

Ellsworth becomes the center of knowledge for tactics, weapons, and low-level training.

SAC's New Graduate School

BY JEFFREY P. RHODES, AERONAUTICS EDITOR

HISTORICALLY, *strategic airpower* only meant *nuclear deterrent*," says Maj. Craig Scherzberg, a B-52 instructor pilot with the 25th Strategic Training Squadron at Ellsworth AFB, S. D. "But the conventional mission is increasing in importance. With the threats we are facing out there, we have got to get smarter at this business all the way around."

Strategic Air Command crews will get smarter by making use of the staff and facilities at the Gen. Curtis E. LeMay Strategic Warfare Center (SWC), activated last August at Ellsworth. The SWC's purpose is simple: to teach aircrews to wring maximum combat power from B-52s, FB-111s, and B-1s.

The SWC, when it becomes fully operational in 1992, will consist of six main activities—the tactics and intelligence directorates, the Strategic Weapons School, the Strategic Training Center, the 1st Electronic Combat Range Group, and aircraft maintenance support. Developmental, academic, and operational advanced bomber crew training thus will be combined in one state-of-the-art learning center.



The purpose of the Curtis E. LeMay Strategic Warfare Center is to teach Strategic Air Command bomber crews to get the most out of their aircraft. Crews learn more effective mission-planning techniques from instructors like Maj. Steve Humber (above) and practice their skills on actual aircraft (right).



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"We are here to concentrate on preparing SAC and its crews for anything they could be called on to do," explains Col. James McKeon, Commander of the 99th Strategic Weapons Wing, the SWC's unit designation. "We have a staff selected on the basis of talents and experience. They are . . . enthusiastic people who are not constrained by 'This is how it's always been done before.' I'm really excited about the whole thing."

Three Main Branches

Tactics were formerly developed at SAC Hq. at Offutt AFB, Neb., and were taught at the SAC Tactics School at Nellis AFB, Nev. Detachment 1 of the 99th SWW will stay at Nellis to keep tabs on Tactical Air Command's tactics work, but both the developers and the tactics school will move to Ellsworth by 1991.

The 99th SWW staff will work to improve bombing techniques, especially those pertaining to low-level flight, and develop new ones. Other areas to be enhanced include threat detection and identification capabilities in target areas and survivability of aircrews. An in-house intelli-

gence unit will update the tactics branch on what potential aggressors are doing in air defense and electronic countermeasures.

"We will be able to get tactics information out to the operators in a much more timely manner than we do now," says Colonel McKeon. "With intel[ligence] and operations next to each other, we will be able to get the crews who are training here to test things for us. We can then analyze the new tactics and quickly get the information out to the field."

SWC's second major branch, the Strategic Weapons School, is in the early stages of development. This graduate-level school will use classroom instruction to teach operations and tactics—including those developed across the street by the Strategic Tactics Development Center (STDC)—to competitively selected individuals, who will then instruct other crews at their respective home bases.

A graduate of the weapons school will become the acknowledged expert in his squadron or wing in such matters as instructor techniques, aircraft capabilities, planning, employment, and execution. The curriculum would require a minimum

of fifty-five training days and fifteen flying sorties. Classroom training will cover bombing techniques and threat study, while the flying training will concentrate on weapons delivery and defeating enemy air defenses. Plans call for the weapons school to be in full operation next summer.

SWC's third main branch, the Strategic Training Center, supervises the hands-on portion of aircrew training. Already up and running at near full speed, the training center eventually will come into direct contact with every bomber crew in SAC. The training center, once it becomes fully operational next July, will see six B-52G/H, two B-1B, and two FB-111A crews deploy to Ellsworth every week. In addition, two B-1 crews from Ellsworth will participate in exercises every seven days.

Actual air training is conducted by the 25th Strategic Training Squadron, whose lineage dates back to the 25th Aero Squadron formed in World War I. The 25th STS's main tasks are to design challenging scenarios for crews flying along the fourteen low-level training routes that make up the Strategic

—USAF photo by A1C Mila Gaffney



Air Training at the Strategic Warfare Center is conducted by the 25th Strategic Training Squadron, which can trace its lineage to World War I. The 25th STS's home is this new \$5.4 million structure that houses the mission-planning and briefing rooms, the Strategic Training Route Complex range control center, and other offices.

