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CLOSE AIR SUPPORT AND THE SOVIET THREAT

INTRODUCTION

Close air support (CAS) is defined by the Joint Chiefs of staff as "air attacks against hostile targets which are in close proximity to friendly forces and which require detailed integration of each air mission with the fire and movement of those forces." Thus, for an air mission to qualify as close air support, it must be in direct support of engaged troops and be coordinated with the ground commander. Although known by a number of different names over the decades, the CAS mission has officially existed for some sixty years.¹ For much of its existence, however, it has been neglected by airpower proponents, in favor of air missions that have promised to provide a more decisive application of military force. It is a mission in direct support of one service (the Army), but it is a mission which is the responsibility of another service (the Air Force) with vastly different priorities and strategic conceptions. In a very real sense, then, it is a mission destined by circumstances to be neglected except in times of most immediate need.

Following its experiences with tactical airpower in Southeast Asia and its subsequent analysis of the emerging conventional force disparities in Central Europe, the Air Force, to its credit, broke with tradition and procured an aircraft designed specifical-

¹ The term "mission" as it is used in this case and as it is most often used throughout this paper means: "Any particular business, service, or duty assigned to be accomplished by a person, organization, office, detachment, or the like with the object of contributing functionally to an overall objective." Woodford Agee Heflin, ed., The United States Air Force Dictionary (Maxwell Air Force Base, Alabama: Air University Press, 1956), p. 329.

ly for close air support. This aircraft, the A-10 Thunderbolt II (immediately nicknamed the Warthog), has been operational in Europe since 1979. Moreover, the Air Force has perfected a series of low-level flying tactics that will help the A-10 perform its tank-killing mission during a Central Front war, even in the face of the Soviet Army's formidable air defenses.

Now, however, there are disturbing signs that budget constraints are prompting the Air Force to weaken its commitment to CAS and concentrate once again almost exclusively on air superiority and interdiction as the roles for tactical airpower.² This could be a serious mistake, since effective CAS could well make the difference in allowing NATO to maintain a viable defense on the Central Front in the first, crucial days of a Warsaw Pact invasion. The Air Force now has an A-10 force that will peak in strength at just over 700 aircraft in 1984. With peacetime attrition, this specially designed CAS force will begin declining in fighting effectiveness just when it is needed more than ever.

CLOSE AIR SUPPORT: A DOCTRINAL HISTORY

During America's participation in the First World War, air warfare was completely controlled by ground commanders, and the support of ground forces was seen as the predominant offensive mission for military aviation, once air superiority had been achieved. The close air support mission began in October 1918, during the latter stages of the Meuse-Argonne Offensive, when Brigadier General William "Billy" Mitchell, commander of the Air Service, Army Group, AEF, recognized the important role that Army pursuit aircraft were playing in keeping the German forces continually off balance during the offensive (at one point disrupting German reserves poised for a counterattack) by bombing and strafing enemy troop concentrations in the battle zone.³ Accordingly, just before the hostilities ended, the Air Service, AEF, began planning for a number of designated ground attack squadrons.

Between the Wars, the fate of the close air support mission was very much intertwined with the attempts by the Air Service to carve out an independent role for itself. During the early

² Air superiority refers to obtaining control of contested airspace.

³ For example, the First Army Air Service's Battle Order No. 44 of November 3, 1918, noted: "1. The Allied Armies have forced the enemy into a precipitate retreat....The aviation of the enemy has been destroyed or driven back wherever found, his balloons have been burned, and our air planes continually harry and demoralize his ground troops with bombs and machine guns...." (emphasis added). "48. Battle Orders Air Service, First Army September-November 1918," in The U.S. Air Service in World War I, Volume II: Early Concepts of Military Aviation, edited and compiled by Maurer Maurer (Washington, D.C.: The Office of Air Force History, Headquarters USAF, 1978), p. 249.

