

COMMAND AND CONTROL

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(revised 30 September 2015)

(U) During the 1990s, the U.S. Air Force put greater emphasis on what commonly was called jointness, as the nation's military services worked and trained together to act as a smoothly merged fighting force. While many regarded Operation Desert Storm as a model of how to employ force in the national interest, some observers criticized the conduct of the Gulf War on the grounds that the Air Force and its comrades in arms had not worked together as closely as they might have. The service's own 1993 *Gulf War Air Power Survey* concluded: "During Desert Storm, the lack of common procedures, training, equipment, and software among the Services was a major obstacle to effective centralized command and control."¹

(U) Key to command and control for the coalition air forces was the air tasking order (ATO), an operational document that designated which aircraft were committed to an operation and assigned to them the missions, targets, rules of engagement, communication frequencies, and other essential details they required. Following the war, senior U.S. Navy officers stated that the dissemination of the ATO represented their "biggest problem" with command and control of the air campaign. Their carriers did not have Ninth Air Force's computer-aided force management system (CAFMS) and, thus could not receive the ATO electronically. Every day aircraft had to physically deliver "hard" copies of the ATO to each aircraft carrier.²

(U) Inter-service conflict also developed over the land. In one example, controversy developed between the U.S. Army and the Air Force during the ground campaign concerning where to place the fire support coordination line (FSCL). The FSCL was a designated dividing line meant to deconflict air support from friendly ground forces and prevent "friendly fire"

incidents. Between the front line of the friendly units and the FSCL, all aircraft sorties were under the positive control either of the ground forces or of airborne forward air controllers who were in communication with them. Beyond the FSCL, attack aircraft were free to strike at any targets they believed hostile. However, the rapid advance of coalition ground units made it difficult to establish the FSCL and keep fast-moving aircraft aware of its location. Several disputes over where the FSCL should be located took place.³

(U) Problems also arose with the U.S. Marine Corps, which, in its 3d Marine Air Wing, effectively had its own air force designed to provide close air support to its combat forces on the ground. Marine leaders believed that its aircraft and highly-developed procedures could do that job better than anyone else, and were displeased with Air Force control of their activities. Ultimately, the Marines retained control over F/A-18 Hornets, reserving them for attacking Iraqi forces in southern Kuwait in direct support of their ground operations. By the fourth week of the air campaign, the Marine Corps had pulled nearly all of its airplanes out of coalition air operations against Iraq, concentrating them instead against targets to which, its leaders believed, the Air Force had given insufficient attention.⁴

(U) These disagreements represented only a few examples of tensions among the services during the Gulf War. In a widely read history of the conflict, *The Generals' War*, military correspondent Michael R. Gordon and retired Marine Corps Lt. Gen. Bernard E. Trainor argued that the conflict should and could have been waged more jointly. In their words, “the way the war was planned, fought, and brought to a close often had more to do with the culture of the military services, their entrenched concept of warfare, and [Chairman of the Joint Chiefs of Staff (CJCS) General Colin L.] Powell’s abiding philosophy of decisive force than it did with the Iraqis or the tangled politics of the Middle East.”⁵ Gordon and Trainor contended that the

conduct of the Gulf War “was ‘joint’ more in name than in fact. Each service fought its own war, concentrating on its own piece of the conflict with a single-minded intensity, and the commanders in Washington and Riyadh failed to fully harmonize the war plans.”⁶

(U) The Air Force emerged from the Gulf War justifiably proud of its record during the conflict but aware that there was a certain amount of truth in the Gordon and Trainor thesis. In response, the Air Force and the other services determined to strengthen their commitment to jointness. In an August 1993 speech at Elmendorf Air Force Base (AFB) in Alaska, Secretary of

Image 1



F/A-18 Hornet: Marines kept their F/A-18 Hornets under their own control during Operation Desert Storm.

the Air Force Dr. Sheila E. Widnall underscored the importance of “new joint action with the other services and our allies.”⁷ A year later defense journalist John Tirpak observed: “Steadily dropping budgets and increased pressure to eliminate duplication of effort have given the armed services a new religion. It’s called ‘jointness.’”⁸

