

A three-week air campaign in the fall of 1995 was the decisive factor in bringing the recalcitrant Serbs to the peace talks in Dayton.

Artwork by K. Price Randall for Lockheed Martin

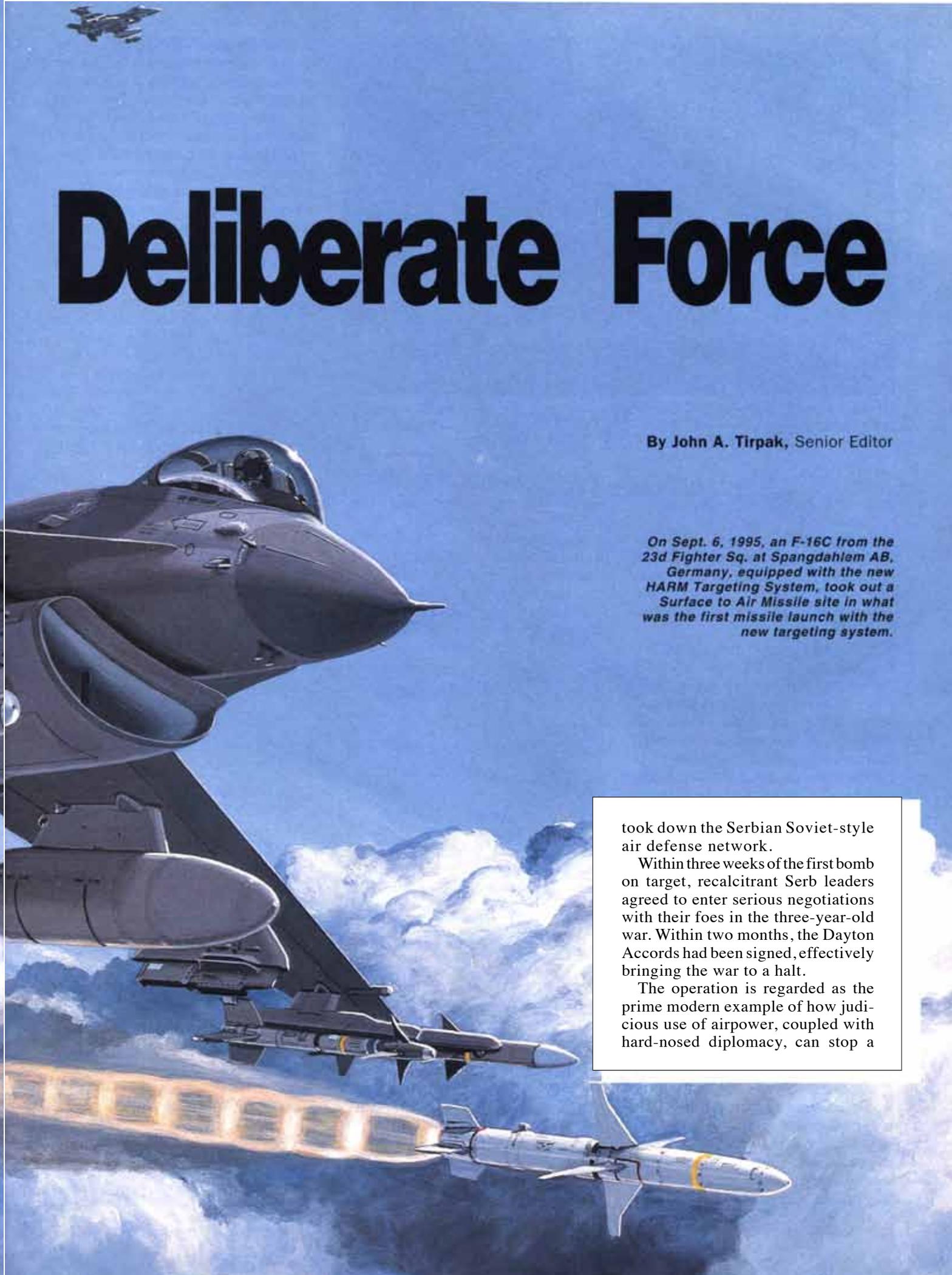
ON Aug. 28, 1995, an artillery shell ripped through the stalls of an open market in Sarajevo, Bosnia, killing 38 civilians and maiming or injuring 85 others. For the leaders of a joint United Nations–NATO force charged with protecting refugee “safe areas” like Sara-jevo, it was seen as the last straw after a lengthy spree of deal-breaking attacks by the Bosnian Serbs.