inter-war period, the theory of General Guilio Douhet (Command of the Air), Lord Trenchard and Count Gianni Caproni--that strategic bombardment of enemy industrial centers would prove to be the decisive factor in future wars--gained increasing credence from American airpower enthusiasts. The doctrine of strategic bombardment not only offered a belief in the decisive role of airpower but, in light of this belief, lent the Air Corps as a whole a significant argument to use in favor of its eventual autonomy from the Army. On the other hand, the ground attack mission merely enhanced the Air Corps' existing subordination to the ground army.⁴ The result was a diminution of the role of attack and other tactical aviation in doctrine and planning. As one author remarked in connection with the Air Corps Tactical School: "Attachment to this commitment [strategic bombardment] was, however, so inflexible that it inhibited the development of tactics for escort, for air defense, for support of ground forces and for reconnaissance and transport aviation."⁵ The first attack group was formed in 1921 and this was followed by the formation of only one additional attack group more than a decade later.⁶ Thus, where in 1922 there had been four attack and seven bombardment squadrons, by 1932 there were still only four attack squadrons, but the number of bombardment squadrons had increased to twelve.

The mission of these attack squadrons, as defined at the time, was: "To assist the ground troops in their action against enemy positions; to attack hostile front line troops, supports, reserves, troop concentrations, road traffic of whatever nature, tanks, airdromes, and hostile batteries."⁷

During the Second World War, the close air support mission continued to suffer relative to the strategic bombardment and interdiction missions. Wartime Army Air Forces trends in doctrinal support of "independence of control and operations" reached their zenith in mid-1943, with the publication of Field Manual 100-20--Command and Employment of Air Power--which set forth the new doctrine that "Land power and air power are co-equal and interdependent forces; neither is an auxiliary of the other."⁸ This document noted:

⁴ Perry McCoy Smith, The Air Force Plans for Peace 1943-1945 (Baltimore: Johns Hopkins Press, 1970), p. 27.

⁵ Quoted in ibid., p. 33.

⁶ Maurer Maurer, ed., Air Force Combat Units of World War II: History and Insignia (Washington, D.C.: Zenger Publishing Company, Inc., reprinted 1980), pp. 29-30, 61.

⁷ "32. Attack aviation," in Other Arms --Air Service (Fort Riley, Kansas: Department of Tactics, The Calvary School, 1923-1924), copy of a mimeographed document, p. 27.

⁸ Quoted in James A. Huston, "Tactical Use of Air Power in World War II: The Army Experience," Military Affairs, Vol. 14 (Winter 1950), p. 167.

Massed air action on the immediate front will pave the way for an advance. However, in the zone of contact, missions against hostile units are most difficult to control, are most expensive, and are, in general, least effective....Only at critical times are contact zone missions profitable.⁹

In operational practice, Army Air Force units in the Mediterranean, European, and Pacific Theaters flew thousands of direct support missions for Allied troops and with some spectacular results--witness the XIX Tactical Air Command's success in protecting the exposed right flank of Patton's Third Army along the Loire River in 1944. In looking back, however, it becomes apparent that the AAF's primary interest lay in strategic bombardment and secondarily in interdiction missions.

The Army Air Force's principal interest in strategic airpower continued to dominate the postwar Air Force, garnering the bulk of the attention and most of the available funding. Though the Korean and Vietnam Wars demonstrated the need for adequate tactical air support, particularly CAS, in neither situation was the Air Force prepared at the outset with the proper mix of aircraft for tactical missions involving close support of ground forces.¹⁰ In fact, the Air Force was forced, at the start of its combat deployment in South Vietnam, to use World War II-design Navy A-1E and A-1H Skyraider aircraft in order to provide reliable close air support to the South Vietnamese troops.¹¹

The Air Force's general lack of interest in the CAS mission was to change by the time that the war in Vietnam was winding down for the United States. One reason was perception of tactical air needs on the NATO Central Front.

⁹ Quoted in *ibid.*, p. 168.

¹⁰ Perry McCoy Smith noted: "The doctrinal dedication to strategic bombardment at the expense of close air support and interdiction led to difficulties, among them lack of adequate support for ground forces during the Korean conflict, deemphasis of tactical training, and lack of development of tactical weapons systems and tactical munitions (much of the development in these areas was done by the Navy in the two decades following World War II). Smith, *Air Force Plans for Peace*, p. 28.

¹¹ The AD/A-1 Douglas Skyraider was first produced in 1945 for the Navy, as a replacement for the SB2C and TBM torpedo bombers. The last attack version of the A-1 was retired in April 1968. "Appendix IV. U.S. Navy Airplanes, 1911-1969," in *Dictionary of American Naval Fighting Ships, Volume 5* (Washington, D.C.: Naval History Division, Navy Department, 1970), p. 546. For comments on the Air Force's procurement of A-1s, see General William W. Momyer, USAF (Ret.), *Air Power in Three Wars (WW II, Korea, Vietnam)* (Washington, D.C.: U.S. Government Printing Office, 1978), pp. 263-264.

