IT HAS BEEN A HALF-CENTURY SINCE THE "DEW LINE" FIRST STARTED RISING IN THE ARCTIC WASTE.

A LINE IN THE ICE

By Peter Grier

THEY'RE still up there in the frozen north, some of them. They rise abruptly from the icy wilderness, a jumble of buildings and platforms topped with giant white domes. They look like relics from another time, which, in a way, they are. When they were built, the United States' primary adversary was communism, not terrorism. The US military's greatest fear was of a sneak attack by Soviet bombers, flying undetected over the North Pole.

Five decades ago this year, the US and Canada launched one of the most ambitious construction projects ever—the Distant Early Warning, or DEW Line, a series of radar early warning stations from Greenland to Alaska. Over the next two-and-a-half years, thousands of people and some 460,000 tons of material would be shipped, hauled, and airlifted some 200 miles north of the Arctic Circle, up to a line

running roughly along the 69th parallel. When the crash project was over, North America had something that, for the era, was a technical marvel. It had also gained a crucial few hours' extra time to respond to any incursion by aircraft carrying nuclear bombs.

That strike never came, of course. Yet year after year, the radar technicians, radio operators, pilots, cooks, metal workers, and military commanders who constituted the isolated DEW Line population braved cold and boredom to keep watch for the West. Today, their mission may be largely forgotten. Any traveler happening upon the abandoned stations might wonder what on earth they were for.

Watching, Waiting

"To that, I must answer that, for a brief while, we stood on guard," writes former DEW worker Rick Ranson in his book *Working North.* "Like ancient guards in a lonely outpost on the Great Wall of China or Hadrian's Wall, we watched, we waited, and we slowly went nuts."

Some civilian technicians bought snowmobiles and went out hunting in their free time. Some hung around station bars, playing cards and swapping tall tales. Some immersed themselves in solitary hobbies like photography.

Some couldn't take it and fled when their contracts were up. Others loved it and today remember their time on the line with fondness.

"You had a lot of time to think," says Ranson, who still works as a boilermaker, in Winnipeg, Canada.

For centuries, the United States depended on broad oceans and peaceful neighbors to protect its people and home-based forces from military attack. From the beginning of the age of flight, however, visionaries realized this geographic isolation might no longer serve as an effective buffer. As early as 1916, Alexander Graham Bell worried that airships might be able to float over the waves and bomb US cities.

During World War II, the continental US remained virtually untouched, despite West Coast fears about Japanese aircraft. Japanese troops and aircraft did gain a foothold in the western Aleutian Islands early in the war, but withdrew by the middle of 1943. After the war, the threat to the US homeland seemed minimal, and air defense budgets crumbled accordingly.

In the late 1940s, however, Soviet acquisition of atomic weapons, plus Moscow's development of a long-range bomber force, quickly changed the situation. In 1947, the US Air Force proposed a $600 million radar fence composed of 411 radar stations and 18 control systems. The cost seemed high to Defense Department officials, who sent USAF back to the drawing board. By 1950, the Air Force erected an interim system named Lashup, which consisted of 44 World War II-vintage radars located near major US metropolitan areas. Lashup may have been better than nothing, but its old radars did not have much range, and it would have provided little advance warning of attack. Air Force officials wanted something more—distant warning of attack.

Canada was worried as well. Without its own nuclear deterrent, Ottawa saw air defense as its best protection against Soviet attack. In the early 1950s, the US and Canada began joint construction of the Pinetree Line, a series of some 30 radars that ran roughly along the line of the US–Canadian border. This system was fully operational in 1954, with the US paying two-thirds of its cost.

At around the same time, with its own funds, Canada began building another line farther north, near the 55th parallel. This Mid-Canada Line was a simpler microwave warning device, prone to false alarms set off by geese and other large birds. However, the fact that Canadians were even attempting to build this barrier, whatever its limitations, intrigued some US defense officials. If Canada could undertake a difficult construction task in the often-bitter weather of the 55th parallel, why couldn't the US do the same even farther north? A trip wire situated above the Arctic Circle would provide hours of extra warning of bomber attack.

Top Air Force officials were not initially enthusiastic. They thought that erecting and maintaining a string of high-tech radars in such weather was not feasible and that even trying would drain crucial funds from the main mission of SAC. They favored offensive nuclear deterrence, but nevertheless agreed to provide supplies and advisors for a February 1953 equipment test on Barter Island, off the northeast coast of Alaska.

Out There. ***At a DEW Line outpost, radar antennae probe the skies. "Like ancient guards," USAF radar technicians, radiomen, and support personnel stood lonely watch in the desolate Arctic.***

Breakthrough

It was at this experimental outpost, with nothing but the icy bleakness of the Arctic Ocean stretching away to the north, that personnel from MIT's Lincoln Laboratory and from Western Electric achieved the breakthroughs that made the DEW Line possible. Lincoln scientists developed automated alarms that sounded when radars picked up a target, so that operators did not have to stare at scopes for hours on end. They perfected communications via radio waves

bounced off the troposphere, overcoming the difficult radiation characteristics of the far north. They hardened, for Arctic use, two radars—the AN/FPS-19, which had a range of up to 65,000 feet and out 160 miles, and the AN/FPS-23, which handled low-level detection through its ability to pick up targets flying as low as 50 feet above water.