The 28th Consolidated Aircraft Maintenance Squadron (right) has an unusual job in that none of the B-52s or FB-111s it services belongs to its parent unit. The 28th CAMS maintains the aircraft of the crews that come to the LeMay Center to train. The transient B-1B aircraft (below) are maintained by the 28th Organizational Maintenance Squadron, whose technicians normally work on Ellsworth's B-1s.



—USAF photo by Sgt. Tony Evans

Training Route Complex (STRC) and to debrief crews to enhance their performance in weapons delivery and survivability.

Over the Plains

The STRC routes cover a 250,000-square-mile area spread



over parts of North and South Dakota, Wyoming, and Montana. The routes are intertwined, permitting many variations in flight paths, so crews don't get overly familiar with any one route. These ribbons of restricted airspace allow bomber crews to drop to as low as 400 feet, though efforts are made to avoid farms and other areas where aircraft noise provokes complaints.

Despite such courtesies, there can be no doubt that the crews are training for war. Training attacks have to be made at low altitude, using terrain-masking to minimize the chance of detection by enemy radars. Dashing in at low altitude also gives SAM and other anti-aircraft artillery crews less time to track and shoot at aircraft as they pass overhead. Along the routes, ground threats are simulated by technicians operating the AN/MST-T1A Multiple Threat Emitter System (MUTES). This equipment can imitate the signals of ninety different threat radars, although only five types of emissions can be sent out at one time.

For a variety of reasons, no live drops are made on the STRC runs. Instead, the simulated drops are assessed and scored by radar.

A ground-based AN/TPQ-43 Seek Score radar, which tracks the subject aircraft, makes known the plane's position relative to the target. Meanwhile, equipment on

board the aircraft emits a tone. When the navigator on a B-52 "releases" the weapon, the tone is broken. Ground observers know what type of weapon is being simulated, and, because the bomb's ballistic properties are also known, they can establish where the bomb falls relative to the target. The system, though not 100 percent accurate, has a small margin of error.

MUTES, Seek Score, and the AN/MSR-T4 Threat Reaction Analysis Indicator System—which records and measures aircrew response to threats emitted by MUTES—are always located close to each other. All of the radars are mobile and are located at twelve (six permanent and six migratory) radar bomb scoring sites along the STRC.

Located near Forsyth, Conrad, and Havre in Montana, Powell, Wyo., Dickinson, N. D., and Belle Fourche, S. D., the permanent radar sites are manned by two Air Force officers and some sixty enlisted personnel assigned to the 1st Electronic Combat Range Group. Representatives from Martin Marietta and General Dynamics are also present to train blue-suiters to operate and maintain the radar equipment.

Low-level flight, of course, is inherently dangerous. With the addition of ground threats, even though they are simulated, the environment becomes stressful indeed. Crew

members' reactions to these situations and their degree of cooperation are almost as important as putting bombs on target.

"The whole crew has to get involved when flying a mission," maintains Maj. Randy Jameson, a B-52 instructor radar navigator with the 25th STS. "Historically, the crew was compartmentalized. The pilots could react to threats, but that was it. But now, because the number of threats in combat will be so great, all six people have to know what's going on. For example, a pilot can turn to avoid a SAM site, but he needs to tell me so I can make corrections to my bomb calculations. Otherwise, we'll miss the target."

How the Crews Improve

The STRC is a valuable training tool because every action, reaction, radio transmission, and emission from both aircraft and ground units is recorded. After each of the three sorties that transient crews fly during their week at Ellsworth, the 25th STS instructors give them a thorough debriefing and replay the mission.

"We're not here to evaluate the

crews that come in," says Major Jameson. "We say, 'Here is what you did, and here is how we think you can do better.' What we want is for them to learn and improve."

In each of the eight debriefing rooms in the STC building is a large screen with a graphic symbol generator. The record of the mission can be displayed from several perspectives. Crews can see their overall route, if they wish, or just a part of it in greater detail. They can see the radar track. They can take a broad, comprehensive view of the flight. Or, because different images can be cast simultaneously onto four different sections of the screen, they can view a combination of any of these. The rooms also contain two VCRs for watching videotape recorded from the aircraft or from a ground-tracking station.

