



Environment
Canada

Environnement
Canada

Welcome

to the



Updated April 2010



PREFACE

This manual was prepared by MSC staff at Eureka early in 1993 and updated in 2010

The purpose of this manual is to provide travellers to Eureka with a flavour of what they can expect and what will be expected of them once they reach their destination. It is our hope that this manual provides useful information to you. Any questions, comments or suggestions that can improve the quality of this manual can be forwarded to:

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TABLE OF CONTENTS

	PAGE
1. INTRODUCTION	
1.1 GEOGRAPHY AND GEOLOGY	5
1.2 WEATHER AND CLIMATE	6
1.3 PREHISTORY	6
1.4 ENVIRONMENTAL STEWARDSHIP.....	7
2. EUREKA	
2.1 GETTING TO KNOW THE PLACE.....	8
2.1.1 Station History	8
2.1.2 Geology.....	8
2.1.3 Climate and Weather	9
2.1.4 Wildlife	9
2.1.5 Flora	9
2.2 STATION ACTIVITIES	10
2.2.1 The Staff	10
2.2.2 Buildings, Power Generation, and Water Supply	10
2.2.2.1 Buildings and accommodations	10
2.2.2.2 Generators	11
2.2.2.3 Water Supply	11
2.2.2.4 Airport.....	12
2.2.3 Transportation - aircraft, local vehicles.....	12
2.2.3.1 Transportation to Eureka	12
2.2.3.2 Transportation on Site	12
2.2.4 Available Services.....	12
2.2.4.1 Mail Service	12
2.2.4.2 Medical Facilities	12
2.2.4.3 Customs and Immigration	13
2.2.4.4 Shopping	13
2.2.4.5 Fishing License	13
2.2.5 Recreation	13
2.2.6 Communications	13
2.3 STATION OPERATIONS	14
2.3.1 Medical Clearance.....	14
2.3.2 Visitor Permits	14
2.3.3 Costs of Provided Services	15
2.3.4 Time Zone	15
2.3.5 Meal Hours	15
2.3.6 HAWS Code of Conduct	16
2.3.7 Fire Regulations	16
2.3.8 Arctic Clothing	17
2.3.9 Procedures when venturing away from station	17
2.3.10 Emergency Conditions	17
2.3.11 Items to Bring	17
2.4 WEATHER AND SCIENTIFIC PROGRAMS	18
2.4.1 Weather Program	18

2.4.1.1	Hourly Weather	18
2.4.1.2	Synoptic Weather	18
2.4.1.3	Aerological Soundings	18
2.4.2	Additional Programs	18
2.4.2.1	Radiation	18
2.4.2.2	Sunshine	18
2.4.2.3	Snow Survey	18
2.4.2.4	Geomagnetic Monitoring	18
2.4.2.5	Ice Thickness	18
2.4.2.6	Freeze-up/Break-up	18
2.4.2.7	ASTRO	18
2.5	THINGS TO DO AND SEE	19
2.6	OTHER GOVERNMENT AGENCIES	19
2.6.1	Department of National Defence	19
2.6.1.1	Operation NEVUS	19
2.6.1.2	Skull Point, Satellite Communication station	19
2.6.2	Polar Continental Shelf Project	20
2.7	SPECIAL EVENTS AND HAPPENINGS	21
2.7.1	Sea Lift	21
2.7.2	Trips and Expeditions	21
2.8	SPECIAL INTERESTS IN THE VICINITY	21
2.8.1	Geodetic Hills - Axel Heiberg Island	21
2.8.2	Quttinirpaaq National Park	21
2.8.3	Alert	22

A VISITOR'S GUIDE TO EUREKA

1. INTRODUCTION

1.1 GEOGRAPHY AND GEOLOGY

The Arctic is characterised by its land. The tundra, which extends from the tree line northwards, covers one-quarter of Canada's surface. The ground remains frozen year round with only the top few feet thawing in the summer to allow vegetation to grow. This frozen ground is known as permafrost and it underlies all of the Canadian Arctic. Permafrost is ground which stays below the temperature of zero degrees Celsius for more than two years. Changes in climate will cause changes in permafrost.