(U) The Gulf War itself, as a matter of course, strengthened the Air Force’s experience with jointness. During Operation Desert Storm, for the first time since the Vietnam War, Air Force senior leaders participated with the other services in sustained combat. Preeminent among these general-officer veterans was Lt. Gen. Charles A. (Chuck) Horner, by virtue of the fact that

during the Gulf War he had served as the Joint Force Air Component Commander (JFACC). Under the governing Joint Chiefs of Staff publication at the time, the JFACC derived his authority from the joint force commander and he ensured that all aspects of air power in his theater worked together.⁹ He planned, coordinated, allocated, and tasked the air sorties of all the services and allies operating in his area of responsibility—in his case, Southwest Asia.¹⁰

(U) Lieutenant General Horner filled these responsibilities from a Tactical Air Control Center (TACC) located in the basement of the headquarters of Royal Saudi Air Force in Riyadh.¹¹ From this facility, the JFACC and his staff controlled all aircraft and air-warning assets that performed tactical air operations in the Southwest Asian theater. One contemporary observer of the Gulf War TACC characterized its personnel as very high-quality people. During Operation Desert Storm these officers and airmen, like their generals, gained invaluable experience with the command and control of joint and coalition operations. In remarks made many years after the Gulf War, General John P. Jumper, Air Force Chief of Staff (CSAF) from 2001 to 2005, strongly praised his service's experience in the conflict: "What Lt. Gen. Chuck Horner did to validate the concept of the air operations center," he reflected, "was tremendous."¹²

(U) This experience revealed not only wartime successes with the command and control of joint forces, but also areas where improvements were needed. After the Gulf War, the Navy addressed the issue of receiving ATOs through the CAFMS by equipping its ships with new hardware. By January 1992, three carriers and six other vessels gained CAFMS capability. In addition to gaining Navy-Air Force compatibility, USAF leaders also hoped newer software would help the military services manage information better. After Operation Desert Storm, computer experts and acquisition managers looked to the contingency theater automated

planning system (CTAPS), a UNIX-based bundle of application programs, to assist air planners in sharing data more effectively.¹³ However, CTAPS, like CAFMS, proved difficult to use; and during the late 1990s the Air Force adopted the much more advanced theater battle management core system (TBMCS).¹⁴

(U) In addition to the quality of computer programs and their inter-service compatibility, representatives of the services debated other issues during the Gulf War. Some of the sharpest discussions concerned the JFACC and the Joint Target Coordination Board (JCTB). Chaired by a member of the JFACC's staff, the JCTB comprised representatives from the Army, Navy, Marine Corps, and coalition partners including Kuwait. The board provided a forum within which the services nominated targets for the air campaign. On February 18, with the ground campaign less than a week away, an Army situation report complained: "Too few sorties are made available to the VII and XVIII [Airborne] Corps."¹⁵ Navy and Marine Corps planners also tried to gain more sorties against Iraqi tanks. In response, Air Force officers contended that the final responsibility for prioritizing targets must rest with the JFACC in the interest of centralized apportioning of air power.¹⁶ That view was best expressed following the conflict, when a Navy-Marine Corps "lessons learned" study recommended that a member of the Joint Forces commander's staff, rather than of the JFACC, should chair the JCTB. Air Force officers opposed this view, contending that target apportioning should remain centralized and in the hands of the JFACC. In the words of one USAF Gulf War veteran: "We feel it should be at the JFACC level because he's staffed to do it and has the expertise to do it. And he's probably going to be the one that [conducts] exercises during peacetime to do it."¹⁷

(U) Although the services exchanged their points of view in sometimes sharply worded statements, they made progress in cooperating with each other. Col. Charles Westenhoff, who

represented the Air Force Doctrine Center at several conferences during the early 1990s, believed that most of the Marine Corps officers he met accepted the concept of jointness. He recalled: “Some leaned forward; some resisted. The general feeling of Marine aviators was that this was the way forward and we might as well figure out a way to make it work as well as possible.”¹⁸ In a 1993 article Rear Adm. James A. Winnefeld, a naval aviator, and Dr. Dana J. Johnson, a Rand Corporation analyst, offered the positive suggestion that the services should conduct “joint exercises under the direction of an exercise JFACC to familiarize each service with joint procedures and to test joint air-control systems.”¹⁹

(U) By the time the Winnefeld/Johnson article was published, Admiral Charles R. Lawson, commander in chief of U.S. Pacific Command, had initiated a series of exercises, the first of them held in the eastern Pacific during July 1992 and led by the commander of Third Fleet, Vice Adm. Jerry L. Unruh. About 15,000 Army, Navy, and Air Force personnel participated in Exercise Tandem Thrust. Lt. Gen. Joseph Ralston, the new Eleventh Air Force Commander, served as the JFACC for this exercise. Significantly, Ralston remotely coordinated all of Tandem Thrust 92’s air operations from a command center at Luke AFB, Arizona. One participant said of the exercise, held less than a year and a half after the Gulf War: “We gained some more confidence in the joint command and control of air operations.”²⁰