Joint Force leaders quickly moved to exercise their internationally grant-

ed authority to launch “disproportionate” retaliation.

A three-week campaign—called Deliberate Force—was launched. It included some artillery fire, but it was dominated by airpower, the weight of which hammered the Bosnian Serb heavy weapons, ammunition depots, command-and-control bunkers, and other targets. At the same time, NATO air forces undertook a parallel operation called Dead Eye, which

K. Price Randall



Deliberate Force

By John A. Tirpak, Senior Editor

On Sept. 6, 1995, an F-16C from the 23d Fighter Sq. at Spangdahlem AB, Germany, equipped with the new HARM Targeting System, took out a Surface to Air Missile site in what was the first missile launch with the new targeting system.

took down the Serbian Soviet-style air defense network.

Within three weeks of the first bomb on target, recalcitrant Serb leaders agreed to enter serious negotiations with their foes in the three-year-old war. Within two months, the Dayton Accords had been signed, effectively bringing the war to a halt.

The operation is regarded as the prime modern example of how judicious use of airpower, coupled with hard-nosed diplomacy, can stop a



Of the 3,515 NATO sorties, shooters flew 60 percent of the missions—releasing 1,026 munitions, including 708 PGMs. This F-16 from the 510th Fighter Sq. at Aviano AB, Italy, is loaded with a 500-lb. precision weapon.

ground force in its tracks and bring the worst of enemies to the bargaining table. It also illustrated that years of working together had made NATO an efficient fighting force, though one heavily dependent on US contributions of airpower, satellite and airborne reconnaissance, and electronic jamming.

In November 1995, President Clinton said that the US “led NATO’s heavy and continuous air strikes, many of them flown by skilled and brave American pilots. Those air strikes, together with the renewed determination of our European partners and the Bosnian [Muslim] and Croat gains on the battlefield, convinced the Serbs, finally, to start thinking about making peace.”

“Impressed and Awed”

Then-Defense Secretary William J. Perry said the belligerents were “just sick of the war” but that another factor was that “the warring parties were impressed and awed at the military capability of the United States and NATO.”

He went on, “They got a sample of that during the bombing raids. They witnessed our military power, but they also came to believe that, in the context of an agreement, that power would be used constructively—not to harm them but to enforce the peace. That was the solid foundation which allowed them ... to make the necessary compromises to reach this peace agreement.”

Ambassador Richard C. Holbrooke, special US negotiator in the Balkans and primary architect of the Dayton peace accords, told AFA’s 1996 National Convention that Deliberate Force was the decisive factor in bringing the Serbs to the peace table. Holbrooke flatly declared that

the diplomatic effort wouldn’t have succeeded “without the United States Air Force and Navy and the precision bombing.” Holbrooke said he believed at the time of Deliberate Force that “more bombing” would lead to better diplomacy. “And it was true,” he said.

Of the bombing, he observed, “The precision of it, its immediate and visible effects on the negotiations, made a real difference. Those people who argue about airpower have got to stop arguing only about Vietnam and talk about what can be done in the [Persian] Gulf, what was done in Bosnia.”

Paul G. Kaminski, who was then DoD’s top weapons official, told an Air Force Academy audience on May 2, 1996, that Deliberate Force surpassed even Desert Storm as a demonstration of modern airpower. “In Desert Storm, only two percent of all weapons expended during the air war were precision guided munitions,” he said. “In Bosnia, they accounted for over 90 percent of all ordnance expended by US forces.”

