Tactical Air Meet 88: Can NATO still defend Europe?

by Dean Andromidas and Andreas Ranke

From June 16 through June 29, over 70 fighter aircraft from nine NATO nations participated in the sixth semi-annual Tactical Air Meet 88 (TAM 88) in Baden Söllingen, West Germany. Taking place soon after the final ratification of the INF treaty, this year's TAM occurred amid growing doubts among Western military experts over whether the United States will continue support for the defense of Europe; and whether the current military capabilities of NATO, minus both Pershing II and cruise missiles, can carry out NATO's mission and defend Western Europe.

TAM 88 had as its purpose to afford NATO member air forces an opportunity to practice joint tactics and procedures for operations on the tactical level and therefore, in itself, could neither confirm nor allay these misgivings. According to the observations of these authors, it was an impressive demonstration of the NATO Alliance's strongest points: that it is an alliance of 16 nations with an amazing level of cooperation among its military services, which demonstrated itself in an impressive level of professionalism and *esprit de corps*. Nonetheless, TAM 88 demonstrated three vital points for these observers:

1) The INF treaty not only served to create fears of "decoupling" of the United States from Western Europe, but has put NATO in a precarious military situation.

2) In his remarks at the opening press conference of TAM 88, Gen. William L. Kirk of the United States Air Force, commander of Allied Air Forces Central Europe, described air power as the "most responsive and flexible resource available to a NATO commander." TAM 88 demonstrated the tremendous resources in manpower, weapons systems, and physical effort required to conduct air operations, opening up the question of whether current levels of capability (capabilities jeopardized by calls for budget cuts) can take on the expanded mission requirements caused by the loss of the Pershing II and cruise missiles.

3) It is clearly in the air war that the concept of a "war of technological attrition" is being fought out on a daily basis. In an era when modern aircraft and their weapons systems are becoming more and more dependent on microelectronics and electromagnetic technologies, from ever more sophisticated radars for guidance systems to sophisticated electronic countermeasures capabilities, radio frequency weapon technologies are becoming the most pressing area of development for future warfare.

Air power and the INF

The accompanying chart, **Figure 1,** illustrates Warsaw Pact numerical superiority, which continues to be augmented by increasing numbers of very new and capable aircraft such as the MiG-29 Fulcrum fighters and Su-27 Flanker fighter bombers. These aircraft are wedded to an offensive deep-strike strategic doctrine that seeks, through achieving strategic surprise, to knock out NATO nuclear weapons centers, air bases, and command and control centers wherever possible, prior to sending armored divisions across the German-German border. *Deep strike* means conducting war in the full depth of NATO territory from the German-German border to the United Kingdom.

Prior to the INF treaty, NATO sought to counter this doctrine through deep-strike capabilities of its own. The NATO FOFA (Follow on Forces Attack) and the American Air Land Battle, sought to carry the battle into the Warsaw Pact territory through striking at Soviet second-echelon forces and rear-area command and communications centers. Although these doctrines are considered militarily sound, and air power would play a leading role, it would have to face two problems: 1) NATO air forces would be facing Soviet air defense capabilities that have been augmented considerably with improved acquisition and tracking radars, better anti-aircraft missiles, and a growing number of high-performance fighters. While Allied officers in the past were confident of penetration of Soviet defenses through low-level attacks, that confidence has been serious eroded over recent years. 2) The first mission of NATO air forces is to stave off what could be expected to be a massive Soviet air assault. This mission would have to be accomplished *prior* to the deployment of air assets to go over to the attack.

One solution which was considered highly effective militarily and economically, according to Gen. Gerard Berkhof (ret.), former Chief of Staff of Allied Forces Central Europe, was the deployment of a conventionally tipped cruise missile in the 600 kilometer range, which could penetrate the dense

air defense system. The missiles could achieve survivability through a mobile deployment capability, while they could have been launched at the earliest possible time following the initiation of hostilities, far sooner than NATO's ground forces and even its air forces.

Furthermore, the cost-effectiveness would have been dramatically superior. According to General Berkhof, the procurement cost of 600 to 700 missiles is $1.7 million per missile, based on the cost of a 10-year deployment cycle. This compares with $50 million for one GR1 Tornado aircraft and $5 million to train and support its pilot. While up to 50 aircraft are required to attack one Warsaw Pact target, only one to three missiles would have been required per target.

Yet, under the terms of the INF treaty, cruise missiles have been defined as nuclear-carrying vehicles and hence all land-based cruise missiles, conventional tipped as well as nuclear, have been banned. As General Berkhof remarked, "We have given up a cheap unmanned option for a very costly manned conventional solution."