The mission-debrief system's Digital Vax mainframe computers have an artificial-intelligence-based subsystem, permitting crews to play "what if" with the mission. Instead of showing events as they occurred, the computer can take the terrain and threat data and show what would have happened if the crew had chosen another attack axis or

had performed a different evasive maneuver.

Unlike events at the Air Force's Fighter Weapons School course or the Navy's Top Gun program, STC training sorties are not rigidly structured and don't always get progressively harder. Crews can fly a completely "canned" profile, in which everything is known in advance. Or, says TSgt. Tim Ruening, an instructor gunner with the 25th STS, "we can throw some surprises at them if they have progressed." Even replays of the same profile can be arranged, if the crew or instructors think it is necessary.

"The talent level is different across the command," notes Colonel McKeon. "We develop different scenarios to fit the talent level. The same basic things will happen each week at the Center, but at different levels of intensity. The one-week type of operation we run allows us to get the training done and keep maintenance to a minimum."

"We have a unique relationship here, in that none of the aircraft we service belongs to us," says Maj. Christine Nelson, Commander of the 28th Consolidated Aircraft Maintenance Squadron at Ells-

—USAF photo by SSgt. Melba Tamayo



Six permanent radar bomb scoring sites, such as this one near Belle Fourche, S. D., are scattered over the fourteen low-level training routes that make up the Strategic Training Route Complex. Shown are the MUTES and TRAINS, a pair of systems that first imitate the signals of up to ninety threat radars and then record the bomber crew's reaction to those signals.

How well the entire crew works together is a key to mission success, both in training and on actual missions. Crew coordination is emphasized during training at the LeMay Center. At right, a 25th STS crew gets ready for the day's flight. The lessons learned in South Dakota not only improve the performance of individual crews but also may be passed on to other squadron and wing crews once a crew returns to its home base after training.



—USAF photo by A1C Milla Gaffney

worth. Also unique is the fact that the 28th CAMS must keep two types of aircraft (B-52G/H and FB-111) repaired and flying, though neither type is assigned to the base.

With help from Air Force Logistics Command, Major Nelson and her staff looked at the types of parts

that the two aircraft need most frequently and laid in a supply. Her spares stock even includes replacement engines, and it has been necessary for the unit to install some. Maintenance for transient B-1Bs is handled by Ellsworth's 28th Organizational Maintenance Squadron.

What's in the Works

The 99th SWW is the third active wing at Ellsworth, a first for a SAC base. New facilities built for the wing include the STC, a futuristic \$5.4 million structure that houses the debriefing rooms, mission-planning rooms, a large squadron-briefing room, the STRC range control center, an intelligence and weather section (with all the attendant equipment), and offices and locker rooms for the 25th STS instructors and visiting aircrews.

Other new construction includes a companion building to the STC that will house the STDC and the wing's executive offices and a third building that will serve as quarters for the crews that come in to train. Groundbreaking for the STDC building will occur this winter, and work is under way on the crew quarters.

An integral system soon to be installed at the STC will be a Route Integration Instrumentation System, which will enable the STRC range control center to use a series of land lines to direct scenarios and

monitor aircraft in real time. The system will also allow the operations staff and radar sites staff to change a mission profile much more rapidly. GTE is installing this system for operational use in a few months.

Though the STRC is designed to train one bomber crew to penetrate a target area, drop its bomb load, and survive a return trip, plans are being made to include other aircraft in the missions. In some, fighters will participate as adversaries. In others, the "fast movers" will join the bombers to create a force package that attacks a target.

Plans are even being made to include the Northrop B-2A Stealth bomber in the STC curriculum. Though still in the earliest stages, the current plan is to have the B-2 crews fly the STRC from home base at Whiteman AFB, Mo., return to base, and then get the debrief information over the telephone and the mission data from installed computer terminals or some other means.

The underlying concept of the Strategic Warfare Center is summed up well by Colonel McKeon. "We may get all the buildings and computers," he says, "but we will never reach full-up capability, because we are dealing with ideas. You take the talent and intellect of the crews we have in Strategic Air Command, and there is no limit to what we can do here." ■