Kaminski went on to suggest that the United States had entered a radically new warfare era. “The bomb

The American Aircraft of Deliberate Force

US forces assigned to NATO, Aug. 30–Sept. 14, 1995

Service	Aircraft Type	Number	Mission	Location
USAF	AC-130H	4	combat	Brindisi AB, Italy
USAF	A/OA-10A	12	combat	Aviano AB, Italy
USAF	EC-130H	3	combat	Aviano AB, Italy
USAF	EF-111A	6	combat	Aviano AB, Italy
USAF	F-15E	8	combat	Aviano AB, Italy
USAF	F-16C	12	combat	Aviano AB, Italy
USAF	F-16C HTS	10	combat	Aviano AB, Italy
USAF	EC-130E	4	support	Aviano AB, Italy
USAF	KC-10	5	support	Genoa, Italy
USAF	KC-135	12	support	Genoa, Italy
USAF	M/HC-130P	4	support	Brindisi AB, Italy
USAF	MH-53J	7	support	Brindisi AB, Italy
US Navy	EA-6B	10	combat	Aviano AB, Italy
US Navy	F/A-18C	18	combat	Adriatic Sea
USMC	F/A-18D	12	combat	Aviano AB, Italy
Total		127		

The US Air Force supplied 69 percent of US aircraft assigned to NATO for the Balkan campaign, and the Navy and Marine Corps the rest. The US also made available these nonassigned supporting forces: **USAF:** U-2R, RAF Fairford, UK; RC-135, RAF Mildenhall, UK; F-16C, Aviano AB, Italy; and F-15E, RAF Lakenheath, UK. **US Navy:** F-14, Adriatic Sea; P-3C, NAS Sigonella, Italy; E-2, Adriatic Sea; S-3, Adriatic Sea; HH-60, Adriatic Sea. **USMC:** AV-8B, Adriatic Sea.

damage assessment photographs in Bosnia bear no resemblance to photos of the past, where the target, often undamaged, is surrounded by craters,” said Kaminski. “The photos from Bosnia usually showed one crater where the target used to be, with virtually no collateral damage.”



Who Flew the Missions?

All Sorties, Aug. 30–Sept. 14, 1995

Nation	Sorties	Percent
US	2,318	65.9
United Kingdom	326	9.3
France	284	8.1
Netherlands	198	5.6
NATO AEW force	96	2.7
Turkey	78	2.2
Germany	59	1.7
Italy	35	1.0
Spain	12	0.3
Other	109	3.1
Total	3,515	100.0

He concluded, “We are moving closer to a situation known as ‘one target, one weapon.’ It was actually more than one—but less than two—weapons per target in Operation Deliberate Force. This has been the promise for the past 20 years; now it is becoming a reality.”

Considering the scale of the results, Deliberate Force was an economical use of power. It took just 3,515 NATO air sorties—about a day’s work in the 1991 Gulf War—to get the Serbs to negotiate in earnest. Of

those sorties, about 60 percent were flown by “shooters.” These combat aircraft released 1,026 munitions, 708 of which were precision guided. Though the weather was often bad, the well-trained and disciplined aircrews got virtually everything they aimed at, hitting 97 percent of the targets and destroying or inflicting serious damage on more than 80 percent of them.

The targets themselves—338 individual aim points within 48 “complexes”—were checked and rechecked and painstakingly selected so as to virtually eliminate the risk to civilian life and property.

Deliberate Force was an achievement on a scale that even airpower

proponents did not anticipate. Shortly after Operation Desert Storm, the USAF Chief of Staff, Gen. Merrill McPeak, told a Senate committee not to expect too much from airpower in the Balkan context. Mountainous terrain, heavy foliage, and bad weather would conspire to prevent the kind of success seen in the Gulf War, he said, where targets were easier to find in the flat, open desert under typically clear skies.

“Imagine flying over the Blue Ridge Mountains at 600 miles an hour ... in overcast ... and picking out the right target somewhere down there in the woods,” McPeak had said, illustrating the difficulties airpower would face in Bosnia.

However, the Air Force had been busy since then, equipping far more of its airplanes with precision weapon capability than had been the case in the desert. “Deliberate Force extended a trend which began with the Vietnam War,” Air Force Secretary Sheila E.



This reconnaissance photo, taken by Royal Netherlands Air Force RF-16s over Bosnia, shows the precision with which targets were hit—bunkers containing munitions were destroyed while nearby buildings were untouched.

