

## Development of Frobisher Bay Between 1941 and 1963

The role of Frobisher Bay (renamed Iqaluit from 1987) is referenced in *Arctic Cargo: A History of Marine Transportation in the Canadian North* (see pp226-227). However, although it was recognized as an important military communications location from 1942 on, with both a Pinetree Line radar station (completed 1953), and a Pole Vault Tropospheric Scatter communications unit (completed 1955), it was not recognized as having a major role in the DEW Line, but it was a major strategic base for North American air defence.

During recent project work relative to the new port at Iqaluit, the town's role in construction of the DEW Line- as outlined in *Arctic Cargo*, was challenged by the following statement in the history of Iqaluit:

*1955-57 - The new settlement of Frobisher Bay becomes center for DEW Line construction operations. This huge project brings tonnes of supplies and hundreds of men into the area. By 1957 the population is approximately 1,200, 489 of whom are Inuit.<sup>1</sup>*

Further research, although based only on web resources, has shown that although Frobisher Bay (Frobisher) did have an important role in support of airlift to Eastern DEW Line stations, it was not a centre for construction of the entire line. By 1955, between airfield operations, Pinetree and Pole Vault operations the USAF had over 300 persons at Frobisher. The RCAF, RCN, DOT and other Canadians at Frobisher would probably have added at least another 50 persons.

For construction purposes, Western Electric divided the DEW line into Western, Central and Eastern regions. Each of these regions had separate command and control bases in the south. The USAF, which was heavily involved in air lift for the DEW Line used Western or Central and Eastern for its service regions. By inference from a statement by the USAF regarding the operational phase of the DEW Line, it would appear that the USAF had two air staging points, Ladd AFB (Fairbanks) in the west, and Frobisher Bay in the East. However, the USAF was also noted as having air distribution points at Mont Joli, Frobisher Bay, Churchill, Namao (Edmonton) and Fort Nelson, as well as three assembly points at Cambridge Bay, Coral Harbour and Frobisher Bay. Just how the air logistics operation functioned over time is uncertain, as the logistics chain, and the military detachments tasked with handling it, seemed to be in a constant state of flux. It is unlikely that Frobisher Bay had a formal ship to air role during 1955 and 1956 as, unlike Coral Harbour, it was not a designated ship to air transshipment point. It was one of six Temporary sites during construction; see Annex 4. The meaning of the different site designations is not defined.

It was noted that Frobisher handled airlift to seven stations (see map in Annex 5) that were not accessible to sealift, although this role was transferred to Hall Beach for the operational stage. This could explain why the USAF stationed twin engine C-119 (flying boxcars) at Frobisher, while they stationed four engine C-124 Globemaster aircraft at the other distribution points - the air served DEW Line locations may not have been able to handle the larger aircraft because runways were

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<sup>1</sup> <https://www.iqaluit.ca/visitors/explore-iqaluit/history> The statement seems to be based on an entry in Wikipedia, see Annex 1 for comparative statements from three websites.

too short. The report of a Globemaster crash at Frobisher in 1955 suggests that the USAF used the larger aircraft into Frobisher, and the small aircraft for distribution.

The following timeline demonstrates how Frobisher Bay grew from a weather station and aircraft staging base to a major strategic base for North American air defence.

**1941** Air surveys to find staging airfields for the Crimson Route identify Cape Rammelsberg as the site for Crystal 2<sup>2</sup>. The marine contingent could not find the location, partly due to bad weather, but mainly because of grossly inaccurate charts that dated back to 1865. A wintering base was established on Crowell Island. Over the winter, further surveys determine Cape Rammelsberg would not be suitable, but a site next to the Sylvia Grinnel River was ideal.

