

It isn't how many airplanes you have. It's how many you can put in the air, what they can do, and how long you can keep them flying.

AS IT updates its plans to counter Soviet power in Europe, the Air Force seems intent on suspending the laws of mathematics. The service is embarked on a course that calls for Western air forces to "outnumber" the Warsaw Pact air fleet in battle—though these units are to remain inferior to the adversary in size.

What is significant for US Air Forces in Europe (USAFE) is not only the quantity of warplanes at its disposal. The specific dimension of the USAFE force, which now deploys 700 aircraft, is a separate issue. At the heart of the emerging plan, say US officers, would be superiority of a different sort: the ability of USAFE and its allies to fly more actual combat missions, and for longer periods, than the foe.

The upshot is a USAFE warfighting program that complements the traditional emphasis on putting fighters on the ramp with steps that will multiply the readiness and persistence of today's force.

USAFE's aircraft, air bases, maintenance units, logistic systems, supply operations, weapons, and other assets are all being reshaped in a campaign aimed at forging a readier force that not only can pack a big punch but also deliver it around the clock for long periods.

The most conspicuous advance thus far is a marked rise in the number of sorties that USAFE and the allies can squeeze from their scarce aircraft, compared to the 1960s and 1970s. Today, USAFE's sortie-generation powers are "at least twice as good, maybe more," says Maj. Gen. Michael A. Nelson, a top Air Force operations officer at Allied Command Europe in Belgium. "[The difference is] big—and significant."

More modest but still important are improvements in USAFE's powers to provide munitions, fuel, and parts to sustain operations longer.

Incomplete Solution

The strides may explain, in part, why USAFE seems more upbeat about being able to combat massed

Generating Sorties and Sustaining Combat

BY ROBERT S. DUDNEY, SENIOR EDITOR

This F-16 is being rearmed for yet another sortie by its crew, wearing their chemical-biological warfare suits, at Hahn AB in Germany. Not only do the F-16s break less often than their predecessors, but maintenance crews can "turn" the newer aircraft for combat in less than half of the time it took for the F-4.



Pact air attacks. Of every raiding force sent against NATO, one officer now claims, as much as twenty percent of attackers would be downed by swarming Western defenders—in the early going, at least.

"If he comes over on this side of the fence," says USAFE Commander in Chief Gen. William Kirk, "we'll eat his lunch. He will take massive losses."

For all its promise, the effort is regarded by US officers as a less than complete solution to problems they face. They would prefer to have a larger fighter force, as well as a ready one, but concede that the Pentagon budget crunch makes the prospect of a buildup remote at best.

The situation is not without its problems, the major one being the force's lack of sustainability. How far USAFE has come—and has yet to go—in crafting the force that it says it requires is pointed up in talks with officers and troops responsible for USAFE readiness.

Nowhere, these experts say, is the command exerting greater effort, and making more visible progress, than in the areas that contribute to USAFE's capability to generate combat sorties. These vital factors are many and varied. Among them: day-to-day readiness of aircraft, training of aircrews, weapons reliability and effectiveness, and resilience in local base facilities and infrastructure.

Improvement in peacetime aircraft availability rates forms the bedrock of USAFE's ability to generate sorties. Officers point out that the mission-capable rate of combat squadrons in Europe, up significantly since 1980, now stands near an all-time high.

The value of having ready fighters—finely tuned, well maintained, and fully equipped—is underlined by an F-16 squadron operations officer. "We can be ready with the entire squadron, all twenty-four jets going up, in only half a day," he asserts. "It wouldn't take us very long."

This capability, all agree, marks a reversal of the situation facing USAFE wings early in the decade. What accounts for the turnaround?

One key factor is better funding, sustained for several years, of peacetime readiness accounts. This

has helped USAFE come up with the spare parts, repair equipment, and other items needed to keep aircraft and other weapons well-supplied and in fighting trim. In fact, the index of aircraft out of action for lack of parts has declined precipitously since the early 1980s.