The Dominance of Precision Weapons

All Attacks, Aug. 30–Sept. 14, 1995

Precision Weapon Type	Number Expended	% of Total Weapons
GBU-10 2,000-lb. laser-guided bomb	303	29.5
GBU-12 500-lb. laser-guided bomb	125	12.2
GBU-16 1,000-lb. laser-guided bomb	215	21.0
GBU-24 2,000-lb. laser-guided bomb	6	0.6
AS30L laser-guided air-to-surface missile	4	0.4
SLAM EO/IR-guided missile	10	1.0
GBU-15 2,000-lb. EO/IR-guided missile	9	0.9
AGM-65 EO/IR-guided missile	23	2.2
Tomahawk EO-guided cruise missile	13	1.3
Total precision guided munitions	708	69.0
Nonprecision Weapon Type	Number Expended	% of Total Weapons
Mk. 82 500-lb. general purpose bomb	175	17.1
Mk. 83 1,000-lb. general purpose bomb	99	9.7
Mk. 84 2,000-lb. general purpose bomb	42	4.1
CBU-87 submunition	2	0.2
Total nonprecision weapons	318	31.0

Widnall said at the 1996 AFA Air Warfare Symposium.

Up From Vietnam

In Vietnam, only two-tenths of one percent of the bombs used were precision guided, she noted. In Desert Storm, “contrary to the general perception of its having been a ‘video war,’ only about nine percent of our bombs were precision guided. In Deliberate Force, over 60 percent of the bombs dropped by the NATO force were precision guided.”

Planning for Deliberate Force be-

gan back in September 1994, when NATO defense ministers met in Spain to discuss possibilities for using airpower to stem the ever-worsening Balkan war.

They used it two months later against Krajina AB in Serb-held Croatia, which had been used to launch attacks against the UN-guaranteed Bihac “safe area”—one of several where refugees were supposed to have a haven from attack. Serb surface-to-air missiles were fired against the NATO airplanes, which returned fire.

The use of airpower was sporadic,

however—not the sustained campaign many believed was necessary to influence the Serbs. NATO had carried out Deny Flight, enforcement of a no-fly zone over the Balkans, but that did not have much impact on the ground.

NATO developed Operation Dead Eye as a response to the Bosnian Serb air defense threat. Should the call come for an air campaign, it would target air defense communications, command-and-control nodes, early-warning radar sites, known SAM sites, and related support facilities.

Simultaneously, NATO began the planning for Deliberate Force, the strike campaign which would be unleashed if the Serbs failed to respect the UN-identified “safe areas” and comply with other cease-fire terms. The target list concentrated on Serb heavy weapons, such as large artillery and tanks, command-and-control centers, dedicated military support facilities, and lines of communication.

The UN and NATO were extremely patient with the Serbs—critics said too much restraint was exercised—as the Serbs moved toward and attacked the safe areas. NATO and the UN were blocked by divisions among members.

“We had piecemealed airpower, in a way—for lots of reasons—over the course of Deny Flight,” said Gen. Michael E. Ryan, Air Force Chief of Staff nominee and then-commander of NATO southern air forces, who oversaw Deliberate Force.

Without “a sustained effort,” Ryan said, airpower was not “taken seriously by the warring factions.”

As 1995 unfolded, Bosnian Serb defiance of UN mandates grew routine. From “weapons collection points” outside Sarajevo where they were to turn in certain kinds of armaments, the Serbs began shelling the city and reclaiming surrendered weapons. Shelling in May was met with limited air strikes on Serbian ammo dumps. In retaliation, the Serbs took UN hostages, then in June shot down Capt. Scott O’Grady’s F-16 with a SAM, proving that the Integrated Air Defense System from the dismembered Yugoslavia—including SA-2 and SA-6 missiles and man-portable air defense weapons—was still active and potent.

No Penalty

In July, the Serbs overran the safe areas of Srebrenica and Zepa and set

their sights on Gorazde. On a roll, the Serbs had little to lose by defying UN admonitions to leave the safe areas alone, as the “penalty” air attacks had not been unleashed.