THE THREAT TO NATO'S CENTRAL FRONT

The Central Front

The forward edge of NATO's Central Front stretches south from the Elbe-Trave Canal in the West German State of Lower Saxony to Germany's southern border with Austria--a line about 650 miles long. Some twenty-six NATO divisions are deployed in this area. Adding in the in-country European forces earmarked for the Central Front (including those in Great Britain) brings the total to thirty-two divisions, equipped with 7,150 tanks and about 3,470 artillery pieces and mortars.¹² The aircraft deployed with these NATO forces number 1,869 fixed-wing planes, including fighter/bombers, interceptors, and reconnaissance types.

The bulk of NATO's forces on the Central Front are deployed close to the intra-German border because of political necessity. Such "forward defense" serves to reassure Bonn that, if war breaks out, NATO forces will endeavor to protect against the loss of any West German territory by forming a coherent defense line as far forward as possible, holding back the Warsaw Pact forces while awaiting the release of tactical nuclear weapons, and confining collateral damage to a minimum. NATO's supply lines, of necessity, run near and parallel to the intra-German border, making it likely that initial Warsaw Pact penetrations of NATO's defense will disrupt or even sever the supply lines.

Warsaw Pact Strength

Of the four groups of Soviet forces deployed in Eastern Europe, two are oriented directly toward operations against the NATO Central Front.¹³ These are the Group of Soviet Forces, Germany (GSFG), headquartered in Zossen-Wünsdorf, near Berlin, and the Soviet Central Group of Forces (CGF), headquartered in Milovice, Czechoslovakia, northeast of Prague. Together, they have twenty-six Soviet Category I divisions, twelve of them tank

¹² The totals are derived from subtracting the (approximately) two Danish divisions and the German VI Armored Infantry Division assigned to Allied Forces Northern Europe (AFNORTH) for the defense of Schleswig-Holstein and Jutland from the combined AFNORTH/AFCENT totals given in NATO and the Warsaw Pact: Force Comparisons (Brussels: North Atlantic Treaty Organization, 1982), figure six, p. 29.

¹³ The four are the Group of Soviet Forces, Germany, the Soviet Northern Group of Forces (based in Poland), the Soviet Central Group of Forces (based in Czechoslovakia), and the Soviet Southern Group of Forces (based in Hungary). Although the Northern Group and Southern Group could support offensive operations on NATO's Central Front, it is apparent that their primary responsibilities would be to the Baltic area and Southern Europe, respectively.

divisions.¹⁴ If the Soviet armies deployed within the USSR which would be used in direct support of Central Front operations and the available Eastern European forces are included, NATO faces on the Central Front a formidable Warsaw Pact military force of about ninety divisions, about half of which are capable of an unreinforced, standing-start attack. The tanks alone in this unreinforced offensive force number over 13,000,¹⁵ while an additional 7,000 tanks are readily available in Soviet Central Front-committed Military Districts. Over two-thirds of the tanks deployed in Eastern Europe and over one-half deployed in the USSR's Western Military Districts are modern design T-62s and T-64/T-72s, while the rest are obsolescent T-54s and T-55s.

The Offensive

The Soviet Army practices three primary forms of offensive action--the meeting engagement, the breakthrough attack (now primarily the breakthrough attack from the march, in contrast to the World War II-derived steamroller breakthrough attack from contact), and the pursuit. The meeting engagement, which occurs when both the attacking and defending forces are on the move, is considered by the Soviets to be the most important form of offensive action. As David Isby describes it:

The advance guard of a Soviet unit will attack upon encountering the enemy, seize the initiative, penetrate the enemy covering forces, and pin down the enemy main body while simultaneously covering the deployment of the Soviet main body, which will attempt to envelop or outflank the enemy. The Soviets will fully exploit the cross-country mobility of their vehicles and their willingness to take advantage of any path or track to carry out their outflanking or enveloping maneuvers.¹⁶

At the operational level, it is expected that Soviet commanders would launch a series of thrusts across the length of the Central Front. NATO military responses to these thrusts would determine

¹⁴ "Soviet Army order of battle," in David C. Isby, Weapons and Tactics of the Soviet Army (London: Jane's Publishing Company Limited, 1981), p. 24; and Friedrich Weiner and William J. Lewis, The Warsaw Pact Armies (Vienna: Carl Ueberreuter Publishers, 1977), pp. 62-63.