Even more impressive than the supply situation has been a dramatic



improvement in the quality of work performed by maintenance crews. Not long ago, performance had deteriorated to a worrisome level. A large number of specialists, officers note, simply didn't know how to repair or maintain their weapons.

Now, officials contend, that problem is largely a thing of the past. The main reason: better training. The command today is taking its best workers off the flight line to become instructors, where they can impart their hard-earned knowledge to many others.

"Part of our old philosophy," recalls a senior maintenance man, "was to keep the good people working on airplanes and put the dead, the sick, the lame, and the lazy down in training. So our people knew just enough to get by. Now, they really learn what to do."

Equally critical to sortie generation in the early days of war, many experts maintain, would be USAFE's success in its drive to prepare the human element of its force for the rigors of nonstop combat. That, USAFE planners make clear, is a priority of high order. The com-

mand stresses pilot training, explains one operations officer, because it translates into "no-kidding combat capability."

Part—but only part—of the effort involves giving pilots an adequate number of flying hours. Time in the cockpit has increased markedly from the 184,892 hours that they flew in 1980. The typical pilot gets to fly three to four sorties every week.

High-Quality Training Time

As important as the quantity, however, is the quality of the training that pilots receive while they are in the air. Here, USAFE is going to great lengths to make sure that the time the individual pilot spends in the air provides training that is as realistic as possible.

With the opening of the Air Combat Maneuvering Instrumentation facility on Sardinia, for example, US and other NATO pilots are now able to conduct extremely realistic air-to-air combat training. What's more, they participate frequently in low-level operations during Red Flag exercises in the US, though not as often as they would like.

There are limits. Despite all its efforts, say officers, USAFE can never recreate the stresses and strains that pilots would face in the melee over Europe in the opening days of conflict.

Sharpening the peacetime readiness of men and materiel, while important, is but one element in USAF's drive to prepare its European forces to generate enough combat sorties to match an outsized foe. Also getting major attention: pursuit of a more persistent fighter force able to stay in action long after Day One.

Innovative steps are being taken to produce aircraft and weapons that break down less often, can be fixed quicker with less manpower, and are more effective. The aim, officers note, is to keep Air Force F-15, F-16, F-111, and other warplanes out of the maintenance bays and in the air, where they would help even the odds in the air battle.

Progress on this score, say planners, is nowhere more evident than in the increased reliability of USAFE's latest aircraft. In simplest terms, fighters are not breaking as often. "I compare the situation with twenty-five years ago, when I was

an F-100 pilot in Europe," says General Nelson, "and the difference is just incredible."

The leading factor: USAFE's force of 228 General Dynamics F-16C multirole fighters, currently deployed in West Germany and Spain. USAFE officials report that the F-16, with advanced design and components, breaks less than half as frequently as the F-4 jets it replaces. As senior maintenance workers tell it, the plane is on the ground far less than its predecessor was.

"What I've learned from being around F-16s for three years," says an F-16 crew chief at Ramstein AB, Germany, "is that the harder you fly 'em, the better they stay fully mission-capable."

Flight controls are triple-redundant, with backup systems to backup systems, meaning that they seldom cause flying downtime for the jet. Officers also point out that aircraft electronics, long a source of reliability problems, are greatly improved on the F-16, the F-15, and the other USAFE planes. Explains one: "Printed circuits work a lot better than vacuum tubes at six Gs and [when] bouncing them on the ground."

Faster Fixes for Aircraft

The steps go beyond reliability improvements. Because airborne components and combat systems will sometimes break down, the Air Force is working hard to make them increasingly easier to fix.

For USAFE, the wartime advantages would be great. Maintenance consumes enormous numbers of man-hours, not to mention the pressure it puts on spare-parts supplies, facility space, and support. Making the aircraft easy to maintain thus contributes directly to the command's ability to put combat power in the air time and again.

In Europe, improvements are strikingly visible. The new fighters, say repair troops, are far easier to maintain and "turn" for combat. The F-16, for example, requires fifteen hours for a major maintenance job—much less than the thirty to thirty-five hours typically taken for the less-sophisticated F-4. On top of that, the job can be performed by about half the number of personnel.