NATO and UN ministers agreed that trying to appease the Serbs and hoping for better behavior on their part was proving futile and humiliating and that, with each defiance, their organizations looked paralyzed and unable to act decisively.

In late July, the NATO/UN ministers agreed that an attack on Gorazde would be “met by substantial and decisive airpower.”

Any attack on a safe area, by troops, artillery or aircraft, or the massing of forces or heavy weapons in preparation for such an attack, would trigger a “disproportionate” response in the form of bombing anywhere in the “wider area” of Serb operations.

Ryan was to “build the campaign” of air attacks. His instructions were to get the Serbs’ attention and compel them to stop the “wanton shelling” of the safe areas.

“We were not at war with any faction,” Ryan explained, and that included the Bosnian Serbs, “so it was not an attack that was meant to take away or destroy their army. It was an attack to take away the military capability they had ... that made them dominant.” Once the Serbs “realized what was happening” and that they were losing their edge against their enemies, Ryan reasoned, the Serbs would comply with UN mandates,

fearing their enemies would move to take advantage of the disruption of Serbian forces.

The Serbian strengths centered on “their command and control, which was very, very good—intricate, interconnected, and redundant,” Ryan noted. The command-and-control network allowed the Serbs to move their forces—which were outnumbered by those of the Muslims and Croats—quickly to where they were needed.

A network of ammunition dumps and vehicle parks also meant that the Bosnian Serb army didn’t have to lug around lots of armor and supplies and so could move faster. The combination of command and control with scattered ammo and vehicle supplies was what gave the Serbs their edge.

Then, “if we could take away their mobility by taking down some very key ... lines of communications,” the Serbs wouldn’t be able to move forces quickly, communicate, or resupply, Ryan said.

Such targets would include “some bridges” and roads. “We minimized that because we didn’t want to do any more damage to this poor nation that had been beat up so long,” Ryan added. If the bombing campaign had the desired effect of taking away the Serb strengths, “and they realized it was happening to them,” Ryan said, Deliberate Force would work. However, “they would not realize it unless we had a sustained operation

that would show them that we really meant business.”

When the Sarajevo market was hit by the artillery round on Aug. 28, Adm. Leighton W. Smith Jr., commander of NATO’s Southern Region, and his UN counterpart, French Lt. Gen. Bernard Janvier, agreed it was time to launch the bombing campaign. The two had to agree to the action under a “dual key” system put in place to assure that the attacks were mutually agreed to and approved.

On Aug. 29, the order came for Deliberate Force to commence at 2 a.m. the next day. UN forces in Gorazde—deemed to be at risk of being taken hostage by Serbs—were to quietly leave their positions.

Bombs on Target

At 2:12 a.m. on Aug. 30, the first bombs hit their targets.

Any and all IADS sites or related facilities anywhere in Bosnia were considered legitimate targets. However, diplomatic language governing the use of force in retaliation for the market shelling mandated that non-IADS targets be linked with shelling of the safe areas. Strikes were therefore limited at first to the “southeast zone” of Bosnia. This restriction would also give critics of the operation—such as Russia—less ammunition to argue that NATO was acting as the de facto air force of the Croat and Muslim forces waging a ground offensive in the northwest.

NATO and UN mandates “limited the target set,” Ryan noted. “Then I further limited it” to specific aim points, in order to “minimize collateral damage and, in fact, minimize carnage.”

Bridges, for example, would be hit only at night, when it was assumed there would be no traffic on them. Ammo dumps would be hit but adjacent administration buildings would not. On some targets, the sequence of attacks was important, Ryan recalled.

“We’d start at the back end of the ammo dump and work our way forward to where the administrative buildings were” so anyone nearby would “get the idea that it was probably not a real good place to be.”

The Suppression of Enemy Air Defenses mission was handled principally by Navy and Marine Corps fighters, which, operating off carriers in the Adriatic Sea and from Aviano AB,



A crew chief marshals a Predator UAV to its parking spot. Predators flew critical reconnaissance missions during Deliberate Force to help determine if the Serbs were complying with NATO/UN conditions.