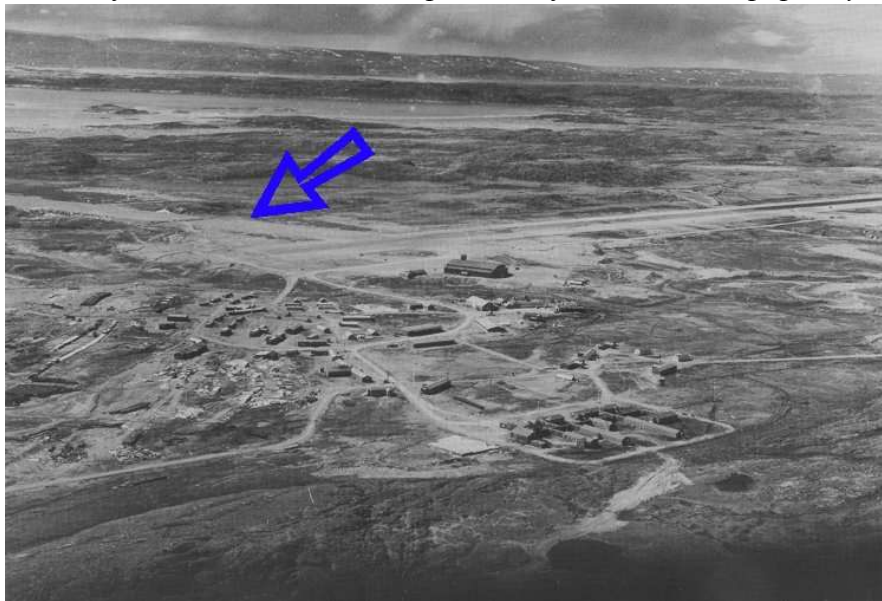
**1942** The Al Johnson Construction Company landed 200 men in late August to build two airstrips and the meteorological station. They also built a hospital, living quarters, garages, warehouses, and a small tent city. By end 1942 two runways had been completed.

**1943** By April, both runways were operational, but not completed. By end 1943, number 1 runway NW-SE (6,000ft) was completed and paved. The Number 2 runway NE-SW (5,000ft) was gravel surface only, both were 150' wide.

**1944** In June, Canada acquired the Crimson Route airfields for U\$31.6m, of which U\$6.8m was for Frobisher Bay; the other arctic runways were at Chimo, Northern Quebec and Southampton Island (Coral Harbour).

**1946** The following Photograph shows the Crystal 2 airfield as of 20 March 1946. The blue arrow points to the gravel #2 runway

*National Archives of Canada PL-164470. Reproduced from an online paper by Robert Eno<sup>3</sup>*



<sup>2</sup> See pages Arctic Cargo p223-225

<sup>3</sup> This was an extract from an untitled JAINA paper that explained the fate of the #2 runway.

**1947** US lands 400 men at Frobisher Bay to refurbish the airfield<sup>4</sup>

**1948** Hudson's Bay Company moves store from Ward Inlet to Apex. US presence downgraded and transferred to Military Air Transport Services under the Air Weather Service.



*C-119 being re-fueled at Frobisher in 1948. From:*

*<https://www.candemuseum.org/sites/default/files/archives/Pinetreeline/homepage.html>*

**1950** RCAF take official control of airfield and US presence de-activated

**1951** US presence reportedly re-activated 01 October by North East Air Command (NEAC) 6603 Air Base Wing to refuel<sup>5</sup> RB-29 very long-range reconnaissance aircraft. This approval was referenced in a June 1955 External Affairs memo listed in Resources. This memo notes a 150person USAF detachment for “communication support with northern bases, weather alternatives and re-fueling stop”, it does not mention the strategic nature of the re-fueling. Construction of Pinetree Line station started.

**1952** The RCAF had 20-24 persons (of which 16 were from DOT for air traffic control) at Frobisher, while the Americans had about 150. From footnote 10

**1953** Pinetree Line station completed at Upper Base. A history of 926<sup>th</sup> Aircraft Control and Warning Squadron indicates that their assigned strength in 1953 to man the site was 7 officers, 102 airmen and 12 civilians; by 1959 the complement had risen to 14 officers 124 airmen and 17 civilians<sup>6</sup>. Royal Canadian Navy install an HF/DF (Huff Duff) radio station.

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<sup>4</sup> In 1947, Frobisher was reportedly involved in recovery of B-52 Kee Bird. No confirmation of this activity, but the report may have been confused with airlift of a sick engineer to Iqaluit in 1995 during the attempt to fly the aircraft off the Greenland icecap.

<sup>5</sup> Cannot be verified. Deployment to Frobisher not referenced in history of RB-29 aircraft. However, takeoff weight of 133,500lbs was significantly less than a C 124, at 194,500lbs, and Frobisher was used for this type of aircraft.

<sup>6</sup> This may have been the complement for the Pole Vault Tropospheric Scatter station completed in 1955



*Pinetree station at Upper Base 1954 From:*

*<https://www.candemuseum.org/sites/default/files/archives/Pinetreeline/homepage.html>*

**1954** Rock ridge at NW end of No 1 Runway blasted out and material used to lengthen runway. By 1960 the runway was 9,000ft x 200ft<sup>7</sup>.

