

# Army Engineer

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# *Corps lifts morale of Arctic Air Base*

By JoAnne Castagna, Ed.D.

**Two  
successful  
construction  
projects  
completed**





**L**ast year, a team of experts from the U.S. Army Corps of Engineers New York District traveled to Greenland's Thule Air Base, the United States northern-most military installation in the Arctic, to inspect a dormitory they were constructing (top photo) and a medical center they recently completed. After traveling overnight, the door to their DC-8 aircraft cracked open and Thule's sub-zero winds greeted them with a cold good morning kiss and hug. After a long day of meetings and inspections, they wearily climbed back into the aircraft and headed back home. They would have liked to have stayed overnight in a warm dorm, but it wasn't possible. However, thanks to their tireless efforts others visiting the base can stay in a comfortable new dormitory.





Personnel at Thule Air Base enjoy time to relax in the new Airman's Center, complete with an array of HD screen video games. (Photos courtesy of the author)

*The new medical clinic is a single story, 20,450 square foot facility with a mortuary facility. The clinic provides an array of health services unique to the region by expert medical personnel. Services include outpatient and inpatient care, surgical services, and state-of-the-art digital x-ray services that uses lower radiation dosages, with no adverse effects to the environment.*

*The 'dorm' has 72 rooms for junior and senior non-commissioned officer visiting or on temporary duty. Rooms are divided into 4-bedroom modules with individual bathrooms, walk-in closets, a shared social space, housekeeping areas, and laundry rooms on each floor. There is also a common area day room with a kitchen with appliances in the center on each floor with large windows overlooking the base, providing occupants with a place where they can relax and socialize.*

The base's hundreds of residents, including active-duty Air Force members, were in need of a new dormitory and medical clinic. The Corps built these much needed facilities after it was determined that the old structures were sub-standard, expensive to operate, and situated a far distance from base.

When building in the Arctic, harsh weather conditions require using techniques unique to the area also keeping in mind the short days and long nights due to Thule's proximity near the North Pole.

The facilities were completed under a design/build contract by the Danish firm GC/MTHøjgaard. Corps personnel supervised the work and remained on base during the construction evolution.

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The medical staff has treated 1,787 patients since the ribbon cutting in January.

A member of the Air Force medical staff said he really likes its location closer to base and that it allows the base population the ability to walk there from their living quarters.

The size and layout of the clinic is also perfect for the number of patients that they see daily and makes it easier for them to treat several patients at a time.

"The medical clinic provides urgent and preventive care for our diverse population of U.S., Danish, Greenlandic, and Canadian employees ensuring we can continue to fulfill our critical missions, despite our industrial-type work environment, the harsh arctic climate and conditions, and the deeply isolated location of Thule Air Base," said Col. Ed Fienga, commander of the Air Force 821 Air Base Group.

The new dormitory also received favorable reviews. It is a bright blue and red 3-story building located in the center of the base. The steel superstructure has an insulated metal panel system exterior, a pitched standing metal roof and stands on concrete footings.

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"The dorm is well furnished and very comfortable," said Msgt. Richard Lane, Air Force fuels quality assurance representative who has lived in the dorm for over ten months. "The Day Room is a popular place for socializing and cooking."

According to Fienga, the day room is where it was decided to locate the Airmen's Center, and as a result it's become the hub of off-duty relaxation for the base's airmen. He added, "The new dormitory immediately became the flagship of Thule's facility fleet.

It's much more than a dormitory, it is a community cornerstone enabling airmen to focus on their mission-critical jobs."

One of the most significant differences used for construction projects in the Arctic region is the unique elevated building foundations. Both the medical clinic and dormitory were built with elevated foundations.

Thule is located in the northwest corner of Greenland and surrounded by icebergs and glaciers. The northern portion of Greenland is primarily composed of permafrost,

which is permanently frozen ground below the earth's surface from 6 feet in some areas and up to 1,600 feet in others.

Because of the terrain, building foundations in the region needs to be elevated above ground. Buildings must rest on concrete support beams or requires air corridors to separate the building from the ground with 3.25 feet of clearance between the ground and the bottom of the building.

If buildings aren't elevated, the heat generated from the building will melt the permafrost and the building could possibly sink.

Due to Thule being only 900 miles from the North Pole, the region has sub-zero temperatures and limited sunlight which restricts construction to primarily the summer months from June to mid-September, when the weather is a "balmy" 30-40 degrees Fahrenheit.

During the rest of the year the weather is too severe to work outdoors, ranging from -30 to -40 degrees Fahrenheit.

It is also during the summer months that workers get the most sunlight to work outdoors. The region has 24-hours of sunlight from May through August and 24 hours of darkness from November through February.

Greenland is locked in by ice nine months out of the year, and the summer season is when they can only receive construction material deliveries when the frozen shipping lanes are broken up to allow the supply ships into port.

Because outside construction needs to be performed rapidly, most of the building materials are pre-fabricated elsewhere before arriving by ship to Thule. Prefabricated parts helped the workers to rapidly perform the construction of the dorm and medical clinic.

The pre-fabricated materials used for the dorm construction included the concrete foundations, structural steel and insulated metal wall and roof panels.

When the winter season rolled in, the building's shell had to be completed and interior work needed to be uninterrupted during the winter months.

The building's interior construction included mechanical, electrical, plumbing and fire protection systems that were designed to withstand extreme frigid sub-zero temperatures.

Fienga said he was pleased with the Corps work.

"The state-of-the-art medical clinic is an invaluable community resource and has become Northwest Greenland's rightful place of choice for medical care."

"The new dormitory, with its sharp attention to design and detail has improved morale, quality of life, and safety of personnel, conservation of energy, and the appearance of the Department of Defense's northernmost installation." AE

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*Dr. JoAnne Castagna is a technical writer-editor for the U.S. Army Corps of Engineers, New York District. She can be reached at [joanne.castagna@usace.army.mil](mailto:joanne.castagna@usace.army.mil)*