¹⁵ Total derived by comparing and adding tank figures (for GSFG, CGF, East German Army and first-line Czech units) from "Estimated Soviet tank inventory (mid-1979)," in Isby, Weapons and Tactics of the Soviet Army, p. 30.; Weiner and Lewis, Warsaw Pact Armies, pp. 25 and 31; and Military Balance 1981-1982, pp. 18-19. NATO's most recent published estimate for the Warsaw Pact forces--lumping together the first and follow-on echelon divisions together and including some forces that would be deployed against the southern portion of AFNORTH's territory--is ninety-five divisions and 25,500 tanks. NATO and the Warsaw Pact, figure six, p. 29.

¹⁶ Isby, op. cit., p. 35.

how each effort would be followed up. Those attacks successfully contained by NATO troops would be converted into holding actions by the Soviets, keeping just enough pressure on the engaged NATO forces to prevent their being readily shifted to other positions. However, those attacks that pushed through the initial defenses would be augmented by reinforcements as rapidly as possible.¹⁷

Rapid rates of advance would be essential to the Soviet plan for a short war. Soviet military commanders estimate that under such circumstances their forces would need to make advances of 70-100 kilometers a day in nuclear conditions and 25-35 kilometers a day in conventional warfare.¹⁸ The aim would be to quickly breach the NATO defenses, wedging open gaps sufficient for Soviet second echelon tank formations to penetrate deep into NATO rear areas.¹⁹ Thus, tanks are the key to the successful exploitation of the offensive penetration and the Warsaw Pact's maintenance of rapid rates of advance.

Clearly then, one of the essential tactics for delaying the Warsaw Pact's offensive timetable and for giving the overextended and maldeployed NATO forces additional time to respond to the enfolding Soviet offensive would be early employment of NATO's tactical airpower.²⁰ In the short-war-structured offensive, given the NATO Central Front's numerical inferiority and the linear nature of its defensive preparations, close air support

¹⁷ See Steven L. Canby, A Comparative Assessment of the NATO Corps Battle ([Potomac, Maryland: C&L Associates ?], November 24, 1978), copy of a typescript document, pp. 19-22.

¹⁸ Isby, Weapons and Tactics of the Soviet Army, p. 33. John Erickson commented: "The duration of these [Soviet high-speed] operations depends critically on early initial success and the reduction of NATO as an effective military entity before the arrival and deployment of reserve forces, a requirement which necessitates striking to a depth of 600 km within 10 to 14 days." John Erickson, "Trends in the Soviet Combined-Arms Concept," Strategic Review, Vol. 5 (Winter 1977), p. 46.

¹⁹ Soviet tactics are tank tactics writ large. As David Isby remarked: "Their mission is to outflank, envelop and pursue, defeating the enemy through manoeuvre rather than by frontal attack." Isby, ibid., p. 71.

²⁰ As Air Force General William Momyer noted: "...we recognize that there is a deficiency in the NATO armored forces to counter the anticipated massive ground thrust. The application of air power is the only possible military action that could constrain or reduce the Communist ground forces to a level that the NATO ground forces could contain." "Statement of General William W. Momyer, USAF, Commander, Tactical Air Command, U.S. Air Force," in Congress, Senate, Committee on Armed Services, Special Subcommittee on Close Air Support of the Preparedness Investigating Subcommittee, Close Air Support: Hearings, 92nd Congress, 1st session, October 22, 26, 28, 29; November 1, 3, 8, 1971, USGPO, 1972; p. 180.

and battlefield air interdiction (BAI) would be crucial to a successful NATO defense.²¹

By picking off the tanks in large numbers and by creating bottlenecks that canalize Soviet movement, these close support aircraft could impede the offensive, perhaps giving NATO Commanders the time to patch together a coherent defense until reinforcements arrive.