**1955** Reported in DEW Line Coordination Committee Progress Report #1 21 March 1955 that the Foundation Company had contracted with Canadian Marconi for a teletype link Mont Joli-Knob Lake-Frobisher at a cost of about \$1m.

The Pole Vault tropospheric scatter communications unit was completed at Upper Base. This was designed to provide a link to the south (via Resolution Island) for DEW Line stations to the north, and with Thule (see USAF Activities at Frobisher Bay in resources). See map in Annex 5. No photographs could be found for the Frobisher Bay Pole Vault, although one web site states that it was one of the larger operations. The following photograph shows what it might have looked like:

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<sup>7</sup> Another source says this happened in 1955, and was undertaken by a construction battalion. Yet another source claims the runway extension took place in 1960



*Pole Vault at Resolution Island in 1987 From:*

*<https://www.candemuseum.org/sites/default/files/archives/Pinetreeline/homepage.html>*

During SUNEK 1955, the 1<sup>st</sup> BARC<sup>8</sup> Platoon discharged cargo at Frobisher Bay. This was the first deployment of an experimental 60ton capacity wheeled barge. See photograph below:



*A BARC at a US military museum. The wheel is 9' diameter. From internet.*

The source<sup>9</sup> suggests that prior to the use of BARCs, the US military had used DUKW craft for discharge at Frobisher Bay, and that in 1955 the predominant cargo was drums of avgas. This would be consistent with statements from the USAF (see below) that aircraft flew direct to Eastern DEW line stations, and re-fueled at Frobisher heading south. The source states that the unit worked steadily between July and October, when ice set in. The BARCs returned south on LSDs.

<sup>8</sup> Barge Amphibious Re-supply Cargo. The barge could carry up to 100tons, depending on conditions.

<sup>9</sup> One of those Little-Known Cold War Adventures (And what happened after that) By Bill Hill.

<https://transportation.army.mil/history/lots.html> Hill states that he wrote a full report after his return south. This may still be in US military archives.

On April 27 1955, a loaded C-124 Globemaster crashed at Frobisher during its final approach and was wrecked. Part of the cargo was 3 Bombardier snowmobiles. See reference 10, no mention in reference 8.



From: [https://lswilson.dewlineadventures.com/dyepics/dye\\_main-lambert005/](https://lswilson.dewlineadventures.com/dyepics/dye_main-lambert005/) This photo was from 1958, but probably represents the type of snowmobiles on the Globemaster

On September 29, a fire in the laydown area at Cape Dyer destroyed considerable construction material that had been sealifted in. During the 1955/56 winter, the USAF flew some material direct form Mont Joli, but also used Frobisher as an air staging point.

***Eastern sector cargo carried in 1955:***

Airlift	10,668tons	
FLY X	7,700tons	(These were rearward communication stations)
Sealift	46,903tons	(direct to site)

**1956** The US requests Canadian approval to establish a strategic air command base at Frobisher Bay. At least seven KC-97 air tankers<sup>10</sup> were based at the airfield.

BARCs were again used for discharge of sealift<sup>11</sup>. The person beside the tyre is 6' tall,



*Illustrations from footnote 9. no enlargements are available.*

<sup>10</sup> Based on the Boeing Stratofreighter. The airframe was also adapted for civilian use as the double deck Stratocruiser.

<sup>11</sup> From Naval Radio Station Frobisher Bay <http://jproc.ca/rrp/rrp2/frob.html>

From the DEW Line Coordinating Committee Progress Report No. 6, 12 January 1956

*“The USAF 1956 airlift to DEW Line sites will commence on 1 February 1956 and continue through May 1956. USAF C-124 flights will originate at Dover Air Force Base, Delaware, and Larson Air Force Base, Moses Lake, Washington State. Aircraft will fly direct to sites in the Eastern Sector and return to Frobisher for refuel. Aircraft servicing sites, in the Central and Western Sectors, will refuel at Churchill and Namao (Edmonton)”.*

### ***Eastern Sector cargo carried in 1956***

Airlift	36,500tons
Sealift	65,294tons (direct to site)

**1957** Canadian DOT takes over Frobisher airfield from the RCAF. On 01 April, USAF discontinued NEAC. Air Defense Command took over southern operations. USAF Strategic Air Command took over American activities at northern airfields. The causeway may have been built this year, or in 1958, to improve sealift operations. However, the construction of the wharf using large diameter steel culverts may not have survived many winters. See 1961 following, and construction of the new RCN/RCAF barracks.