There are four geological areas in the Arctic: the Canadian Shield, the Arctic Platform, the Innuitian Orogen and the Arctic Coastal Plain - each giving a different character to the Arctic.

The Canadian Shield, the foundation of the North American continent, is composed of granites, gneisses, ancient sediments, and volcanics. Much of the land is exposed bedrock, either worn down and glacially scarred or lightly mantled by glacial drift. The Shield contains thousands of lakes and many mountain ranges with peaks of 1,000 metres on south Baffin Island to over 1,800 metres on Ellesmere Island.

The Arctic Platform is a broad, geologically stable zone of flat-lying sedimentary rock built layer upon layer. Where exposed, cliffs and hillsides show successive layers of limestone, dolomites, shale, and other sediments. The Arctic Platform land surface is mainly composed of weathered bedrock and glacial deposits. Elevations are low, averaging between 100 and 200 metres.

The Innuitian Orogen is a mountain-building area where accumulated sediments have been folded, faulted and elevated at the edges of the shield and the Platform. The landscape is oriented in successive ridge or mountain lines that run roughly northeast to Southwest. The mountainous part has peaks above 1,100 metres which are often covered by ice-caps. The glacier summits have heights of 2,000 to 2,900 metres.

The Arctic Coastal Plain is the narrow seaward edge of the low islands in the western High Arctic. Its level sediments slope gently into the sea. The land surfaces do not rise far above sea level.

1.2 WEATHER AND CLIMATE

Generally, the Arctic has continuous daylight from spring to fall and night lasts from fall to spring. The Arctic receives its energy in the form of solar radiation, during the daylight months. Because of its high latitude, the sun does not rise high in the Arctic sky. The sun's rays are dispersed, reducing the intensity of energy that reaches the surface. In winter, the land loses energy. In summer, the Arctic atmosphere is heated very little and in winter it is significantly cooled. If it were not for general atmospheric circulation and ocean currents, the Arctic would grow colder and colder.

Hemispherical air circulation patterns determine the Arctic climate. The winter pattern of air flow is generally influenced by a zone of low pressure, with a counter clockwise circulation, centred south of Greenland and a high pressure cell with an associated clockwise circulation of dense, cold air over the Mackenzie and nearby Arctic Ocean. Both pressure systems contribute to a persistent outflow of cold Arctic air from the snow and ice southeast across the archipelago mainland and Hudson Bay into eastern Canada. This pattern effectively prevents any incursion of warmer air. Mean midwinter temperatures range from -22 degrees Celsius to -27 degrees Celsius on the mainland and Baffin Island, to averages of -30 degrees Celsius to -35 degrees Celsius in the High Arctic. Extremes of -40 degrees to -50 degrees Celsius exist and can persist for days and even weeks. The wind intensifies the effect of the cold.. The central Arctic and Baffin Island have average wind speeds of 15 to 20 km/hr which blow 90 percent of the time. The High Arctic Islands are calmer with weaker winds of 10 km/hr. The wind speeds are stronger in winter and combined with low temperatures they produce a marked wind chill.

In summertime, the low pressure cell weakens and moves over Baffin Bay and Hudson Strait. Storms which have crossed the continent pour into the cell. Stormy weather is common in the eastern Arctic. The winter high pressure cell retreats and weakens considerably. With the return of daylight, snow and ice begin to melt by late May or early June. Some snow and ice remain in the High Arctic Archipelago and on the Arctic Ocean. The air does not warm much due to the large areas of frigid ocean water. Most of the Arctic has a mean temperature of less than 10 degrees Celsius in the warmest month, July. The interior has averages above 10 degrees with records into the 30 degree Celsius range. The extreme north has midsummer means of 4 degrees Celsius.