Italy, performed 60 percent of the SEAD missions in the operation. On the first night, the SEAD plan called for F-14 Tomcats to launch a volley of Tactical Air-Launched Decoys into the vicinity of known air defense sites; when the sites turned on their radars to shoot at the decoys, F/A-18 Hornets behind the Tomcats would rain a barrage of AGM-88 High-speed Anti-Radiation Missiles down on the missile batteries.

The tactic had worked brilliantly in the Gulf War, but the Serbs—as the Iraqis had learned the hard way—found it better to hunker down and not turn on their radars.

Although the SAM batteries were “off the air” most of the time—effectively self-suppressed—these batteries continued to be a threat until specifically tracked down.

Not relying just on the threat from HARMs to thwart the SAMs, Marine EA-6B and Air Force EC-130 airplanes jammed the Serb radar frequen-

cies. Meanwhile, USAF’s Airborne Battlefield Command and Control Center airplanes maintained communications links between ground commanders and the air armada, while NATO E-3 AWACS aircraft kept track of the aerial traffic and kept it deconflicted.

France Loses a Fighter

One French Mirage 2000K was shot down near Pale, brought down by a shoulder-fired SAM. It was the only aircraft lost in the operation. Numerous attempts to rescue the two French aircrew members proved unsuccessful, but they were eventually repatriated by the Serbs who had captured them.

The second day of air strikes mirrored the first, though fewer targets were struck. Bomb damage assessment continued. Late in the day, word came from the Serb leadership that they had received the NATO/UN ultimatum—to withdraw heavy

weapons beyond 12 miles outside Sarajevo, abandon the siege, and allow free passage in and out of the city—and that they were willing to talk. Janvier ordered a 24-hour halt to the operation so he could talk with Serb leader Ratko Mladic. The strike “packages” set to go that day sat alert, while reconnaissance and SEAD missions continued.

After a marathon negotiating session, Janvier accepted Mladic’s pledge that NATO’s terms would be met and ordered a four-day extension of the bombing halt. Some believed the Serb leaders were as yet unaware of how much harm had been done to them and needed time to comprehend the damage.

There were strings to the Serb agreement, however, and NATO/UN leaders quickly decided that the assurances provided, like all those that had come before, were semantic and insubstantial. The Serbs were given a new ultimatum—rejecting their conditions—and this time a deadline was given for compliance. The withdrawal and other conditions were to be accomplished by late Sept. 4 or the bombing would resume.

On the morning of Sept. 5, imagery from Predator and Gnat UAVs showed that the Serbs were only making a halfhearted show of moving weapons around, and the heavy weapons stayed defiantly put. Seeing no gesture of compliance, NATO/UN leaders ordered a resumption of bombing. By lunchtime, attacks were under way against more ammo dumps, vehicle staging and repair areas, and like targets, as well as some targets that needed a second round of bombs to finish the job.

Similar sites were struck on Sept. 6 and 7, but with bridges and choke points added to the mix. The idea was to force Serb forces onto roads where they could be watched by UAVs and reconnaissance airplanes, the better to determine if compliance was forthcoming.

The pattern of strikes continued, but plans were refined for striking targets in the “northwest zone” of Bosnia, some of which would be hit by standoff weapons. Moreover, the initial list of targets prepared for Deliberate Force was more than 80 percent destroyed and a new list was drawn up, expanding the target set to include power stations, factories, and oil refineries. It would have to

Breaking Down the Missions

All Sorties, Aug. 30–Sept. 14, 1995

Mission Category	Sorties	Percent
Combat Air Patrol	294	8.4
Suppression of Enemy Air Defenses	785	22.3
Close Air Support/Battlefield Air Interdiction	1,372	39.0
Reconnaissance	316	9.0
Support Operations	748	21.3
Total	3,515	100.0



The pace of Deliberate Force was furious. Theater operations centers, like this one at Aviano’s 555th Fighter Sq., went into overdrive after the shootdown of Capt. Scott O’Grady, one of the 555th’s pilots.

wait for senior NATO/UN approval, however.