(U) About five thousand highly-qualified representatives from all the services participated in Tandem Thrust 93, which took place that July in the waters around Tinian, the Farallon de Medinilla Islands, and Guam. For this exercise, the JFACC was stationed aboard the USS *Blue Ridge*, a special Navy command and control ship that served as flagship for the Seventh Fleet, where he demonstrated the ability to exercise



USS *Blue Ridge*

the JFACC function while afloat. The centerpiece of Tandem Thrust 93 took place in the middle of the exercise when the JFACC transferred his authority ashore to a command post at Anderson AFB, Guam.²¹

(U) Colonel Westenhoff, who was aboard the *Blue Ridge* during Tandem Thrust 93, characterized the first two post-Desert Storm JFACC exercises as “walk-before-you-run” efforts that proved certain concepts without “putting a lot of forces at risk while trying something new.” The Defense Department continued the Tandem Thrust series of exercises through the 1990s and into the new century.²²

(U) The exercises improved the command portion of “command and control.” The ability to control actions also evolved because of the development of better software and hardware by commercial firms that made them readily available to the Air Force and other services. Nomenclature changed when, in January 1992, Brig. Gen. Michael Short—then Air Combat Command’s deputy chief of staff for operations and later the JFACC for the Kosovo air campaign—replaced the TACC with the “Air Operations Center.” Subsequently, in recognition of the fact that air operations were becoming more joint and more multinational, military planners expanded Short’s new term to *Combined* Air Operations Center (CAOC). By the time of Operation Deliberate Force—the August 30 through September 20, 1995, air campaign in Bosnia—the comparatively limited TACC of Operation Desert Storm had been replaced by a far more technologically advanced CAOC.²³

(U) The CAOC was the focal point for all NATO air operations over the former Yugoslavia. It was not created for Operation Deliberate Force. It had been established earlier, during the spring of 1993, at Vicenza Air Base (AB), Italy, for another Bosnian operation, Deny Flight. Maj. Gen. Hal M. Hornburg, who had commanded the 4th Fighter Wing during the Gulf

War, directed the CAOC.²⁴ Although most of its personnel were from the United States, it drew members from every country participating in Deny Flight. The CAOC's organization followed a traditional air-staff structure, with a NATO flavor to its personnel, intelligence, operations, logistics, plans, and communications branches.²⁵

(U) During Operations Deny Flight and Deliberate Force, CAOC officers and mission planners ensured NATO aircraft operated safely, in "deconflicted" airspace. Each day the CAOC staff produced air tasking messages, which translated NATO commanders' intentions into orders. A network of communications satellites, centered on Vincenza AB, allowed the facility's operations officers to strictly control all of the allied aircraft. CAOC personnel also prepared contingency plans for situations when new missions were needed quickly.²⁶

(U) In early 1995, Lt. Gen. Michael E. Ryan, commander of USAFE's Sixteenth Air Force and NATO's Allied Air Forces Southern Europe (AIRSOUTH), transferred a part of Sixteenth Air Force staff from Aviano AB, Italy, to the CAOC at Vincenza. The majority of the strategic planners assigned to Ryan's Headquarters AIRSOUTH in Naples, Italy, remained at that location under the direction of Col. Daniel Zoerb. Lieutenant General Ryan and most of his operations and staff officers transferred from Headquarters Sixteenth Air Force to the CAOC.²⁷

(U) Operation Deliberate Force began on August 30. Immediately, the CAOC's guidance, apportionment, and targeting (GAT) cell nominated targets to be attacked. The GAT cell originally consisted of Ryan, Colonel Zoerb, two veteran air-operations officers, and two intelligence targeteers. Working in Major General Hornburg's office, Lieutenant General Ryan and the cell members selected all of the specific targets for Operation Deliberate Force.²⁸