"So that neither would record flocks of migratory birds, both were set to disregard objects flying slower than 125 miles per hour—a feature the Mid-Canada Line lacked," notes *The Emerging Shield,* a 1991 publication of the Office of Air Force History about the evolution of US continental air defense.

In July 1953, the US began building an 18-site test line running across Alaska and northern Canada. Working from an old US Navy base in Barrow, Alaska, workers towed prefabricated modules across the tundra to selected sites, then set them up. Air Staff concerns about the difficulty of Arctic construction faded away. In December 1954, the Pentagon awarded Western Electric the project.

The DEW Line was on.

The DEW Line was the largest construction project ever undertaken in the Arctic and one of the most difficult construction projects of any kind, ever. Even today, the idea of constructing a string of habitable stations across trackless wilderness would raise major concerns. And these stations were not just erected. They were staffed with thousands of men who slept, ate, worked, played cards, did laundry, and generally carried on a normal life—as normal, that is, as one could be in such frozen isolation.

Lifeline. ***Isolated DEW Line sites were resupplied by aircraft such as the ski-equipped C-47 at left and the then-new C-124 at right. The flying was dangerous work; 25 people died in aircraft accidents in 1956 alone.***

Site selectors went in first. They came in overland by Caterpillar tractor "trains" in the Alaskan portion and by ski plane in much of the Canadian portion. With the help of parachute-dropped bulldozers, they cleared airstrips, often on frozen lakes, long enough to handle C-124 cargo aircraft. Except during two months in late summer, everything had to come in by air.

The basic unit of construction was a modular building 28 feet long, 16 feet wide and 10 feet high. Made of prefabricated panels, these modules were combined into "trains" like a string of blocks. Main stations had two 400-foot trains, connected by an overhead bridge, forming a giant H. The trains were laid on gravel pads or mounted on stilts to prevent thawing of the permafrost beneath and were oriented with the prevailing winds so as to minimize snow drifts.

On the Greenland ice cap at the line's eastern end, some three feet of snow and ice piled up every year. Some stations there were built on stilts and equipped with hydraulic equipment so they could jack themselves higher every year. This ingenious solution to the problem of ice buildup is still used today in polar research stations.

Steel towers were topped with the DEW Line's distinctive geodesic radomes. Classified electronic equipment was kept in separate offices, which were theoretically off-limits to all but cleared station staff. The other trains contained sleeping quarters, communications rooms, shops, and the all-important dining facilities, which often doubled as entertainment centers and bars. Inside, airlifted diesel fuel kept life comfortable. Outside, the temperature could fall to 65 degrees below zero. Every year the sun would disappear below the horizon for two months.

Paging Nanook. ***Construction workers drill foundation piers for a DEW Line building on Canada's Baffin Island, north of the Arctic Circle. Temperatures at such sites could hit 65 degrees below zero.***

Frozen in Time. ***Inside a DEW Line site, personnel in an operations room plot aircraft movements on radar screens and plexiglass boards. They might not "see" all bombers, but getting just one was worth it, said Gen. Earle Partridge.***

The construction effort was like nothing so much as the marshaling of troops and supplies for the D-Day invasion, officials said at the time. In 1956 alone, air, sea, and water transport carried 167,183 short tons of supplies to DEW sites. It was dangerous work—25 people died that year in aircraft accidents. On July 31, 1957, responsibility for the DEW Line passed to the Air Force, and, by the end of that year, the first phase of stations was virtually complete.

The military role of the DEW Line was to detect the approach of Soviet bombers from the north in an actual attack. While its radars and communications could be jammed, that in itself would be a signal that something major was afoot, officials noted at the time. Theoretically Soviet aircraft could swing wide and come in toward the North American mainland from the Atlantic or Pacific Oceans, but this was unlikely, given the range of the USSR's bombers at the time. Navy ships, early warning aircraft, and Texas Tower radar platforms provided some protection outside the DEW Line's flanks.

If DEW radar blips turned out to be enemies, US and Canadian interceptor squadrons could be scrambled to meet them. Meanwhile, forces in the United States would have gained valuable warning of four to six hours to prepare for the attack. The Air Force especially liked the fact that the DEW Line would aid in the defense of US nuclear forces.

"We believe that our primary mission in the Air Defense Command is to defend the bases from which the Strategic Air Command is going to operate," said Gen. Earle E. Partridge, commander of Air Defense Command, at the time. "We believe also that we have to provide a reasonable, an equitable, protection for the key facilities, the population centers, and our industry."

Duck Hunting

Even with the DEW Line standing guard, some Soviet bombers would likely get through, noted Partridge. He compared the situation to duck hunting. Some days, the hunter would be good and the conditions right, and most of the ducks would be shot. Other days, the ducks would be more adept, the conditions worse, and many would get through, but getting even one duck might make a tremendous difference.

