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Army Corps Of Engineers Maintains Arctic Air Base, Supporting National Security

By: JoAnne Castagna

03/05/2015 (11:47am)



Its 9:00 PM and 2 degrees at Thule Air Base, located in the northwestern corner of Greenland in the Arctic Circle. A team of engineers from the US Army Corps of Engineers are haggard after a long overnight flight followed by a day of visiting projects. They were about to call it a day when they decide to visit the base's museum.

They step out of the sharp cold air into a warm building where they are greeted by a pleasant woman wearing a parka. She enthusiastically shows them around and tells them she has been living and working at the remote base since the 1960's. On display are base memorabilia, including photos of visiting dignitaries, a large round radar screen, a wooden sled used by the native Inuit people with a manikin wearing a fur hunting outfit.

They're about to leave when she asks them if they want to see an old film strip about the base. They wearily sit down in front of a large screen. The film shows

how the base was secretly and quickly constructed in the early 1950's because the United States felt a foreign threat.

Thule Air Base - "Two Lee" - is the US Armed Forces' northernmost installation which was established to perform national security functions. The Air Force performs several missions there including monitoring the United States Airspace for foreign missiles.

To perform these missions, hundreds of active-duty US Air Force personnel and American, Danish and Greenlandic civilian contractors are stationed there.

In record time, massive amounts of supplies, equipment and 120,000 men were transported to Thule to originally construct the base. This enormous effort, which included the Army Corps, was an incredible feat that was fueled by the country's intense need to preserve the American way of life.

It seemed fitting the team saw this film and met this devoted woman that night because it reminded them of why they were there.

For decades, the US Army Corps of Engineers, New York District, has constructed facilities for the base under extreme Arctic conditions. These projects have included aircraft runways, dormitories and medical centers. Presently, they are constructing two much needed dormitories.

"These new dormitories will help to provide Airmen with the quality of life they deserve on a difficult assignment to Thule Air Base in the Arctic Circle," said New York District Commander Col. Paul Owen. "Thule's remoteness and harsh climate restricts all personnel assigned there to live on base, which is why it's so important to provide top notch housing facilities."

Quality housing is needed for these individuals to keep them safe from the harsh weather and to keep their moral up in this remote area of the world.

Both of the dormitories were designed by the Army Corps New York District and are being constructed by Danish contractors with the Army Corps supervision. Greenland is a province of Denmark.

The dorms will be ready for occupation in 2015 and are replacing old structures that were constructed in the 1950's that have seen wear from the harsh arctic climate.



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One of the dorms will house 54 people and is being constructed by contractor MT Højgaard Gronland A/S of Søborg, Denmark, and the other will house 48 people and is being constructed by contractor Pilegaard-Henriksen of Denmark.



The dorms will house junior and senior non-commissioned officers visiting or on temporary duty. Both dorms will be 3 stories. Rooms will be 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 dorms are being constructed using techniques that will help them withstand the harsh Arctic elements. Techniques include using special arctic foundations, steel frames, insulated panel exteriors and pitched metal roofs.

Challenges of constructing in the Arctic

Construction in the Arctic can be challenging due to severe weather and limited daylight, which requires the use of unique building techniques and fast paced construction.

One of the challenges is ice. Most of northern Greenland is covered with permafrost, which is permanently frozen ground - ranging from 6 to 1,600 feet in depth.

Because of permafrost, both dorms are being constructed with a special Arctic foundation. This foundation will be elevated. If buildings are not constructed off of the ground, the heat from inside the building can melt the permafrost, making the ground unstable and causing buildings to sink.

The buildings need to be elevated one meter from the ground. Buildings are elevated with the use of spread footings that go down about 10 feet deep and concrete columns that come up and support the floor system above the ground.

Another challenge is limited daylight. Because of Thule's proximity to the North Pole, it has 24-hours of sunlight from May thru August and 24 hours of darkness from November thru February.

Because of the limited daylight, construction is limited to the summer and autumn months -- May thru October -- because there is sufficient sunlight and temperatures are bearable to work in. Temperatures can reach 40 degrees Fahrenheit.

During the rest of the year, there is no sunlight and the weather is too severe to work outdoors. Temperatures can drop as low as minus 30 degrees Fahrenheit.

It is also only during the summer months that shipments of building materials and fuel can be received via cargo. During the summer, Greenland's iced shipping lanes can be broken up to allow supply ships into port. Greenland is locked in by ice nine months out of the year.

Since work needs to be performed rapidly, most of the building materials are prefabricated elsewhere before being shipped in. Prefabricating the parts helps the workers to rapidly perform the construction. These materials include concrete foundations, structural steel, insulated metal walls and roof panels.

Right now, it's winter in Thule, so the dorms' outer shells must be completed so that interior work is not interrupted during the winter months. This interior work will include constructing mechanical, electrical, plumbing and fire protection systems that are designed to withstand extreme frigid sub-zero temperatures.

There are many things about Thule Air Base that remain unchanged since the Air Force arrived in the 1950s; the harsh weather conditions, the importance of the base to our national security; and the dedication of the men and women who serve our nation. However, the construction of two dormitories for our dedicated service members and contractors is a welcome change to the Air Base!

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10/20/2016

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Photo: Area surrounding Thule Air Base, Greenland, located in the Arctic Circle. Photo by JoAnne Castagna, Public Affairs, New York District, US Army Corps of Engineers.

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