(U) The CAOC of Deliberate Force featured technical advancements over the TACC of Desert Storm. By the time of the Bosnia air campaign, intelligence, surveillance, and

reconnaissance sensors had evolved dramatically beyond the joint surveillance target attack radar system E-8A aircraft of the Gulf War.²⁹ Unmanned aerial vehicles (UAVs) had evolved after Desert Storm and, as discussed in the preceding chapter, the Predator proved particularly valuable during Operation Deliberate Force. Impressed with this UAV's performance over Bosnia, CSAF General Ronald R. Fogleman mobilized support to make it a USAF asset and to create an operational squadron even before the Air Force was designated the Predator's lead service.³⁰

(U) During the mid-1990s, the fields of electronic data and telecommunications made astonishing advances that soon revolutionized the Air Force's ability to command and control its forces. In May 1994, 380 information technologists from around the globe attended the First International Conference on the World Wide Web in Geneva, Switzerland. The following October, the World Wide Web Consortium was established to develop standards for the internet. In the same year, the Department of Defense (DOD) established a secret internet protocol router network (SIPRNet, "sipper net"), making possible instantaneous sending and receiving of electronic messages classified as secret.³¹

(U) These and other developments in information technology allowed the Air Force to make extraordinary improvements in its air operations centers. The improved capabilities of these facilities and their increasing importance to combatant commanders became so great that they invited the potential to amass information without concern for the efficient integration of hardware into a CAOC or the economical manning of it. However, the rapid advances in hardware and software during the late 1990s also produced another positive consequence: they encouraged the Air Force to reexamine its ideas about command and control. By 1998 the service's doctrine provided for an air operations center that included not only a plans division

and an operations division, but also a strategy division to plan for future operations and assess current and past ones.³²

(U) By the time Operation Allied Force began in March 1999, the Air Force had given considerable thought to its command and control doctrine, and the service enjoyed the benefits of the electronics revolution of the 1990s. However, these advantages were offset to some extent by cumbersome command arrangements for the Kosovo air campaign because the operation was a NATO, not a unilateral U.S. action. The resulting structure, therefore, was more complex than that for Operation Deliberate Force and far more so than for Operation Desert Storm.

(U) The chain of command of U.S. forces began with the national command authorities and moved down to the commander in chief, U. S. European Command, Army General Wesley K. Clark. Two senior officers served below him: Admiral James Ellis, commander of Joint Task Force Noble Anvil, and General Jumper, USAFE commander at the time. Admiral Ellis was the immediate superior of Lt. Gen. Michael Short, the JFACC for the Kosovo air campaign, although General Jumper exercised administrative control. The U.S. chain of command ended with the 32d Air Operations Group in the Joint Air Operations Center,³³ on Ramstein AB, and with the officers who augmented the group from elsewhere in Germany.³⁴

(U) The NATO chain of command ran parallel to that of the United States. The North Atlantic Council stood at its top, and General Clark, in his position as commander at Supreme Headquarters Allied Powers Europe (SHAPE), was immediately below the Council. His immediate subordinate was another dual-hatted senior officer, Admiral Ellis, who served as the commander of Allied Forces Southern Europe in the NATO chain of command. Below Admiral Ellis, Lieutenant General Short served both as the JFACC in the U.S. chain of command and as

Combined Forces Air Component Commander (and the AIRSOUTH commander) in the NATO organization.³⁵ Brig. Gen. Randall C. Gelwix directed the CAOC at Vincenza.³⁶

(U) These two parallel chains of authority, noteworthy for their dual-hatted responsibilities, represented a step backward from the command and control arrangements for the Gulf War and Bosnia. Lieutenant General Short stated that the Kosovo air campaign was waged with “about as murky a command relationship as you could possibly get.”³⁷ Military analyst Benjamin Lambeth contended that the “dual-hatting of so many commanders and operational functions often made it hard for Allied Force participants, irrespective of level, to determine exactly who was operating in what capacity at any given time.”³⁸

(U) While a cumbersome chain of command hindered Allied Force, the operation’s CAOC suffered from overcrowding. As the air campaign continued through the spring of 1999, its CAOC provided an unfortunate example of what General Jumper called the tendency “to pile stuff in there,”³⁹ without enough regard for rational integration and efficient manning. The CAOC’s staff grew from its peacetime level of between 250 and 300 personnel,⁴⁰ to nearly five times that number at the height of the air campaign. In a work published shortly after Operation Allied Force, Benjamin Lambeth reported: “Over time, the CAOC went from badly understaffed to packed with a surfeit of personnel as a result of the rampant inefficiencies of the target planning and apportionment process. On one occasion, there were as many as 1,400 people in the small and cramped facility, producing a staffing level that bordered on gridlock.”⁴¹