Lacking the microelectronics technology required for longer-range cruise missiles, the Soviets gave up very little except their SS-20s, a missile whose power and capability had become incompatible with the Soviets' own evolving deep-strike doctrine. That doctrine has deemphasized nuclear strike in favor of conventional theater forces working in tandem with spetsnaz (special forces) and other irregular warfare capabilities in NATO's rear. Now NATO finds itself where it was 10 years ago, still facing an enemy whose capabilities are continuously being augmented under Secretary General Gorbachov's *perestroika*.

This is not by any means to denigrate TAM 88 as an important and highly impressive demonstration of NATO's capabilities; it serves to underscore how vital these capabilities are and how they must be augmented if they are to remain effective.

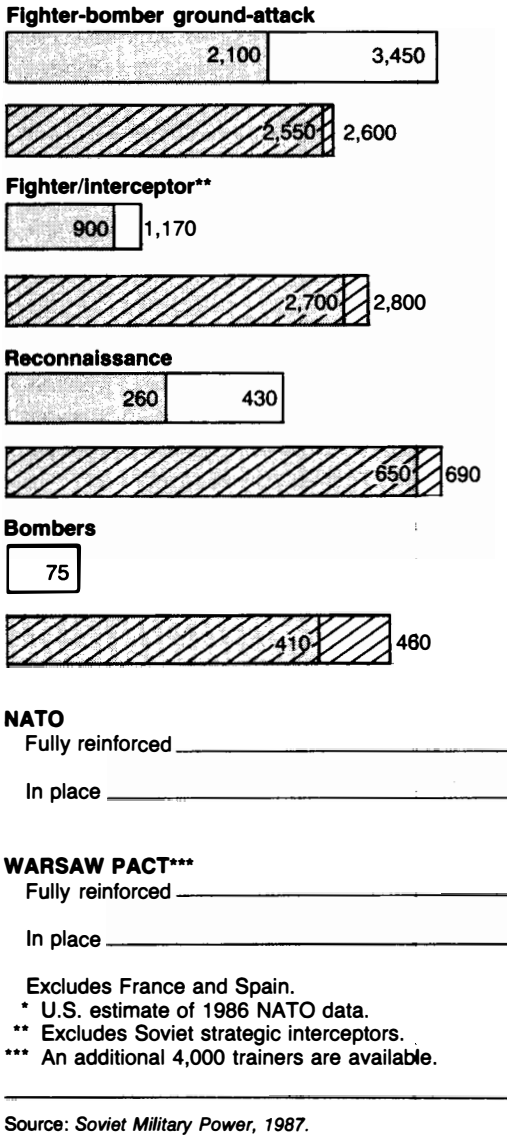
TAM 88

The Tactical Air Meet was a vivid demonstration that NATO is an "alliance" whose most important strength must lie in cooperative and unified action. In the Warsaw Pact, the Soviet armed forces control the entire front of their Western theater of operations. Although the forces of Czechoslovakia, the German Democratic Republic, and other Warsaw Pact nations should not be dismissed, particularly their air forces, they play a secondary role at best. By contrast, in NATO, each nation shares a territorial responsibility along the German-German border and Czechoslovakia. For instance, the two army corps and the entire air forces of Belgium and the Netherlands that constitute the entire armies of these two countries, whose total combined population is less than that of the state of California, have an area of responsibility as large as the two American army corps currently stationed in the Federal Republic of Germany. This fact, and the nature of war in the 1980s, create the necessity for cooperation "in depth," not possible in the "imperial" type system of the Warsaw Pact. TAM 88, as all NATO exercises, seeks first to enhance that cooperation.

TAM 88 was sponsored by Allied Air Forces Central Europe, the NATO command which in time of war commands the six national air forces in NATO's Central Region. This year's host was the Canadian Air Force based in Baden Söllingen, West Germany. Here gathered special teams comprised of 4 to 16 aircraft with their air and ground crews, and other personnel from the six Central Region national air forces, including West Germany, the United States, the United Kingdom, Belgium, the Netherlands, and Canada. Also in-

FIGURE 1

NATO-Warsaw Pact combat aircraft*



Excludes France and Spain.
* U.S. estimate of 1986 NATO data.
** Excludes Soviet strategic interceptors.
*** An additional 4,000 trainers are available.

Source: *Soviet Military Power, 1987.*

vited were teams from neighboring NATO commands, including the air forces of Italy, Denmark, and notably France, which, while a member of the Atlantic Alliance, is not part of the integrated command.

TAM's former competitive aspect was given up to encourage an exchange of expertise among the air crews and other personnel brought together from the participating national air forces. Rather than compete with one another for trophies, the concentration was on developing the combined tactical and operational skills to defeat a common enemy. Over the last decade, the watchword has been interoperability, not so much standardized equipment, or even standardized procedures, but the development of the capability to conduct combined operations among the member nations of NATO, operations which would be used in time of war. TAM is part of this process.