THE A-10 AND CLOSE AIR SUPPORT

A-10 Program Development

The U.S. air effort in Vietnam was in full swing in 1966 when Air Force Chief of Staff John McConnell proposed that his service procure a specialized close air support aircraft, which would embody the best characteristics of the A-1 Skyraider and the soon-to-be-flown A-7D Corsair II. In March 1967, the Air Force sent out Request for Proposals (RFP) for design studies to twenty-one companies; in May, it awarded study contracts to four of these companies for the aircraft then designated A-X.²² Three years later, RFPs for competitive prototype development were issued to twelve companies. By August 1970, six companies, including Boeing and Lockheed, had responded with proposals. This number, in turn, was whittled down to a final two--Northrop and Fairchild--by that December.

The fact that by 1970 the Air Force leadership was on the verge of contracting for a specialized close air support aircraft illustrated the pronounced change that had overtaken earlier attitudes. As General William Momyer, commander of the Tactical Air Command, explained to the members of the Senate subcommittee in October 1971:

In the past, the Air Force has developed its aircraft on the principle of multipurpose systems. As a result[,] all current fighter and attack aircraft have varying capabilities for close air support. However, several factors have developed which impinge significantly on the force structure of tactical air forces. These factors establish a requirement for a large number of airframes and tend to emphasize specialization.²³

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- ²¹ The purpose of battlefield air interdiction is "to bring airpower to bear on those enemy forces not yet engaged but positioned to directly effect the land battle." Thus BAI missions would be directed against enemy second echelon regiments and divisions. "Allied Tactical Publication (ATP) 27 (B), Offensive Air Support," quoted in Lieutenant Colonel Donald J. Alberts, "An Alternate View of Air Interdiction," Air University Review, Vol. 32 (July-August 1981), p. 40.
- ²² Lou Drendel, A-10 Warthog in Action (Carrolton, Texas: Squadron/Signal Publications, 1981), p. 4.
- ²³ "Statement of General William Momyer, USAF," in Senate Armed Services Committee, Close Air Support: Hearings, p. 179.

Among the factors were the high cost of the technology required to overcome the enemy's defenses and the requirement for the Air Force to employ its tactical fighter forces in widely divergent missions simultaneously.

Northrop and Fairchild each built two prototypes of their version of the A-X, designated by the Air Force the A-9 and the A-10, respectively. Service testing began in October 1972 and was completed two months later, with Fairchild's A-10 emerging as the winner. As both the Department of Defense and the Air Force saw it, tanks were to be the CAS aircraft's primary target, and the A-10 had been shown to be almost twice as effective at tank-killing as Northrop's A-9. In March 1973, Fairchild Republic Company was awarded a cost-plus-incentive-fee contract for continued prototype testing and for the pre-production aircraft. Earlier, the Air Force had settled upon 733 aircraft as the total A-10 buy.

General Electric and Philco-Ford competed for the contract for the A-10's principal armament, designed especially for tank-killing, the GAU-30mm gun. In June 1973, the Air Force awarded the contract to General Electric.

Following the six pre-production aircraft funded in fiscal year 1974, fifty-two production models were contracted for FY 1975 and 1976A. Equipping the first training wing with A-10s--the 355th Tactical Fighter Wing at Davis-Monthan Air Force Base, Arizona--was completed in March 1976. Air Force follow-on operational testing (FOT&E) of the production A-10s began in August of that year and lasted through the following February. Test results showed that despite deficiencies noted in system components--such as the head-up display, the stability augmentation system, and the fuel system--the A-10 was superior to other USAF aircraft for the close air support mission.

The tests, among other things, judged the aircraft's capability in nine CAS mission subareas. Some of the Evaluations noted:

Troops in Contact: "...The A-10A can provide effective, accurate, and timely support to ground forces in direct contact with the enemy..."

Armed Escort: "...AE of a ground column/convoy is a mission well-suited for the A-10A. The maneuverability, firepower, and escort time offered by the A-10A is unmatched by any other aircraft in the inventory..."

Low Visibility Operations: "...The capability of the A-10A to operate in low ceiling/visibility is unmatched by any other aircraft in the inventory today..."²⁴

²⁴ A-10A FOT&E Phase I Final Report (Kirtland Air Force Base, New Mexico: Air Force Test and Evaluation Center, May 1977), copy of a typescript document, pp. 13, 15 and 19, respectively.