(U) Some observers also believed the command and control of Operation Allied Force was both helped and hindered by a new communications tool: the video teleconference (VTC). The Kosovo air campaign represented the first time VTCs took place during a military operation. The electronic conferences offered obvious advantages. General Clark was able to see and

communicate immediately with Secretary of Defense William S. Cohen, CJCS Army General Henry H. Shelton, the service chiefs, and other senior leaders.⁴² The VTCs connected key participants in the air campaign who were scattered across Europe and elsewhere.⁴³

(U) However, some contemporaries believed this new technology also carried disadvantages. Admiral Ellis granted that the VTC was a powerful tool if used properly, but—given that principal leaders attended three or four of them a day—contended they took too much time from senior officers and their staffs. After the air campaign, Royal Air Force Air Marshal Sir John Day, United Kingdom Ministry of Defense director of operations during Allied Force, made several suggestions about VTCs. Day recommended that VTCs be attended only by appropriate participants and viewers; be guided by agendas circulated in advance; be supported by thorough minutes; and be followed up by distributing a summary of the decisions taken during each conference.⁴⁴

(U) Whatever drawbacks VTCs or other elements may have brought to the Kosovo air campaign, they were outweighed by the overall progress the Air Force made during the 1990s to command and control its forces. During Allied Force the service for the first time fully reaped the benefits of the 1990s electronics revolution. Improvements in the World Wide Web made it possible to develop and communicate information about targets much more rapidly. The SIPRNet, developed by the DOD in 1994, allowed all of the U.S. participants in the air campaign to share target folders and other important classified data extensively and quickly.⁴⁵

(U) Most significantly, the CAOC that directed Operation Allied Force demonstrated dramatic progress beyond the comparable facilities of Operations Desert Storm and Deliberate Force in its ability to use intelligence gathered and fused together from a wide variety of sources. This technological advance allowed the air operations center to introduce “flex” targeting. A

postwar report described the innovation: “This effort focused principally on mobile targets in the vicinity of fielded forces in Kosovo, unlike static targets such as bridges, refineries, or electrical power stations. The rapid retargeting cell in the CAOC used various intelligence, surveillance, and reconnaissance sources for information in detecting and developing targets, and in providing information in near-real-time to allow aircraft and missiles to attack those targets.”⁴⁶

(U) The rapid retargeting organization referred to in this report was formally called the flex-targeting cell. Lieutenant General Short established it in the CAOC, after gaining targeting experience during the early days of the campaign. His planners established a “Kosovo engagement zone” (KEZ) similar to the “kill boxes” of the Gulf War air campaign that allowed attacking aircraft to engage targets of opportunity. With the flex-targeting cell and KEZ in place, the Allied Force air campaign turned its attention to fleeting targets—the Serbian integrated air defense system and the enemy’s field forces.⁴⁷

(U) By the time the Kosovo air campaign concluded successfully in June 1999, Air Force command and control was entering a new era. The CAOC’s capabilities were so advanced that it not only served as a facility for directing operations, but as a *weapon*. Military analyst Rebecca Grant asserts that “aerospace operators from many different specialties combined their talents to find targets and direct strikes to kill those targets.”⁴⁸ The Predator unmanned aerial vehicle, B-2 Spirit bombers carrying joint direct attack munitions (JDAMs), and other new systems produced more rapid and more flexible targeting. The command and control of Allied Force proved a harbinger of the air operations over Afghanistan and Iraq that followed early in the next century.

¹ (U) Eliot A. Cohen, ed., *Gulf War Air Power Survey*, unclassified ed., vol 1, *Command and Control*, (Washington: U.S. Government Printing Office, 1993), p 336 [note: Col Robert D. Evans, Chief of Headquarters Air Force's Concepts, Strategy, and Wargaming Division ("The Skunk Works") suggested several of the ideas that this chapter develops].

² (U) Edward J. Marolda and Robert J. Schneller, Jr., *Shield and Sword: The United States Navy and the Persian Gulf War* (Washington: U.S. Naval Institute Press, 2001), p 188.

³ (U) Perry D. Jamieson, *Lucrative Targets: The U.S. Air Force in the Kuwaiti Theater of Operations* (Washington: Air Force History and Museums Program, 2001), pp 107, 157–158.

⁴ (U) Rick Atkinson, *Crusade: The Untold Story of the Persian Gulf War* (Boston: Houghton Mifflin, 1993), pp 219, 338.