TAM is the practical phase of a series of programs held in the years between TAMs. These include the Tactics Symposium and the Tactical Leadership Program. Here air crews and planners come together to exchange ideas on combined tactical and operational concepts. Over the last years, this has been seen to be key to getting the most out of NATO air forces, whose capabilities vary from nation to nation. One of TAM's purposes is to test those concepts and ideas so they become practical resources toward NATO's evolving capabilities.

The scenario

TAM finds itself inserted at the tactical level of the air war of a classic Orange Force attack on Blue Force scenario. In this "war," the participants will conduct various missions including attack on airfields, armored formations, bridges, simulating all the aspects of actual wartime operations.

At the center of the exercise is a special Allied Tactical Operations Center (ATOC), set up and comprised of personnel drawn from the two real ATOCs which are subordinate to the respective Command Staffs of the 2nd and 4th Allied Tactical Air Forces which are responsible for all Allied air forces in Central Europe. The ATOC's mission is to plan and task offensive operations, including choosing targets and assigning missions to the respective national air forces. This is "force packaging," or the design of a Composite Air Operation which could include aircraft from six different air forces. Although during TAM all the national air forces were operating out of Bad Söllingen, in reality they would be drawn from their home bases throughout the Central Region.


NATO

A Toronado armed with Alarm missiles.


Andreas Ranke

HFB-320 Hansa Jet, an electronic warfare plane flown by West Germany.

Any given target—an airfield, an amored troop concentration—is chosen only following an assessment of intelligence flowing into this ATOC. For this purpose, the ATOC has at its disposal the E3A AWACS or Airborne Early Warning and Command System. This aircraft is drawn from 18 Boeing E3A AWACS aircraft which form NATO's Airborne Early Warning Force. It is the only operational system staffed and commanded by NATO's intergrated command. It is, indeed, a unique system, particularly its crew of 19. Its commander is an Italian lieutenant colonel, its pilot is a Canadian major, and Danish and American servicemen can be seen sitting side by side monitoring the radar screens and control panels. Their mission in TAM is not much different from their everyday mission, which is to monitor enemy low- and high-flying aircraft.

The E3A AWACS can also track Soviet surface ships. In addition to airborne surveillance, it can perform as an airborne command, control, and communications unit. Interfacing directly with the ATOC, it operates around the clock. Its data are not only crucial for target selection and planning, but also interface with the aircraft of the attack formations, updating them on hostile targets and threats.

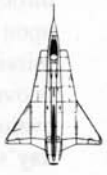
In addition to AWACS, the ATOC receives target information through reconnaissance units under its command. In TAM 88, "recon" units were assigned to French and Belgium units flying French-built Mirages and West German units flying RF-4E Phantoms armed with both optical and infrared cameras, as well as video equipment. They fly over prospective targets to gain detailed target data.

The raw data are transformed by the ATOC into the basis for a planned attack. On Day 4 of TAM, the target was a

FIGURE 2

Aircraft flown at Tactical Air Meet 88

	F-4G Advanced Wild Weasel (Phantom II)	RF-4E Phantom II	F-4E Phantom II	F-15 Eagle	F-16 A/C Fighting Falcon	CF-18 Hornet
						
Type	Electronic warfare -defense suppression	Reconnaissance	Air defense	Air defense	Multi-role fighter/bomber	Multi-role fighter/bomber
Speed	2 Mach	2 Mach	2 Mach	2.5 Mach	2 Mach	1.8 Mach
Radius	425 km	425 km	425 km	925 km	1,000 km	1,170 km
Armament	AAMs*, anti-radiation missiles	Cameras	AAMs	AAMs	AAMs, bombs	AAMs, bombs
Flown by	U.S.	F.R.G.	F.R.G., U.K.	U.S.	U.S., Belgium, Denmark	Canada

	NF-5 Freedom Fighter	EF-111A Raven	F-35 Draken	Mirage F-1CR	Mirage F5	Mirage 2000
						
Type	Multi-role fighter/bomber	Electronic warfare	Multi-role fighter/bomber	Reconnaissance	Fighter bomber	Air-defense fighter
Speed	1.6 Mach	2,279 km/hr	2 Mach	2.2 Mach	2.2 Mach	2.2 Mach
Radius	890 km	1,100 km	1,000 km	640 km	1,220 km	700 km
Armament	AAMs, bombs	Electronic warfare	AAMs, bombs	Cameras, electronics	AAMs, bombs	AAMs
Flown by	Netherlands	U.S.	Denmark	France	Belgium	France