### ***Eastern Sector Cargo carried in 1957***

Airlift	No data provided, but bi-weekly flights Montreal-Frobisher-Cape Dyer-Hall Beach with return via Frobisher commenced.
Sealift	34,255tons

**1958** Federal Electric, the DEW Line operator, proposes changes to the logistics plan. Ladd AFB and Frobisher were considered to be expensive and less effective than a system based out of Paramus NJ, with Canadian purchasing centres at Montreal and Edmonton. Federal Electric had a 4 person office at Frobisher. See Annex 2 for reported employment 1957-1962.

**1961** Pinetree radar station closed, Pole Vault continued in operation. On 26 August 150 crew members from frigate *Cap de la Madaleine* landed to build a new RCN/RCAF barracks. It took them two days, landing 150tons of material from the supply ship *Eastore* using DOT landing barges to assemble the 110' long building.

**1962** The roof of the new barracks blew off in a gale. Federal Electric winding down operations at Frobisher and transferring to Hall Beach.

**1963** The USAF pulls out of Frobisher Bay in July. The base has become strategically obsolete due to the deployment of long-range B-52 bombers and KC-135 air tankers.

### **Resources, and author comments thereon**

**The Distant Early Warning (DEW) Line Coordinating Committee Minutes and Progress Reports 1955-63.**

*P. Whitney Lackenbauer and Matthew Farish 2019*

<https://arts.ucalgary.ca/sites/default/files/teams/25/DEW%20Minutes%20-%20DCASS%20v15.pdf>

This recently released document is a valuable resource, although it does have some limitations. To the extent possible, this document has been used as an authoritative source.

1. This was essentially an interdepartmental committee, consequently, it is concerned primarily with process and communication with the USA.
2. As it is focused on the DEW line, information on related northern activities such as RCAF, RCN, DOT, Pinetree, Pole Vault, USAF Strategic Air Command and USCG Loran (Cape Christian) is limited. Thus, DEW Line employment is reported regularly, but no other US and Canadian employment, which was considerable.
3. The Committee reported regularly on air transportation issues, and the role of Canadian Commercial air carriers (probably because air transportation at that time was still regulated). It reported irregularly on sea transportation<sup>12</sup> which was, apparently, the concern of the Canadian Maritime Commission and DOT. Reports on airlift quantities were also irregular, and sometimes conflicting.

**Military Communications and Electronics Museum, Kingston ON web site:**

<https://www.candemuseum.org/sites/default/files/archives/Pinetreeline/homepage.html>

The documents in this collection are provided in a standard format that may not follow the original sources; figures and tables are original. It should be noted that Pinetree web pages also cover Pole Vault, despite their different purposes and infrastructure. Some pages offer associated photographs, but not all can be accessed. Some documents recovered from this site are separately identified.

**926<sup>th</sup> Aircraft Control and Warning Squadron, various web sites and authors**

This was the squadron assigned to the Frobisher Bay Pinetree station. Information should be utilised with caution as there are conflicts between different web sites. Most information posted is concerned with administration activities.

**Canadian Military History**

*Bruce Forsyth*

<https://militarybruce.com/abandoned-canadian-military-bases/abandoned-bases/nunavut-territory/>

**Crystal Two: The Origin of Iqaluit**

*Robert V Eno*

Arctic: VOL. 56, NO. 1 (MARCH 2003) P. 63– 75

<https://journalhosting.ucalgary.ca/index.php/arctic/article/view/63662/47598>

There is a follow-on paper on the c-and-e web site, see: <http://www.c-and-e-museum.org/rcaf-atc/other/other/other-96.html>

**Military Radar Defence Lines of Northern North America- An Historical Geography**

Roy J Fletcher, Department of Geography, University of Lethbridge, 1989

<http://www.c-and-e-museum.org/Pinetreeline/articles/resartg.html>

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<sup>12</sup> Annual Sealift data was provided in the Progress Reports, but not on a consistent basis

There are other sources of this paper. Some caution is needed regarding manning figures for Pinetree stations. Also, Fig 5 omits Frobisher Bay from the Pole Vault system, despite recognizing its role in the text.

### **One of those Little-Known Cold War Adventures (And what happened after that)**

By Bill Hill

<https://transportation.army.mil/history/brac.html> also:

<https://transportation.army.mil/history/lots.html>

History of the BARC used for Frobisher Bay sealift 1955 and 1956, probably other seasons as well.