⁵ (U) Michael R. Gordon and Bernard E. Trainor, *The Generals' War: The Inside Story of the Conflict in the Gulf* (Boston: Little, Brown and Co., 1995), pp xii, xiv.

⁶ (U) Gordon and Trainor, *The Generals' War*, pp xii, xiv.

⁷ (U) Remarks, Sheila E. Widnall, Secretary of the Air Force, "Remarks at Elmendorf AFB Luncheon," 24 Aug 93.

⁸ (U) John Tirpak, "The Word Is 'Joint,'" *Air Force Magazine* 77:11 (Nov 1994), p 66.

⁹ (U) Cohen, ed., *Gulf War Air Power Survey*, unclassified ed., vol 1, *Command and Control*, I: p 345; Discussion (U), Perry D. Jamieson, Air Force History and Museums Program, with Col (ret.) Charles Westenhoff, contractor to the Concepts, Strategy, and Wargaming Division, Headquarters Air Force, 07 Oct 08.

¹⁰ (U) Cohen, ed., *Gulf War Air Power Survey*, unclassified ed., vol 1, *Command and Control*, I: p 345.

¹¹ (U) Diane T. Putney, *Airpower Advantage: Planning the Gulf War Air Campaign 1989–1991* (Washington: Air Force History and Museums Program, 2004), p 311 [note: Earlier, this TACC had been in a bubble-tent behind the RSAF building. See Putney, p 311].

¹² (U) Cohen, ed., *Gulf War Air Power Survey*, unclassified ed., vol 1, *Command and Control*, I: p 347; Discussion (U), Jamieson with Westenhoff, 07 Oct 08; Discussion (U), Perry D. Jamieson, Air Force History and Museums Program, with Gen (ret.) John P. Jumper, Air Force Chief of Staff from Sep 01 to Sep 05, 7 Nov 08 [note: The TACC also was used to direct the air assets in Operation Southern Watch.]; Report (S//NF), Mark Stanley, "The Al Udeid Combined Air Operations Center: From Requirement to Operational Capability" (Shaw AFB, S.C., 2004), p 3 (info used is U).

¹³ (U) Jamieson, *Lucrative Targets*, p 112; Discussion (U), Jamieson with Westenhoff, 07 Oct 08; Michael W. Kometer, *Command in Air War: Centralized Versus Decentralized Control of Combat Airpower* (Maxwell AFB, Ala.: Air University Press, 2007), p 160.

¹⁴ (U) Discussion (U), Jamieson with Westenhoff, 07 Oct 08; Kometer, *Command in Air War*, p 165.

¹⁵ (U) Jamieson, *Lucrative Targets*, pp 57, 131 [note: See also Gordon and Trainor, *The Generals' War*, p 330].

¹⁶ (U) Jamieson, *Lucrative Targets*, p 111; Gordon and Trainor, *The Generals' War*, p 330; Discussion (U), Jamieson with Westenhoff, 07 Oct 08.

¹⁷ (U) Jamieson, *Lucrative Targets*, p 111.

¹⁸ (U) Discussion (U), Jamieson with Westenhoff, 07 Oct 08.

¹⁹ (U) James A. Winnefeld and Dana J. Johnson, "Building a Brotherhood of Airmen," *United States Naval Institute Proceedings* 119:5 (May 1993), p 64.

²⁰ (U) Web site (U), "Tandem Thrust 92," <http://www.globalsecurity.org/military/ops/tandem-thrust.htm> (accessed 30 Apr 10); Web site (U), Official Air Force biography of Joseph W. Ralston, <http://www.af.mil/information/bios/bio.asp?bioID=6840> (accessed 17 May 10); Discussion (U), Jamieson with Westenhoff, 07 Oct 08.

²¹ (U) Web site (U), U.S. Navy Press Releases, "Tandem Thrust Emphasizes Response to Regional Crises," http://findarticles.com/p/articles/mi_pnav/is_199307/ai_1863612167/?tag=content;col1 (30 Apr 10); Discussion (U), Jamieson with Westenhoff, 07 Oct 08.

²² (U) Discussion (U), Jamieson with Westenhoff, 07 Oct 08; Web site (U), "Tandem Thrust 92."

²³ (U) Discussion (U), Jamieson with Westenhoff, 07 Oct 08; Report (S//NF), Mark Stanley, "The Al Udeid Combined Air Operations Center," p 3 (info used is U).