	GR1 Tornado	F-104 Starfighter	Jaguar	T-17 Canberra	HFB-320 Hansa Jet	Boeing NE-3A AWACS
					(Not shown here)	
Type	Multi-role fighter/bomber	Multi-role fighter	Multi-role fighter/bomber	Electronic warfare	Electronic warfare	Airborne early warning and command post
Speed	2.2 Mach	2.2 Mach	1.5 Mach	.68 Mach	.74 Mach	853 km/hr
Radius	1,400 km	1,100 km	815 km	1,300 km	—	—
Armament	AAMs, bombs	AAMs, bombs	AAMs, bombs	Electronic warfare suit	Electronic warfare suit	None
Flown by	F.R.G., U.K., Italy	Italy	France, U.K.	U.K.	F.R.G.	NATO

*AAMs are air-to-air missiles which are anti-aircraft missiles carried by aircraft.
Source: *Soviet Military Power, 1987*; *Jane's All the World's Aircraft.*

EF-111 Raven, for electronic warfare, flown by the U.S.

Dean Andromidas

NE-3As AWACS, flown by NATO.

simulated airfield complex located on the recently established French- and West German-controlled electronic warfare exercise reserve called Polygon, along the West German-French border. In land war, defensive positions are created through interlocking fields of fire conforming to the topography of the land area being defended. In air war, the geographical topography takes second place to an "invisible" electromagnetic field. The target was heavily defended by SAM batteries and patrolled by manned air defense aircraft, both of which are dependent on acquisition radars, as well as a full range of offensive electronic warfare weapons systems, creating a relatively dense electromagnetic field. This "wall" must be pierced by an invisible artillery barrage of NATO's electronic warfare assets which are, in effect, today's "radio frequency weapons."

The mission was assigned to a "Wild Weasel" hunter/killer team. The team is comprised of "hard kill" electronic warfare (EW) aircraft including specially equipped American F-4G Phantoms that hunt enemy radar by tracking its emissions. These aircraft, in turn, direct F-16 Fighting Falcons equipped with anti-radiation missiles capable of homing in on the energy radiating from the target radar. These, in their turn, are supported by "soft kill" EW aircraft such as the EF-111A Ravens, which fly at 20,000 feet to provide electronic countermeasures, such as sorting, identifying, and jamming different enemy radars. Other EW aircraft deployed included the West German HFB-320 Hansa jet, whose mission is to jam the radars of fighter aircraft, and British T-17 Canbarra, which will turn its attention to jamming the enemy's command, control, and communications system (see **Figure 2**).

Although in full force in TAM, these assets are among NATO's scarcest; nonetheless, they define the most important "flank" in the air war, if not the future shape of the practice of modern war as a whole. By neutralizing this electromagnetic field, one neutralizes the principal defensive and offensive asset of the enemy, rendering its command and control system "blind" and its radar-guided missiles as harmless as 4th of July firecrackers.

Once a "breakthrough" is achieved, the low-level attack formation of British, German, and Italian GR1 Tornado attack bombers, equipped with laser-guided bombs capable of penetrating hardened concrete aircraft shelters and specialized munitions designed to destroy enemy runways, can make their low-level attack. Flying below 500 feet (as low as 80 feet in actual war-fighting conditions), and laden with 18,000 pounds of munitions, these aircraft cannot defend themselves and are therefore escorted by air defense aircraft, such as American F-15 Eagles and older British and West German F-4 Phantoms.

The strike is made. Preselected targets—runways, taxiways, aircraft and their shelters, and ground and air defenses—are struck in simulated bombing strikes. With the attack completed, the aircraft return, "fighting" their way back through enemy fighter-infested skies. Although in real war, upon return they could be "turned around" for yet another mission in the course of a few hours or less, today's mission is over, and the pilots return to an extensive debriefing and evaluation of the day's mission and preparation for the next day's mission: an attack on an enemy armored concentration at a river crossing in Belgium.

By the end of the two weeks of TAM, not only will these participants be far more familiar with the conduct of joint operations with the air forces of other member nations, but NATO as a whole would have generated the experience that will form the basis for the development of future tactics and joint operations. Immediately following TAM will be the preparation of Tactical Symposium 1989, where the lessons of TAM 88 will form a crucial basis for development of future tactics and operations which, in turn, will be put to the test in TAM 90. TAM 90 is expected to be even larger, with over 12 to 15 NATO nations invited, totaling as many as 150 aircraft. Participation of naval air teams with carrier-based aircraft can be expected in future TAMs.

A concluding lesson of TAM for all those truly concerned with NATO's capabilities is the necessity for "in-depth" military capabilities. "In-depth" means the crucial scientific, technological capabilities of our society to develop the war-winning weapons systems that can deter war in a struggle of technological attrition. It also has a fundamental human dimension in the constant development of tactical and operational capabilities that can deploy those systems most effectively.