### **Iqaluit and the old American military base (Frobisher Bay)**

<https://francoisouellet.ca/en/iqaluit-and-the-old-american-military-base-frobisher-bay/>

Mainly 1989 on, but some useful history.

### **Frobisher Bay Radio**

<http://jproc.ca/rrp/rrp2/frob.html>

History of Naval Radio Station Frobisher Bay, contains useful information on related operations, and relevant photographs

### **Historical Reference Paper Number One**

US AIR DEFENSE IN THE NORTHEAST 1940 - 1957

Lydus H. Buss

<http://www.c-and-e-museum.org/Pinetreeline/other/neac.html>

### **History of the DEW Line 1946-1964**

Thomas W Ray 1965

US oriented, no reference to Pinetree and a single reference to Pole Vault. Generalised information about quantities shipped by sea and air.

### **United States Airforce Activities at Frobisher Bay:**

June 1955 External Relations memorandum signed by Jules Leger

<http://www.c-and-e-museum.org/Pinetreeline/reports/CER/CERv21-342.html>

This memorandum confirms numbers of US and Canadian personnel at Frobisher Bay. However, dates of approval requests, and facility completion suggest, at least with regard to communication systems, the US had already started construction well in advance of approval being sought.

## **Annex 1**

### **Statements on three websites re Frobisher Bay**

*1)Frobisher Bay AB became an important staging point, as supplies and equipment for the construction of the DEW Line were shipped via naval transport ships to the port facilities at the base.*

[https://military-history.fandom.com/wiki/Frobisher\\_Bay\\_Air\\_Base](https://military-history.fandom.com/wiki/Frobisher_Bay_Air_Base)

#### **Author comment:**

a) Frobisher Bay was one of 6 staging posts for airlift associated with construction of the DEW Line. Its primary role related to refueling aircraft serving Eastern DEW Line points. It acted, during construction of the DEW Line, along with Ladd AFB, as a distribution centre for airlift of parts.

b) Frobisher Bay did not have port facilities until about 1958, when the old causeway and a T head were probably built. This may have been on behalf of Canada DOT<sup>13</sup>, who took over airfield administration on 01 September 1957. For sealift, the USAF used BARC landing craft in at least 1955, and 1956, probably in later years as well, but not confirmed. Prior to the deployment of the BARCs, DUKW amphibious craft were used.

c) The web page states that the USACE 823rd (347th until 1954) Aviation Battalion was deployed in 1954 to support operations at Frobisher. This unit was actually deployed, from 1953 until it was disbanded in 1957, in building the Stephenville (Harmon) AFB in Newfoundland. <https://archive.org/details/Ernest-Harmon-AFB-Stephenville-NFLD>

Other statements on this web page have not been checked.

2) 1955 – Frobisher Bay becomes the centre for the United States/Canada DEW Line construction operations. Many Inuit continue to settle here for local services. <https://en.wikipedia.org/wiki/Iqaluit>

**Author Comment:**

The statement is unsupported, and may have been derived from the previously reviewed web site. There was a significant USAF presence at Frobisher in 1955 connected with DEW Line airlift to Eastern DEW Line sites, but it was not the centre for construction of the DEW Line

3) 1955-57 - The new settlement of Frobisher Bay becomes center for DEW Line construction operations. This huge project brings tonnes of supplies and hundreds of men into the area. By 1957 the population is approximately 1,200, 489 of whom are Inuit. <https://www.iqaluit.ca/visitors/explore-iqaluit/history>

**Author Comment:**

Probably derived from Wikipedia. In addition to the strategically important airfield, Frobisher Bay had two major projects at “Upper Base”, a Pinetree Line radar station that became operational in 1953, and a Pole Vault communications station operational in 1955. As noted earlier, it also had an important role regarding airlift to Eastern DEW Line stations, and was one of four DEW Line offices in 1957. However, this office was rapidly downgraded by Federal Electric in subsequent years. See Annex 2

## Annex 2

### Reported Employment at DEW Line Offices, from the DEW Line Coordination Committee meeting minutes and Progress Reports

Note that these figures are not qualified, but probably represent employment solely associated with activities connected with the DEW Line. They appear to exclude employment in communications (Pole Vault etc.), weather, Pinetree, and any strategic activities by the USAF. Pinetree/Pole Vault employed about 150 persons, and there were another 150 US personnel, together with about 24 RCN/RCAF/DOT employees at Frobisher airfield.