²⁴ (U) Bradley S. Davis, "The Planning Background," in Robert C. Owen, ed., *Deliberate Force: A Case Study in Effective Air Campaigning* (Maxwell AFB, Ala.: Air University Press, 2000), p 48; Web site (U), Official Air Force biography of Gen Hal M. Hornburg, <http://www.af.mil/information/bios/bio.asp?bioID=5858> (accessed 17 May 10).

²⁵ (U) Davis, "The Planning Background," in Owen, ed., *Deliberate Force: A Case Study in Effective Air Campaigning*, pp 48–49 [note: For a survey history of Deliberate Force and other operations over Bosnia, see Chapter 9 of this work by Daniel Haulman, "The United States Air Force and Bosnia"].

²⁶ (U) Davis, "The Planning Background," in Owen, ed., *Deliberate Force: A Case Study in Effective Air Campaigning*, pp 50, 52.

²⁷ (U) Davis, "The Planning Background," in Owen, ed., *Deliberate Force: A Case Study in Effective Air Campaigning*, pp 54–55; Web site (U), Official Air Force biography of Gen Michael E. Ryan, <http://www.af.mil/information/bios/bio.asp?bioID=7007> (access 17 May 10).

²⁸ (U) Richard L. Sargent, "Weapons Used in Deliberate Force," in Owen, ed., *Deliberate Force: A Case Study in Effective Air Campaigning*, p 290.

²⁹ (U) Kometer, *Command in Air War*, p 94; Jamieson, *Lucrative Targets*, p 50.

³⁰ (U) Kometer, *Command in Air War*, p 95.

³¹ (U) Web site (U), "First International Conference on the World Wide Web," <http://www94.web.cern.ch/WWW94/> (accessed 30 Apr 10); Kometer, *Command in Air War*, p 120.

³² (U) Discussion (U), Perry D. Jamieson, Air Force History and Museums Program, with Gen (ret.) John P. Jumper, Air Force Chief of Staff from Sep 01 to Sep 05, 7 Nov 08; Kometer, *Command in Air War*, pp 160–61.

³³ (U) Benjamin S. Lambeth, *NATO's Air War for Kosovo: A Strategic and Operational Assessment* (Santa Monica, Calif.: Rand Corporation, 2001), p 208.

³⁴ (U) Lambeth, *NATO's Air War for Kosovo*, pp 187, 208.

³⁵ (U) Lambeth, *NATO's Air War for Kosovo*, p 208.

³⁶ (U) Lambeth, *NATO's Air War for Kosovo*, pp 208–9; Web site (U), Official Air Force biography of Brig Gen Randall C. Gelwix, <http://www.af.mil/information/bios/bio.asp?bioID=5512> (accessed 17 May 10).

³⁷ (U) Lambeth, *NATO's Air War for Kosovo*, pp 207, 209.

³⁸ (U) Lambeth, *NATO's Air War for Kosovo*, pp 207, 209.

³⁹ (U) Lambeth, *NATO's Air War for Kosovo*, p 214.

⁴⁰ (U) Lambeth, *NATO's Air War for Kosovo*, p 214, note 87; Report (U), Headquarters United States Air Force, "The Air War Over Serbia Initial Report," 30 Sep 99 (AFHRA IRIS no. 01149318), p 38 [note: Lambeth puts the number at CAOC staff at 250, the official Air Force report on Kosovo at 300].

⁴¹ (U) Lambeth, *NATO's Air War for Kosovo*, p 214.

⁴² (U) Lambeth, *NATO's Air War for Kosovo*, p 216; Wesley Clark, *Waging Modern War: Bosnia, Kosovo, and the Future of Combat* (New York: Perseus Books, 2001), pp 340, 375.

⁴³ (U) Lambeth, *NATO's Air War for Kosovo*, p 217.

⁴⁴ (U) Lambeth, *NATO's Air War for Kosovo*, pp 217-18.

⁴⁵ (U) Kometer, *Command in Air War*, pp 126–27.

⁴⁶ (U) Report (U), Headquarters United States Air Force, *Initial Report: The Air War Over Serbia*, p 24.

⁴⁷ (U) Kometer, *Command in Air War*, pp 128-29.

⁴⁸ (U) Rebecca Grant, *The Kosovo Campaign: Aerospace Power Made It Work* (Arlington, Va.: Air Force Association, 1999), p 26.