Telephone Organizations Build, Maintain DEW Line, White Alice

By RAY BLAIN

THE DEW LINE—short for Distant Early Warning Line—is an integrated chain of more than 50 radar and communication stations stretching 3,000 miles from the northwest coast of Alaska to the eastern shore of Baffin Island opposite Greenland. The original DEW Line is within the Arctic Circle over its entire length, and for much of the distance crosses country hitherto unexplored.

(Both the DEW Line and White Alice should be of particular interest to telephone men because two companies aligned with the industry took over the responsibilities of constructing and maintaining and operating the two national defense systems.)

Dipping down from the southwestern tip of Alaska and curving upward toward the Kamchatka Peninsula of Russian Siberia, a necklace of harsh but beautiful volcanic islands forms one of America's last frontiers. Here, in a damp, dank world of fog, wind and rain, a team of technicians and engineers gathered from the Bell System's companies is now working under the leadership of Western Electric to complete the Aleutian segment (Project 540) of the nation's northern radar defense network.

This strip of radar outposts, for which Western Electric supplies shipments of equipment and apparatus, will stretch from the Alaskan mainland across the northern reaches of the Pacific Ocean. When completed, they will work in relationship with both WHITE ALICE (also built by Western Electric) and the original DEW Line to form an unbroken chain of electronic early warning and communications sites across the northern rim of the North American continent.

The purpose of the DEW Line is to provide the United States and Canada with the earliest warning of the approach of airborne objects over the polar region. Its advantage—the extra time it gives us to rally our defense could mean the difference between successful defense and national disaster.

MIT Group Made Study

The DEW Line grew out of a detailed study made by a group of the nation's foremost scientists in 1952—the Summer Study Group at the Massachusetts Institute of Technology. The subject of their study was the vulnerability of the United States and Canada to air attacks, and their recommendation was that the Distant Early Warning Line be built across our Arctic border as rapidly as possible.

Soon afterward, Robert A. Lovett, who was then Secretary of Defense, asked Cleo F. Craig, then president of American Telephone & Telegraph Co. if the Bell System would undertake the job of building the line. Mr. Lovett stated that the Department of Defense had selected the Bell System for this undertaking because of its "unique qualifications," and he strongly urged that the assignment be accepted.

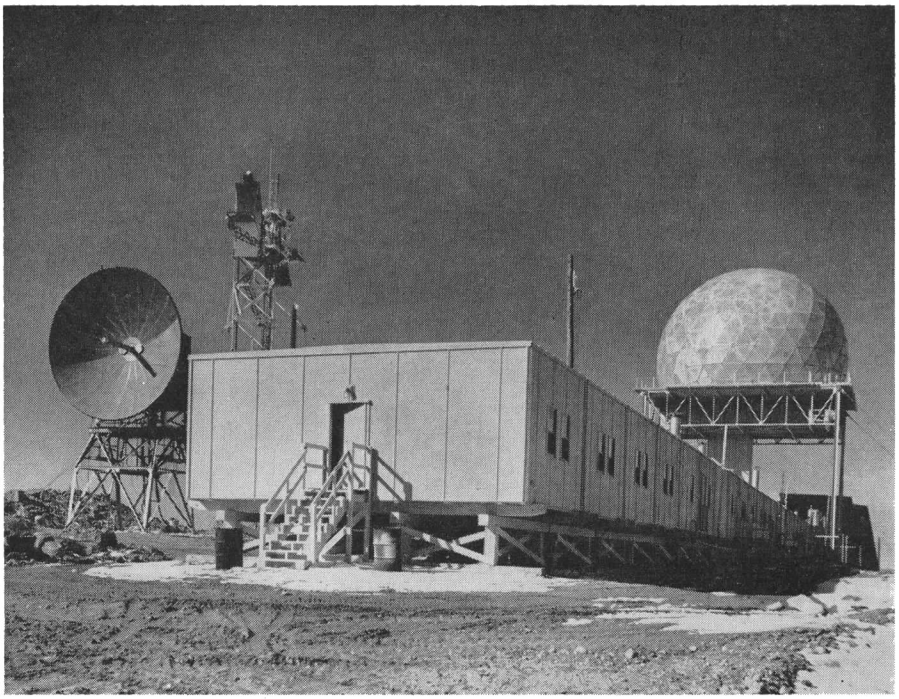
The assignment was accepted and the responsibility for the over-all management of the design and construction of the line was given to Western Electric. Immediately, Western started recruiting a team to do the job from Bell telephone companies, the Long Lines Department of AT&T, Bell Laboratories and from Western Electric's own divisions.