"If you shoot down a bomber coming in—one that was going to a big city like Washington—you save billions of dollars and maybe a million lives, by just shooting down one bomber," Partridge said in a lengthy 1957 interview with *US News and World Report*.

Aircraft did not have to be the size of a Soviet bomber for the DEW Line to pick it up, of course. "Unknowns" were a problem for radar operators from the beginning. Partridge said that the early warning system as a whole, including the lower Mid-Canada and Pinetree Lines, picked up an average of 35 unknowns a day in 1957. Generally these turned out to be small aircraft that had neglected to file flight plans.

"We have a lot of unknowns in the system when the fishing season starts up ... because those small planes come up and appear on the radar," said Partridge.

DEW Line work was carried out mostly by civilians. A scattering of Canadian and American military officers provided supervision. The civilians were at least volunteers, in a sense. For those in uniform, on the

Just Like Home. ***This is "Northside America," one of the main radar stations. Amenities were few. Keeping such places running entailed battles with snow, ice, and the occasional polar bear.***

other hand, a posting to the Arctic Circle was not necessarily good news.

The work could be tedious. For radar and radio operators, there was little traffic to handle, save for B-52s sent north on alert and the occasional jetliner taking a polar route. Pay was good—superior to that most could earn Stateside. Most sites got three first-run movies a month and quantities of good food. Mealtimes were the most important times of the day, and dishes such as baked oysters or steak were not uncommon.

Fresh out of college in 1976, Fred K. Teeter Jr. was offered a DEW job because his uncle was president of Felec Services Inc., the company that then had the contract for line maintenance and operations. He took it because he had no other prospects. He had a rude introduction to DEW life when the C-141 carrying him north from McGuire AFB, N.J., suffered a collapsed cockpit windshield and made an emergency landing in Labrador, Canada.

Hours were long—12 hours on, seven days a week for three months. With only 13 to 15 men at each station, everyone quickly learned everyone else's stories. But Teeter explored the Arctic landscape, took photos, and grew to love the experience.

"I just remember having this wonderful freedom," says Teeter, today a chamber of commerce president in Washington County, Md. "That seems odd because you were stuck on the station, but I had this time to think and do things on my own. It fit me perfectly."

Rick Ranson took up writing to while away long off-work hours. His series of letters home, detailing DEW life, eventually grew into a section of a book about the travails of Arctic Circle life. He's got a story about a seal that a worker sneaked inside so it could luxuriate in a shower and an orphan peregrine falcon chick, fattened by months of table scraps, that a friend freed from the top of the station radio tower.

Says Ranson: "Two hundred and four feet, straight down. Never opened a wing."

A self-described city boy, Ranson once got the job of guarding a camp on Cape Dyer, Baffin Island, Canada, from a polar bear. Everyone else nonessential was off clearing the airstrip. The bear was an aggressive one, looking for food. He had already ripped open the airstrip weather office and cornered the weatherman in a locked storage area.

Fog of Cold War. ***In the Aleutians, heavy fog envelops a DEW Line station (left) and two antennae of a later communications system, dubbed White Alice. The Soviet bomber threat faded, and so did the DEW Line.***

Bear crackers—a cross between a firecracker and a percussion grenade—were not driving the bear off. So Ranson kneeled and shot, aiming just behind the bear's foreleg. The bear charged.

"When I shot him, he was a hundred paces away, and when he died he was 10 paces from me, and I had been running away," says Ranson.

A Short Life

The DEW Line was a marvel for its time. It pioneered construction and air control technology still in use today. But its heyday was not lengthy. Even as it went into operation, the Soviet Union was perfecting intercontinental ballistic missiles that it could not detect and which put the meaning of "strategic warning time" in a whole different perspective.

The US perception of the nuclear threat began to change drastically. By the middle of the 1960s, most defense officials felt that vulnerability to Soviet bombers had little relevance, given the capabilities of Soviet ICBMs. Defense Secretary Robert S. McNamara's embrace of mutual assured destruction further eroded air defense's position.

The Soviets, for their part, never lost interest in their own network of radars and early warning communications.

"Unlike the United States, the Soviet Union did not consider air and missile defense two sides of the same issue," states the Office of Air Force History in *The Emerging Shield*.

In 1980, Air Defense Command was inactivated. In 1985, the DEW Line became the North Warning System, with many sites scrapped, more automatic equipment, and many fewer personnel.

Today a few of the remaining DEW stations are rusting hulks, filled with old office equipment, cases of Danish beer, and other supplies too expensive to ship out when habitation was abandoned. The existence of PCBs and other toxins at the sites is a large environmental issue in Canada, whose officials have long pushed for the US to pay more for cleanup work.

Yet in the US, the DEW Line may be largely forgotten, despite its lifetime cost of some $7 billion in today's dollars. Congress has considered legislation that would establish Cold War commemorative sites; perhaps one day a DEW station and its dome will be preserved for future generations. ■

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