The Arctic is one of the driest regions on the globe. Cold Arctic air does not hold much water vapour. The mainland and south Baffin Island receive the most precipitation with ranges of 20 to 50 cm per annum. Most of the Arctic Islands, especially those in the north and west, are very dry, receiving about 10 cm of precipitation. Snow accounts for 60 to 70% of the precipitation and covers the ground for 8 to 10 months of the year.

1.3 PREHISTORY

Archaeological evidence has placed inhabitants in the High Arctic and Northwest Greenland since 2000 BC. It is believed these settlers originated from the west, perhaps Siberia, and moved along sea routes opened by retreating ice sheets. The climate is thought to have been slightly warmer than it is today.

These first settlers of the Far North are referred to as Palaeo-Eskimo. Their camp sites were small and were probably occupied for only a few days, as they had to keep moving in order to find food. Muskoxen were their primary source of food.

At about the same time, on the southern islands and northern mainland, lived another culture, the Pre-Dorset. The Pre-Dorset people had a more settled lifestyle, as their camps were larger. Those along the coasts hunted seals, walrus and whales with hand held harpoons. Those in the central Arctic hunted caribou and muskoxen, and fished in the many rivers and lakes.

From these early peoples emerged the Dorset culture, somewhere between 800 B.C. and A.D. 1500. The Dorset culture was technologically more advanced than its ancestors. A cooling climate necessitated

hunting through the ice which led to better tools such as double-holed, closed-socket harpoon heads and snow knives. The Dorset culture is thought to have originated the igloo, due to the extended time they spent on sea ice. They also built semi-permanent dwellings on land - houses walled with boulders and turf.

The Dorset period had an interesting feature - an increase in artistic activity. Small carvings of animals, birds and humans made of bone, ivory and stone are found at Dorset sites. Their meaning is unknown but they are thought to have been used in magic and rituals.

The Dorset culture disappeared around A.D. 1200. The reasons are not clear but the demise of the Dorset people coincides with the arrival of a new population, the Thule.

The Thule, ancestors of the Inuit, moved into the area from Alaska. They were experienced sea hunters, as the Bering Sea is relatively ice free for a long period of time. They introduced many new items to the North including skin boats, kayaks and the larger, open umiak, as well as advanced tools for hunting. The Thule moved easily across the land with the use of dog-sleds, and used the dogs in hunting polar bears. During the summer, the Thule hunted whales and other sea mammals. In the winter, they lived in permanent houses made of boulders and whale bones.

Around A.D. 1500 the climate began to cool. The amount of sea ice increased, and marine mammals, such as whales, retreated further south. The Thule followed, abandoning the High Arctic Islands to settle on the mainland and southern islands. By the time the white man ventured onto the frozen land, the Thule period had ended and the Inuit then inhabited the land.

1.4 ENVIRONMENTAL STEWARDSHIP

One can not overemphasize the fragility of the Arctic Environment. Human activity of any kind can have a significant impact on the environment and the rate of recovery is exceedingly slow. We have become more aware in recent years of our responsibilities towards the protection and enhancement of the environment. While working in the Arctic, it is paramount that we keep these responsibilities in mind at all times.

Whether you are working on the land or enjoying its natural beauties on your day off, please ensure that all your refuse is brought back to the station. For those of you that may have access to all-terrain vehicles as part of your work, please operate these vehicles in a responsible manner by avoiding the unspoiled tundra. Tracks left by all-terrain vehicles can persist on the tundra for decades. Not only are they unsightly but even the normal operation of an all-terrain vehicle on the tundra can damage the thin layer of organic material, rendering it incapable of sustaining vegetation.

The Arctic is teeming with wildlife of many varieties. Most of the birds and animals have not had any experience with humans. Their natural curiosity is often mistaken for tameness. Please enjoy the wildlife in all its variety but do not disrupt their natural lives. Especially, do not feed the animals or approach them too closely.