Employment, except as a peripheral topic in meeting minutes, is first referenced as of 01 April 1957. At this date regional offices were Fairbanks (later referred to as Ladd Airforce Base), Edmonton, and Mont Joli. There was no mention of Frobisher. This site is first mentioned 03 July 1957, along with Mont Joli and Montreal, but no figures are given. When employment numbers are first reported, Mont Joli was not included. This suggests an ongoing development of how operational logistics would be handled.

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<sup>13</sup> The construction method for the T Head of using large diameter corrugated culvert sections was similar the barge dock at Hall Beach (late 1950s), and the causeway at Winisk in 1956 to support the Mid Canada Line

**Effective 31 December 1957**

Location	Required	Other	Canadian
Fairbanks	59	15	2
Edmonton	34	4	29
Frobisher	46	16 +5 temp	37
Montreal	26	2 temp	22

*Other = Supernumeries except when Temporary*

**Effective 28 November 1958**

Location	Required	Other	Canadian
Fairbanks	58		0
Edmonton	56		53
Frobisher	15		14
Montreal	61		56

**Effective 27 November 1959**

Location	Required	Other	Canadian
Fairbanks	Not reported		Not reported
Edmonton	58		56
Frobisher	6		6
Montreal	70		65

**Effective 30 December 1960**

Location	Required	Other	Canadian
Edmonton	47		47
Frobisher	2		2
Montreal	55		52

**Effective 28 July 1961**

Location	Required	Other	Canadian
Winnipeg	73		69
Frobisher	2		2

**Effective 30 March 1962**

Location	Required	Other	Canadian
Winnipeg	77		74
Frobisher	0		0

**Annex 3****DEW Line Stations by region**

The DEW Line Coordination Committee Meeting Minutes and Progress Reports make frequent reference to Eastern, Central and Western DEW Line stations, but do not define which stations are included in each region. It would appear that the regions were defined by Western Electric for construction purposes. Western was mainly Alaska, Central was North Central and Northwest Canada, while Eastern was North Eastern Canada, but no dividing line was provided. The USAF used only two regions, Eastern and Western

In Progress Report #10, 27 September 1956, there is a brief reference to stations by region that will be turned over that year:

Western:- POW, POW-A, POW-1

Central:- BAR-B,C,D,E. CAM-A,B,C, CAM-1,2. PIN-A,B,C,D,E. PIN1,2,3,4

Eastern:- CAM E,F. Fox A,B

Regrettably there is no further mention regarding turnover by region; the list of sites in the comprehensive LS Wilson DEW Line web site provides no definition, and on-line resources mention, but do not define the regions. For the purposes of this paper, it will be assumed that:-

Western stations all POW stations and BAR Main.

Central stations, BAR A,B,C,D, 1,2,3,4, PIN Main, A,B,C,D, 1,2,3,4. CAM Main, B,C,D 1,2,3,4

Eastern stations<sup>14</sup> CAM E, F, 5.FOX<sup>15</sup> Main, A, B, C, D, E, 1,2,3,4,5 Dye Main

DYE 1,2,3,4 stations were in Greenland, and DYE 5 was in Iceland. Greenland DYE stations were reportedly served from Sondre Stromfjord.

## **Annex 4**

### ***Relay Stations***

Relay stations were not ship to air transfer locations, but rearward communication sites. Presumably built during 1955, as sealift data identifies cargo destined for Relay Stations, they were discontinued from 1956 because alternative rearward communication systems were implemented that were reported to reduce costs by \$30m

### ***Construction Phase Temporary Stations***

Coral Harbor CORT

Frobisher FROT

Churchill CHUT

Fort Simpson SIMT

Norman Wells NORT

Yellow Knife YELT

## **Annex 5**

***Maps.*** Polevault map from: Military Radar Defence Lines of Northern North America- An Historical Geography, Roy J Fletcher, Department of Geography, University of Lethbridge, 1989

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<sup>14</sup> It is stated (Progress Report #12, 18<sup>th</sup> December 1956) that 7 of the Eastern stations were only accessible by air, although these are not identified.

<sup>15</sup> Regional assignment for FOX Main and Fox 1, author's assumption based on a reference to Hall Lake, later Hall Beach, being in the Eastern Region (Meeting Minutes #2, 13 April 1955).

## DEW Line



From: <https://lswilson.dewlineadventures.com/> Note that the FOX-THULE and DEW DROP links were developed early 1960s. From 1955-1961, the Frobisher Pole Vault station provided an essential communications link with Thule.

## Polevault

