill, "U.S. Commandos Steal Into Iraq to Spot Mobile Missiles," *Washington Times*, January 25, 1991, p. B1.

QUESTIONABLE EMPLOYMENT PRACTICES

U.S. special operations forces (SOF) are small, carefully selected, and superlatively trained to undertake risky tasks that other units could accomplish only with far greater difficulty and far less effectiveness, if at all. Each type is unique. Rangers, for example, are elite light infantry optimized for hit-and-run raids, ambushes, and other shock actions. SEALs, skilled at surreptitious operations, commonly reconnoiter and attack littoral targets of value to navies. Beach defenses, harbor facilities, submerged obstacles, and enemy ships in port typically attract their attention. Main missions of area-oriented Army Special Forces (Green Beret) detachments are to instruct foreign armed forces, paramilitary groups, and undergrounds in fine points of insurgency, resistance, or counterinsurgency. Their diversified repertoire of techniques runs a gamut from guerrilla tactics to civic action, subversion, evasion and escape. Uniquely qualified aircraft and crews furnish all SOF with highly specialized airlift, fire support, reconnaissance, and rescue capabilities while blacked out in bad weather.[76]

Misuse of SOF may squander valuable assets assembled at great expense in time, money, and training. Two lightly-armed Ranger battalions were decimated at Cisterna, Italy during World War II after being committed to sustained action like standard infantry. They were never reconstituted.[77] SEALs took a shellacking during Operation Just Cause in Panama on December 20, 1990, when ordered to seize and hold Paitilla airfield (3 of 48 were killed in action, 1 died later, 9 more were wounded).[78] A regular rifle company would have been more suitable for that mission. Uncharacteristic employment of Army Special Forces as intelligence collectors, target designators, saboteurs, and counterterrorists in Iraq and Kuwait had a happy ending, but nonetheless is open to argument. Their competence is unquestioned. Desert Shield and Desert Storm practice, however, risked hard-to-replace personnel who spent years acquiring language proficiency and cross-cultural understanding applicable to a particular geographic area.

U.S. defense decisionmakers therefore might better dispatch Special Forces teams to train selected allies and provide them the wherewithal to perform tasks like those outlined above. A more expensive but more dependable alternative

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[76]Collins, John M., *U.S. and Soviet Special Operations*, Washington, Congressional Research Service, December 25, 1986, p. 21-37, 82-90.

[77]Blumenson, Martin, "General Lucas at Anzio," in *Command Decisions*, Ed. by Keith Roberts Greenfield, Washington, Office Chief of Military History, U.S. Army, 1960, p. 344.

[78]Starr, Barbara, "Comms Failure Blights SEAL Operation," *Jane's Defence Weekly*, May 5, 1990, p. 834.

might be to form nondivisional U.S. units much like former long-range reconnaissance patrols (LRRPs) responsive to theater commanders.[79]

MISSED PSYOP OPPORTUNITIES

Psychological operations (psyop), which may precede, accompany, replace, or follow applications of force, constitute the planned use of propaganda (broadly defined) and physical actions (such as terror) to influence the behavior of friendly, enemy, or neutral audiences in support of political-military aims. Saddam Hussein engaged in strategic psychological warfare throughout the campaign. Coalition efforts were largely confined to tactical endeavors connected directly with military plans and operations.[80]

Saddam Hussein encouraged "oppressed" peoples throughout the Muslim world to overthrow their governments, which he called corrupt, promised to promote pan-Arab interests, redistribute wealth among "have" and "have not" Arab nations, and protect Islam against infidels. He encouraged pacifist sentiment in the United States, which suited his purposes perfectly, then claimed U.S. aircraft were deliberately bombing civilian residences and religious sites after the shooting war started (the alleged assault on a "milk factory" got extensive play in the U.S. press).[81]

Coalition leaders, who could not foresee that he would fail, were justifiably concerned for several months, but made no cohesive, sustained countermoves, although many themes directed at the Iraqi people might have weakened Saddam's position before and after Desert Storm started, if pursued adroitly and persistently:

- His disregard for the fate Iraqi armed forces
- His disregard for the suffering of Iraqi civilians

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[79]The 24th Infantry Division and Marine divisions employed long-range reconnaissance and surveillance teams within respective areas of interest in Iraq and Kuwait. See, for example, "The Spies in The Sand Far Behind the Enemy's Lines," *U.S. News & World Report*, March 11, 1991, p. 34; Healy, Melissa, "Special Forces: U.S. 'Eyes' Deep in Enemy Territory," p. 1.

[80]One widespread technique is described by Walter S. Mossberg in "U.S. Used Press As Weapon," *Wall Street Journal*, February 28, 1991, p. 3. See also Kurkjian, Stephen, "CIA Wages Quiet War on Iraq," *Boston Globe*, February 11, 1991, p. 1.

[81]Bakhash, Shaul, "How Saddam Is Dividing the Arab World," *New York Review of Books*, November 8, 1990, p. 49-51; Nieves, Evelyn," Protests in 16 Cities Are First Coordinated Against U.S. Gulf Role," *New York Times*, October 21, 1990, p. 14; *Daily Report: Near East and South Asia*, Foreign Broadcast Information Service, January 22, 1991, p. 53, 55; Cody, Edward, "Saddam Seeks Support From Religion," *Washington Post*, September 7, 1990, p. 1,31.

- His amassment of a personal fortune at their expense
- His waste of national resources on a military machine
- His brutal attacks on Muslim brothers
- His repression of minorities
- His cynical manipulation of Islamic religion and disregard for sacred tenets
- His deliberate disregard for international law: mingling military and civilian installations; collocating hostages and prisoners of war with military targets

No serious repercussions accompanied U.S. failure to employ strategic psyop effectively during Desert Shield and Desert Storm, but the future may not be so kind. A sophisticated, area-oriented psyop apparatus staffed by professionals and supported by specialized intelligence accordingly may be worth reconsideration.

INTERCONNECTING COMMENTARY

Planners, programmers, and budgeteers who prepare armed forces to refight the last war frequently do their nations a disservice, because conditions that foster success in one place and time period may not pertain to forthcoming conflicts. France reconfirmed that fact after Germany invaded in 1940. U.S. defense officials learned similar lessons in Vietnam.

Students of Desert Shield and Desert Storm thus should resist temptations to "learn" more from those experiences than the facts allow. Contentions that air power has emerged as the dominant influence on future warfare should cause some skepticism. Those who assert that no ground campaign can succeed anywhere in the world if opponents possess air superiority or believe that armored divisions will always be most desirable might remember the outcome in Southeast Asia circa 1965-72, when footsoldiers gained ascendancy. The U.S. Navy and Marine amphibious forces played supporting roles in the Persian Gulf, but conceivably could predominate in different environments.

Congress and senior DOD officials therefore might wisely defer decisions to reduce and reconfigure U.S. armed forces until they have digested Desert Shield and Desert Storm experience more thoroughly and have compared options with perceived threats.