Result, in the words of an F-16

maintenance chief: "When the flag goes up, you can turn this airplane and get more sorties" than the F-4.

Future gains might be equally large. Current plans call for the Advanced Tactical Fighter, the eventual replacement for today's F-15s, to require half the maintenance time and support to fly twice as many sorties as the Eagle it replaces.

One source of improved maintainability, USAFE officers say, is incorporation of diagnostic electronics that tell the repair troops what is wrong with the airplane. "The big advantage of the F-16," says one, "is that it tells you what's wrong with it. With the F-4, you break wire bundles open for days before you find the problem."

In addition, the aircraft benefits from smarter design, including more accessible placement and greater simplicity of components. For example, engine crewmen find it easier to remove the nozzles on the F110-GE-100 engine.

Complementing the advantages of more reliable and maintainable weapon systems, Air Force officers maintain, is the greater effectiveness of the arms now coming into USAFE. As one puts it, "These weapons will keep our own attrition down, which is a big factor in the business of generating sorties."

Air Force officers, for example, point with satisfaction to the recent gains in USAFE's ability to suppress enemy air defenses that pose a mortal threat to its pilots. The situation is said to be much improved as a result of the deployment of such electronic-warfare assets as EC-130 Compass Call, EF-111 Raven aircraft, and teams of F-4G Wild Weasel and F-16 aircraft.

This is not all. One officer maintains, "I can think of four or five classified programs, off the top of my head, that will help us understand the threat and help us get the sortie through safely."

The planned introduction of the AIM-120 advanced medium-range air-to-air missile (AMRAAM) will help USAFE pilots take on the foe at a greater and therefore safer range. What's more, USAFE's capability to generate sorties around the clock, with great effectiveness, will grow with the soon-to-be-realized deployment of the LANTIRN (Low-Altitude Navigation and Tar-

geting Infrared for Night) pod system.

Turning Night into Day

The LANTIRN dual-pod system, which effectively turns night into day for the pilot in the cockpit, is scheduled to be deployed on select USAFE F-15 and F-16 fighters, giving them a poor-weather, night-attack capability. This, explains an officer, "is something that we really haven't had in this theater. That's a major advance."

When it comes to improving its powers to generate more sorties, USAFE's most significant new "weapon" may not be an aircraft or missile at all. The weapon, rather, will be more prosaic—the base structure from which American forces would fly and fight.

All signs are that USAFE's critical network of runways, taxi areas, maintenance shops, weapons stockpiles, and support infrastructure is being updated and modified in ways that make it more likely that the system can continue to function even after heavy Soviet attack.

The effort is assigned high priority within USAFE and in the entire Air Force. The objective: Prepare the system to be able to stand up to Warsaw Pact air strikes aimed at putting it out of action, then recover sufficiently to be able to launch aircraft.

USAFE, officers concede, has a long way to go. They note that the present vulnerabilities of the base system, illustrated in the 1985 Salty Demo exercise at Spangdahlem AB, Germany, range from ground attack to disruption of communications and fuel supplies (see "Fighting Under Attack," October '88 issue, p. 50). Efforts are under way to alleviate the worst problems.

Most visible is the push in USAFE, and in NATO generally, to shelter its aircraft from attack. The NATO goal is to provide shelters for 100 percent of its fighter force. While Alliance funds are sufficient to cover only seventy percent of the cost, CINCUSAFE has set down a policy of sheltering all in-place and reinforcing aircraft at US main operating bases. Seventy percent of reinforcing planes deployed to collocated bases are to be sheltered. Funds are already programmed for this task. Radar-operations and avi-

onics-repair units also are due to get shelters at selected bases.

More important, the Air Force is pursuing its Air Base Operability program, designed to enhance the protection, survivability, recovery, and regenerative powers of the base infrastructure.