On Sept. 9, HARMs and GBU-15 2,000-pound glide bombs were thrown against heavily defended air defense targets in the northwest zone. Late that day, there were reports that Serbian vehicles were withdrawing from the NATO/UN-imposed “exclusion zone” around Sarajevo, and attacks in this area were temporarily halted.

Here's Our Answer

On Sept. 10, the Serbs again requested talks, and Janvier obliged by traveling to Belgrade to meet with Mladic. But with no progress after four hours of verbal potshots, Janvier beat a hasty retreat, knowing that just a few minutes after his airplane was airborne, Tomahawk Land-Attack Missiles would be launched from USS *Normandy* in the Adriatic Sea. Their target was the Lisina radar complex near Banja Luka in northwest Bosnia, which gave the Serbs a clear view of the Adriatic. Destroying this complex would open up yet another safe avenue of ingress for NATO warplanes coming from the Adriatic and Italy. Eleven of the 13 TLAMs hit within 30 feet of their targets; two missed.

For three more days, targets were struck and reconnaissance performed, almost to the point of exhausting the target list. On Sept. 12 and 13, bad weather kept most missions on the ground.

Then, on the 14th, the Serbs capitulated.

At first, a 12-hour bombing halt was ordered, then it was extended three more days. As the Sept. 17 deadline for action neared, it became clear that the Serbs were indeed making good on Mladic's signed agreement to meet the NATO/UN demands, and Serb artillery was on the move away from Sarajevo.

On Sept. 20—just three weeks after the first weapons of Deliberate Force had been dropped—NATO and UN leaders issued a statement that “the resumption of air strikes is currently not necessary.”

Ryan believes that Deliberate Force testifies to the capability of airpower “to coerce compliance with international mandates.” Against an intransigent Serb leadership, airpower had shown little effectiveness in small doses, Ryan said, but “when it was finally used in very deliber-



USAF photo by SMSgt. Rose Reynolds, *Airman Magazine*

Previous smaller doses of airpower had proved ineffective. According to Gen. Michael E. Ryan, using airpower in a deliberate, sustained way was the decisive element in the success of Deliberate Force.

ate ... but sustained way, I think it ... was the most decisive element of bringing the warring factions to the table and to the successes that were achieved at [Dayton] and eventually signed in Paris.”

He believed that the size of the operation was small enough—but the stakes high enough—that it was his duty to personally choose the aim points.

“Minimizing not only collateral damage but also carnage was first and foremost in my mind,” Ryan noted, “because in that particular operation, ... if NATO had committed an atrocity from the air, then we would be seen in the same light as those who were committing the atrocities on the ground. And that would have brought the operation to a dead halt.”

Given the stakes, and Smith's delegating the choice of targets to him, Ryan felt “a great responsibility to make sure it was done exactly right.” And, at about 300 sorties a day, “it was manageable.”

Look no Further

Moreover, said Ryan, “If anything went wrong, well, they had one person to hang—not a sergeant who was working in the [imagery interpretation] shop saying, “That looks like a good one to me.””

He added that “one thing we know about [bomb damage assessment] in this era of communications is that it's going to be Joint, combined, and it's going to be on CNN.”

Contributing to the success, Ryan noted, was that NATO was “fortunate to have a three-year buildup” to iron out command and control, infrastructure, and especially reconnaissance issues that would be vital to Deliberate Force.

“We were also very lucky that over 40 years NATO had practiced together so that when we did this it was ... seamless,” Ryan asserted. Eight nations contributed fighter or reconnaissance aircraft, “and almost all the other NATO nations in some capacity” contributed to the effort. “It was ... a recognition that all of the effort that we've put into NATO over all these years toward interoperability and ... integration was well worth it.”

Most of the countries contributing combat aircraft used precision weapons, he said. Those that did not have them were assigned targets where the risk of collateral damage was low.

Ryan also took issue with a recent Congressional report arguing that precision weapons offer little advantage over those without such guidance. He said that in Deliberate Force, which offered “probably the best-documented ... BDA of any operation that's been done in years,” precision munitions were “absolutely vital to the success of the mission.” Given the absolute requirement to avoid civilian casualties, it could not have been accomplished without them, he said. “I think precision munitions are not only here to stay, but they're ... the wave of the future.” ■