Before the job was completed, men with the necessary knowledge, skills and experience were drawn from Bell telephone companies in every state in the United States. Much of the responsibility was delegated, under close supervision, to a vast number of subcontractors, suppliers, and U. S. military units. It has been estimated that by the time the original DEW Line was completed, some 25,000 people had been engaged directly in planning and building it.

The initial contract with the Air Force provided for the design and construction of a small experimental system to determine at the beginning whether the idea was practicable. The designs of communication and radar detection equipment available at that time were known to be unsuited to the weather and atmospheric conditions in the Arctic.

Prototypes Built

Prototypes of several stations were designed and built in Alaska and in a rural section of Illinois in 1953. While few of the original designs for either building or equipment were retained, the trial installations did prove that the DEW Line was feasible and furnished a background of information that led to the final improved designs



Typical DEW Line auxiliary station showing 30-foot dish AA tower, building train, radome and back of 60-foot dish.

of all facilities and final plans for manpower, transportation and supply.

With the experimental phase completed successfully, the Air Force asked Western Electric to proceed as rapidly as possible with the construction of the entire DEW Line. This was in December, 1954, before the route to be followed in the eastern section had been even determined.

A target date for completion of the line and having it in operation was set for July 31, 1957. This made available only two short Arctic summers totalling about six months in which to work under passable conditions. The bulk of the work would have to be completed in the long, dark, cold Arctic winters.

From a standing start in December, 1954, many thousands of people with countless skills were recruited, transported to the polar regions, housed, fed and supplied with tools, machines and materials in order to construct physical facilities—buildings, roads, tanks, towers, antennae, airfields and hangars—at some of the most isolated spots in North America.

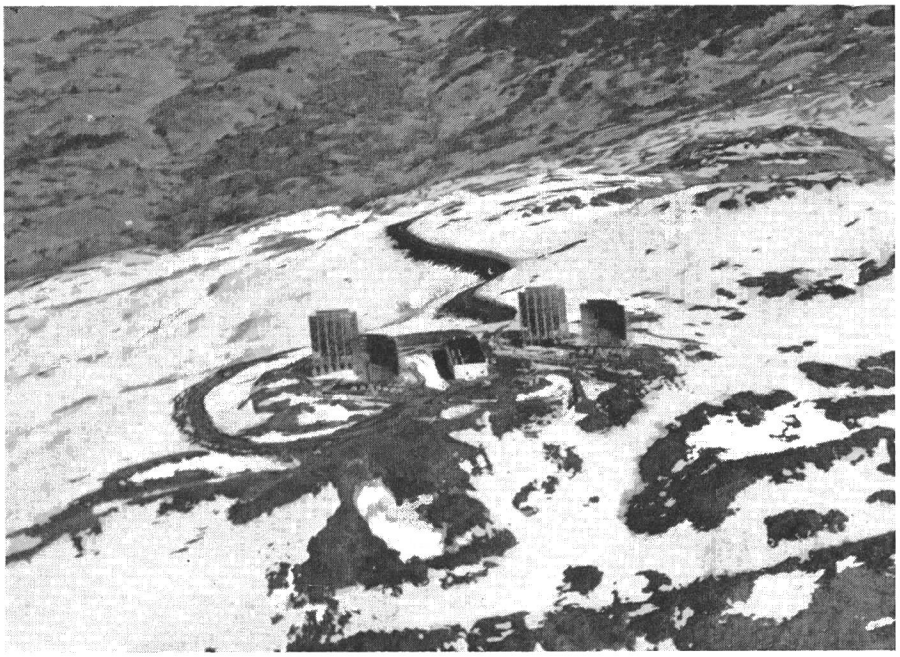
Siting crews covered the area—first from the air and then on the ground—to locate by scientific means the best sites for the main, auxiliary and intermediate stations. These hardy men lived and worked under the most primitive conditions. They covered vast distances by plane, "snowmobile" and dog sled, working in blinding snowstorms with temperatures so low that ordinary thermometers could not measure them. But they completed their part of the job on schedule and set the stage for the small army of men and machines that followed.

460,000 Tons of Material

Military and civilian airlifts, huge sealifts during the short summer, cat trains and barges distributed vast cargoes the length of the line to build the permanent settlements needed at each site. In all, 460,000 tons of materials were moved from the United States and Canada to the Arctic by air, land and water.

As the stacks of materials at the station sites mounted, construction went ahead rapidly. Sub-contractors with a flair for tackling difficult construction projects handled the bulk of this work under Western Electric direction. Prodigious quantities of gravel were produced and moved. Concrete was poured in the middle of the Arctic winters, buildings were constructed, electricity, heat and water provided, huge steel antenna towers were erected, airstrips and hangars were built.