The first operational squadron was activated in June 1977 and achieved operational status that October. In August 1978, the 354th Tactical Fighter Wing at Myrtle Beach Air Force Base, South Carolina, became the Air Force's first fully combat-ready A-10 wing. Five months later, a squadron of the 81st Tactical Fighter Wing, based at RAF Bentwaters/Woodbridge, Great Britain became the first European stationed A-10 squadron, followed eight months later by the first delivery of A-10s to the Air National Guard.

In the FY 1981 Five Year Defense Program, the Department of Defense increased the number of A-10s to be procured from the original 733 to 825 to provide for peacetime attrition and to maintain the aircraft's required force-level life.²⁵ At the beginning of 1981, however, the Carter Administration's outgoing FY 1982 defense budget, because of fiscal considerations, reduced the number to 687. The Reagan Administration's FY 1982 defense budget restored the original procurement level of 733 A-10As and added fourteen two-seat A-10Bs, for a total of 747 aircraft.²⁶ This later was reduced during Pentagon budget cuts to 727. The FY 1983 budget originally requested funding for the last twenty of these 727 aircraft of the program, but in May the Pentagon, suddenly claiming that it did not need any additional A-10s, acquiesced to the Senate's decision to cut the funding for these last twenty. As it now stands, the total A-10 production will remain at 707 aircraft.

THE A-10 AND THE CENTRAL FRONT

When the last of the A-10 production aircraft have entered Air Force inventory in February 1984, the Service will have fully equipped six CAS wings.²⁷ Only the 81st Tactical Fighter Wing at RAF Bentwaters/Woodbridge, with its six squadrons and 108 aircraft, is forward deployed in Europe. In wartime, these A-10s will fly into West Germany to operate out of German airbases, designated Forward Operating Locations, close to the battle area. Eight-aircraft CAS detachments from the 81st are familiarizing themselves with the operational technique by operating for short periods of time alternately out of each of the four Forward Operating Locations that are active in peacetime--Ahlhorn, Noervenich, Sembach, and Leipheim.²⁸

²⁵ A-10 Force Life (Fairchild Republic Company, March 24, 1981), p. [4].

²⁶ Ibid.

²⁷ The delivery date for the 707th aircraft comes from A-10 Program Status (Fairchild Republic Company, [1982]), copy of a printed document, graph, p. [4].

²⁸ "Statement of Brigadier General Perry M. Smith, Deputy Director of Plans, Deputy Chief of Staff Operations, Plans and Readiness," in Congress, Senate, Committee on Armed Services, Department of Defense Authorization for Appropriations for Fiscal Year 1982: Hearings, Part 3 - Tactical Warfare, 97th Congress, 1st Session, February 19, 23, 27, March 3, 5, 10, 12, 1981, USGPO, 1981, p. 1247. Two additional forward operating locations would be available in wartime.

Once in combat, the A-10s should prove themselves extremely capable close air support aircraft. The foremost characteristics of a good CAS aircraft are lethality, survivability, reliability, and responsiveness. The A-10 meets all four.

The A-10's high lethality against the whole variety of armored vehicles and soft targets derives from a number of factors--its deadly accurate GAU-8/A, seven-barrel, 30mm gun; its heavy payload-carrying capacity, which enables it to carry a large (up to 16,000 pounds), mixed-ordnance payload of optimized CAS munitions; and, because of its relatively slow-speed approach, its ability to deliver its free fall munitions with reasonably small mean miss distances.

The 30mm gun is the key to its superior lethality against armored vehicles compared to weapons fired by faster and more sophisticated aircraft such as the F-15 and F-16. The GAU-8/A is mounted internally, along the centerline of the aircraft, which gives the gun excellent stability. Armed with 1,174 rounds of depleted uranium penetrator ammunition--each penetrator weighing .66 pounds--the gun has muzzle velocities of 3,280 feet per second and is capable of firing at rates of 2,100 or 4,200 rounds per minute. The 30mm gun produces bursts capable of killing tanks now in the Soviet arsenal at a slant range of 4,000 feet. Lightly armored vehicles can be destroyed as far away as two miles.²⁹

The A-10's high survivability rating is due to the aircraft's design and the low-level penetration tactics employed in flying it. The plane carries 3,177 pounds of survival provisions, including armor plate and foam for the fuel tanks. The pilot is protected by a titanium armor plate "bathtub" weighing over 1,400 pounds, which can stop direct hits from Soviet 23mm and 57mm shells.³⁰

The A-10's low altitude tactics were developed primarily by the 66th Fighter Weapons Squadron at Nellis Air Force Base, Nevada. Their characteristics include: very low altitude ingress to the target (100 feet above ground level); short exposure above terrain masking while jinking (three seconds or less exposure while flying at 300-400 feet above ground level) to locate the target; short attack exposure while jinking; and very low altitude egress and maneuver for reattack.³¹ Because of its slower approach

²⁹ A-10A (Fairchild Republic Company, [1981]), pp. [10] and [27]; and Drendel, A-10 Warthog, pp. 14 and 20.