Initiatives to this end are numerous. The most important features of this program include: plans to construct an Alternate Launch and Recovery Surface (ALARS) at each USAFE base, provision of Emergency Landing Strips (ELS) at selected sites, dispersal of facilities, camouflage and deception, installation of Survivable Collective Protection Shelters (SCPS) for better chemical warfare protection of base personnel, improved damage-assessment capability, better means for explosive-ordnance removal, equipment for rapid runway repair, mobile aircraft arresting gear, redundant base communications, and better backup power systems.

Added to these passive measures are efforts to enhance active defense of USAFE bases. Officers foresee major gains flowing from the US-German program to deploy Roland and Patriot air defense missile units around bases in the Federal Republic. In addition, the United States has procured and the British are now operating thirty-two Rapier short-range air defense batteries around seven US bases in Britain.

Overall progress has created confidence among officers based at Ramstein AB, headquarters of USAFE, about sortie generation in wartime. Higher readiness, more persistent and effective weapons, and more resilient fighter bases, they say, already are paying dividends, and the picture for the future looks brighter.

The Sustainability Gap

That, however, is not the entire picture. Equally important to the Air Force, but far more worrisome to these officers, is another issue: how long USAFE would be able to sustain this stronger force in combat. Senior officers contend that, despite improvements, the force would not have enough replenishment parts, munitions, fuel, and other consumable items at its disposal.

The situation is far from des-

perate. Higher defense budgets throughout the 1980s have enabled the command to alleviate some of the worst shortages and bottlenecks that characterized the Air Force's stockpiles of war-reserve materiel in the 1970s. Spare parts hoarded for wartime use, for example, are at nearly twice their former low level. More munitions are available.



Even so, officers continue to identify the inadequacy of stockpiles as a significant constraint on their combat capabilities. These are well below requirements. Worse, today's levels seem certain to decline.

One senior leader who worries greatly about this problem is USAFE's Commander in Chief, General Kirk. "We're not back down to where we were in the late 1970s, but we're starting that way," he warns. "If there isn't adequate funding to replace [those items being consumed by the operating force], we will eventually go back down to that 'hollow force' of the 1970s."

One area of major concern is war-reserve spare parts and other replenishment items. USAFE documents show that funding for these, after big rises early in the decade, has fallen far short of one-for-one replacement levels for the last four years. As a result, parts to keep airplanes flying and missiles working today are being taken from stockpiles that had been built up for wartime use.

Today, one officer reports, up to sixty percent of the parts required to keep USAFE's aircraft mission-capable come directly from the command's War Readiness Spares Kits (WRSK) or Base Level Self-Sufficiency Spares (BLSS) kits inventory. "We know that we're not going to buy any—zero—WRSK and BLSS this year or next year," he adds. "So we're just maintaining and praying for tomorrow. There's no stockpiling."

Scarce Smart Munitions

Nearly as troubling, in a different way, is the situation with respect to USAFE's stockpile of wartime munitions. The inventory of air-to-air and air-to-surface weapons would permit the fighter force to fly 100 percent of wartime missions. But most of those missions would be flown with relatively unsophisticated general-purpose bombs, cluster-type weapons, and older-generation guided missiles.

What is missing, in the view of USAFE officers, is an adequate supply of modern, highly accurate "smart" or precision munitions such as the AGM-88 HARM radar-killer and AGM-65 IIR Maverick tank-killer missiles. These officers would also like to see improvements to the Gator air-delivered mine weapon.

Apart from inadequate numbers, the munitions are said to be malpositioned. Most are stored in a handful of depots in Europe and would have to be transported, under attack, to various air bases.

Overarching these local sustainability problems is the larger difficulty of reinforcing USAFE's in-place aircraft with US fighters based in the United States. Insufficiency of intertheater airlift remains one of USAF's principal concerns. Though major gains have been achieved in the past decade, the 1989 funded airlift force will provide no more than 47,000,000 ton-miles per day of strategic cargo airlift, well below the current goal, which is 66,000,000 a day.

Thus, USAFE has a ways to go before it can be confident about overcoming the Warsaw Pact's numerical superiority. Still, the force appears to have little option but to continue trying to rewrite the laws of mathematics. ■