To get an idea of what was accomplished, look at it this way: In transportation and construction effort, building the DEW Line was roughly equivalent to the job of taking 2,000 Statues of Liberty dismantled into reasonable sized units, moving them from New York Harbor to dozens of spots inside the Arctic Circle, and putting them together again in darkness, blizzards and sub-zero cold.



White Alice Station at Pillar Mountain. Shows 60-foot antennas and building. Note access road in center background.

Construction work required to build housing, air strips, hangars, antennae and towers was performed by sub-contractors. In all, over 7,000 bulldozer operators, carpenters, masons, plumbers, welders, riggers, electricians and other tradesmen from the United States and Canada worked at breakneck speed under conditions so difficult it is a wonder the job was completed in such a short time.

The native Eskimos provided their share of workers on the line, too. Although baffled at first by modern machines and construction methods, they were quick to catch on. Whether driving dog teams or bulldozers, they proved conscientious and dependable.

To U. S. military and naval units fell much of the job of transporting mountains of supplies to the northern sites. More than 3,000 Transportation Corps soldiers were given special training to prepare them for the job of unloading ships in the Arctic. They accompanied the convoys provided by the U. S. Navy and raced them during the few weeks the ice was open to land supplies at dozens of spots on the Arctic Ocean shore during the summers of 1955, 1956 and 1957.

Commercial Pilots Used

Scores of commercial pilots, flying everything from bush planes to four-engine aircraft, were the backbone of one of the greatest airlift operations in history. Helping them were U. S. Air Force crews of the giant "Globemaster" and "Flying Boxcars." Together they provided the only means of access to many of the stations during the winter.

If the ground were frozen solid the year round, the construction job would have been far easier. Unfortunately, in warm weather the top few feet of earth would thaw and become a swampy bog, unable to support buildings or vehicles. As a result, roads and airstrips had to be covered with up to 6 feet of gravel to keep the ground from thawing. Heated buildings had to be set on pilings extending down deep into the permanent frozen ground or built on pads of gravel up to 12 feet deep. The main problem was to find the gravel. Often, it had to be trucked for miles or produced by crushing rock.

After the building came the installation of radar and communication equipment, then the thorough and time-consuming testing of each unit individually and of the system as an integrated whole—both handled by Western Electric technical personnel.

Finally, all was ready, and on July 31, 1957—just two years and eight months after the decision to build the Distant Early Warning Line was made—Western Electric turned over to the Air Force on schedule a complete, operating radar system across the top

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DEW LINE, WHITE ALICE

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of North America, with its own dependable communications network.

The Federal Electric Corp. (FEC) of Paramus, N. J., service organization of International Telephone & Telegraph Corp., maintains and operates the DEW Line and White Alice projects, under contracts with the U. S. Air Force.

The technicians manning the DEW Line are civilians. Their companions are USAF personnel. The air force men are members of the 4601st Support Group (DEW).

Installed TACAN

FEC is not a newcomer in the field of communication projects in polar areas, having installed the TACAN air navigation network in Alaska.

President of Federal Electric Corp. is Maj. Gen. Francis H. Lanahan (U. S. A., Ret.), an expert in the field of communications. In 1951, General Lanahan was the first chief signal officer in the Supreme Headquarters of the Allied Powers in Europe (SHAPE). And, retired Vice Adm. Richard H.

Cruzen (U. S. N.), FEC vice president and manager of the DEW Line project, was second in command to the late Adm. Richard E. Byrd on two of the latter's Antarctic expeditions.

The mission of the 4601st Support Group is to "discharge all contractual administration responsibilities of the U. S. Air Force with FEC concerning the operation, maintenance and support of the DEW Line and to insure adequate support by all military agencies."

Most FEC field employes come from the United States and Canada, but others come from as far away as Australia, New Zealand, the British Isles, Denmark and Norway. Some DEW Liners are accustomed to the pleasant climates of Florida and California while others, coming from northern Canada, feel perfectly at home.

Field technicians average a 54-hour work week. For entertainment in their free time, FEC has supplied its larger stations with all types of recreational facilities and equipment. Regular church services, movies, libraries, music, ping pong and other games are available at the main stations. These facilities are also available to Eskimos employed by the company. Amateur ham operators can use short wave radio equipment provided by the company. Fishing in coastal areas is of the finest, but hunting is permitted only in a few sectors. Photography is the most popular hobby among DEW Liners. Fully equipped photo laboratories have been established by the company for the employes' use.

All of the comforts it is possible to supply are furnished to the men of the DEW Line. The object is simple: To keep them in top condition to perform their vital jobs manning the radar scopes around the clock to protect North America.