³⁰ Weights obtained by converting from kilograms to pounds. A-10A, pp. [59-60]; and Drendel, ibid., p. 14.

³¹ Testimony of General Alton D. Slay, Commander, Air Force Systems Command, in Congress, House, Committee on Armed Services, Hearings on Military Posture and H.R. 5068 [H.R. 5970], Part 2: Procurement of Aircraft, Missiles, Tracked Combat Vehicles, Torpedoes, and Other Weapons -- Title I, 95th

speed, the A-10 can turn faster than a higher-performance aircraft, making it easier for it to reacquire the target and reattack. Using these low altitude tactics, the A-10 is able to counteract and defeat formidable anti-aircraft missile defenses and major low-level, anti-aircraft gun threats, such as the Soviet ZSU-23-4 system, with its radar-controlled, quadruple 23mm guns.³² The short exposure times prevent radar lock-on, necessitating the use of manual aiming. In addition, the A-10's GAU-8/A gun outranges the ZSU-23-4.

The A-10 is designed for easy maintenance, including such things as the large doors and panels provided for ready access to aircraft equipment and the onboard auxiliary power unit. And with its short scramble time and its low ceiling and visibility flying capability, the A-10 can operate from short fields, close to the forward edge of the battle area.

THE NEED FOR MORE CAS AIRCRAFT

In sum, the A-10 is an extremely capable CAS aircraft, well-suited to the vital role of engaging and killing Soviet first and second echelon armored vehicles. The problem is that there are not nearly enough aircraft available to NATO, which, like the A-10, are dedicated to the close air support and battle-field air interdiction missions and can be used in the early stages of a possible Warsaw Pact offensive to blunt the armored onslaught.

The planned size of the force currently envisioned by the Air Force will see peacetime attrition decrease before 1987 the available aircraft below the Service's reduced Required Force Level.³³ Once that point is reached, such attrition will begin eating away at the aircraft in the operational inventory at a gradual rate. The planned procurement level of 825 aircraft called for in the Carter FY 1981 Five Year Defense Program would have kept the A-10 force above the Required Force Level until 1993, given the continuance of the present attrition rate.³⁴

The Air Force's response to this situation recalls its earlier, pre-Vietnam views of the value of the CAS mission.

Congress, 1st Session, February 3, 7, 8, 9, 18, 23, March 17, 21, 22, 23 and 24, 1977, USGPO, 1977, pp. 778-784; and Tactical Aircraft Survivability (Fairchild Aircraft Company, [1982]), p. [25]. In jinking, the aircraft makes use of frequent and random maneuvering to throw off the accurate prediction of the aircraft's future position by enemy anti-aircraft guns.

³² For detailed information on the ZSU-23-4's capabilities and tactical employment, see Isby, Weapons and Tactics of the Soviet Army, pp. 237-241.

³³ A-10 Program Status, graph, p. [14]. The A-10's current rate of attrition is 5.9 aircraft per 100,000 flying hours. Ibid., p. [9].

³⁴ Ibid., p. [14].

Having decided that it has enough A-10 aircraft (given the tight budget situation), commanders have begun looking to the possibility of converting models of the more complex and much faster F-16 and F-15 into true multi-role aircraft, by equipping them for the long-range interdiction mission. The lure of F-15E Strike Eagles and F-16Es or XLs seems hard for senior Air Force generals to resist.

Although such aircraft would undoubtedly be capable of handling a variety of air superiority and interdiction missions, they could not handle the close air support mission nearly so well as could the A-10. For example, lethality studies conducted during the Carter Administration, comparing the A-10 with such aircraft as the A-7 and F-16, showed that the A-10 achieved almost three times the armored vehicle kill rate of the A-7 and F-16.³⁵ And, it should be noted, neither the F-15 nor the F-16 has the level of armor protection in the A-10. Of equal import, the CAS and BAI missions will have a more significant impact in the early stages of a short-war-structured, Soviet combined-arms offensive.

CONCLUSION

In the short term, the Air Force should increase procurement of A-10s to the 825 level called for in 1980, even at the expense of additional fighter assets. This increase at least would provide a stable A-10 force until the mid-1990s. Fulfilling requirements for additional close air support squadrons or for bringing National Guard and Reserve squadrons up to full strength would necessitate increases above this minimum benchmark. Over the longer term, however, it is clear that a new CAS aircraft will be needed.

The A-10 simply has become too expensive for the Air Force to afford in the large quantities needed for augmenting NATO's ground force strength on the Central Front. Since FY 1978, the A-10's flyway unit cost has climbed from \$5 to \$12 million (in FY 1982).³⁶ And once the cost of a close air support aircraft reaches or surpasses that of a first-line fighter such as the F-16, the Air Force will always choose to spend the money on the "more capable" plane. Of course, much of the A-10's cost increase has had to do with the low and uneconomical rates of the aircraft's recent procurement, the cost of equipment add-ons, and the increases caused by inflation. A good portion of the increased costs, however, are related to the aircraft's size: the A-10 is too big. Larger, heavier aircraft, over time, tend to become

³⁵ Information from International Defense Review, 2/1979; quoted in A-10A, p. [26].

³⁶ A-10 Program Status, p. [10]. The estimates for FY 1983 are between \$14 and \$16 million per aircraft.

more costly to procure than smaller, lighter aircraft. A big aircraft, moreover, presents larger targets. In this case, admittedly, Fairchild was following the Air Force's lead--it wanted a heavily-armored aircraft capable of carrying a large ordnance payload.³⁷

Exactly what the follow-on CAS aircraft should look like is still an issue of intense debate. However, several design aspects appear to be relevant. It should be smaller than the A-10, with a maximum external payload only a quarter to a third that of the A-10. It should be powered by engines designed for low fuel consumption in low-level cruising. And it should retain the internally-mounted 30mm gun that has proved so successful in the A-10, although, if judged necessary, the GAU-8/A's 4,000 pound weight penalty could be reduced by going with the lighter, four-barreled GAU-13/A.

The Air National Guard came out with its proposal for a "combined forces fighter" to eventually take the place of the A-10, in its March 1982 report. Paralleling many of the design concepts espoused by TacAir consultant Pierre Sprey, the Air National Guard called, among other things, for a smaller aircraft than the A-10, which would have better maximum Gs (the gravitational pull on the pilot), much better acceleration, and better roll/pitch transients (particularly in the 150 to 350 knots region) and which could operate from roads and grassfields.³⁸

Precisely because such a new development project will be very prolonged, if past history is any judge, the Air Force should immediately begin increasing its procurement of A-10s to ensure an adequate close air support force until the mid-1990s. The A-10A is still the best CAS aircraft in the inventory and one that can have a major role in the event of a Soviet invasion of Europe during the next decade.

From the early days of its existence as a component element of the Army to times as recent as a decade ago, the U.S. Air Force has almost continually ignored the value of the close air support mission as a decisive factor in the land battle. Preferring to concentrate its efforts on loftier missions, such as strategic bombardment and deep interdiction, which promise an early end to wars, Air Force leaders have slighted those aspects of tactical aviation that hearken back to their Service's earlier subservience to the Army.

The changed Air Force thinking of the 1970s, which owed its rationale to the lessons of Vietnam and the emerging reality of

³⁷ See the testimony of General Momyer, in Senate Armed Services Committee, Close Air Support: Hearings, pp. 181-182.

³⁸ Vista 1999: A Long-Range Look at the Future of the Army and Air National Guard (Vista 1999 Task Force, March 1982), pp. 62-63.

the dangers facing NATO's Central Front and produced service support for the A-10, seems now to be reverting to traditional channels of thought. At a time when the gap between NATO's and the Warsaw Pact's deployed military power is growing larger, it is vital to maintain sufficient close air support assets to help reduce the disparities in the military capability now favoring the Soviets. This can be done only if the leadership of the Air Force reaffirms the essential nature of this long disparaged mission.

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