2. EUREKA

2.1 GETTING TO KNOW THE PLACE

2.1.1 Station History

Eureka, the first JAWS (Joint Arctic Weather Station), was established on April 7, 1947 when the United States Army Air Force flew in materials which had been assembled at Thule, Greenland the previous year. Although much of the land was rough, rising to 2,000 or 3,000 feet, the most satisfactory location appeared to be in Slidre Fiord on Ellesmere Island, centrally located at latitude 80 00' 00" N., longitude 85 56'25"W. Within the fiord, the ice was quite smooth. Protected by hills from the prevailing north westerly winds, it is surrounded by low rolling country and is in the vicinity of two rivers, which promise fresh water in summer. A six man joint Canadian/American staff erected Jamesway huts as temporary buildings to house themselves and their equipment, while starting and maintaining a program of weather observations. The station personnel landed at Slidre Fiord at 11 a.m. with one of these buildings on board. By 7 p.m. the building was up and heated, radio equipment and facilities for weather observations were in operation and hot meals were available for personnel.

A land airstrip was considered very desirable in the event of a medical emergency and to provide against the possibility that ice would not freeze smooth in the fiord near the station every year. Accordingly, two small tractors, a roller, harrow grader and hydraulic pan were airlifted to the station in May. The six men at the station constructed an airstrip during July, while maintaining full weather observations and radio schedules at the station.

An icebreaker reached the Eureka Weather Station on August 9, 1947. This ship brought some permanent buildings, additional equipment, a year's supply of consumable stores, and two additional men for station staff. Work was immediately begun on erecting the permanent buildings and all were completed prior to the dark period and cold weather in winter. Additional buildings were added in subsequent years to provide more space and additional facilities.

Eureka facilities have been upgraded and are now used for many expeditions to the North Pole. The opening of the new National Parks Reserve on Northern Ellesmere in September 1989 has also increased visitors and transients during the summer months.

A Research Support Opportunity (RSO) at Eureka for graduate students in environmental research was established in 1987 by the Minister of Environment to help encourage field research in the High Arctic Islands.

2.1.2 Geology

Eureka, "Garden Spot of the Arctic", is without a doubt one of the most beautiful spots in the Arctic. Located on Fosheim Peninsula, on the north shore of Slidre Fjord, between Station Creek and Blacktop Creek, the surrounding area is comprised of gentle rolling hills. However, easily visible from the station is some of the mountainous terrain that Ellesmere Island is famous for.

A few kilometres to the north, Blacktop Ridge has peaks of up to 825 metres. Cape Hare, across the Fiord, reaches 550 metres. Sawtooth Range, located 65 kilometres to the east, has peaks up to 1200 metres. The clarity of the Arctic air would convince you that this range is much closer. Axel Heiberg Island, located 20 kilometres across Eureka Sound, to the west, is also visible on most days.

The rock formations around Eureka are quite unique, and the area is known for its Rose rocks and calcite formations. To the southwest, on Axel Heiberg Island, prehistoric petrified forest remains.

2.1.3 Climate and Weather

Due to its northern location, Eureka experiences periods of full daylight and full darkness. 24 hour daylight begins April 13 and is present until August 28. The dark season runs from October 21 to February 20. Transitional periods occur in spring when days draw longer and in fall when daylight hours decrease.

The temperature remains below zero for most of the year. July is the warmest month with a daily mean of +4 degrees Celsius. The record high is +20.7 degrees Celsius. The coldest month is February with a daily mean of -37 degrees Celsius. The record low is -55.3 degrees Celsius.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average daily max	-33.1	-35.0	-34.1	-23.9	-7.6	4.4	8.4	5.4	-5.5	-18.6	-28.6	-31.0
Average daily min	-40.3	-42.0	-40.9	-32.2	-14.5	-0.7	2.4	0.6	-11.4	-26.1	-35.6	-38.1

The area around Eureka is classified as a desert and most of the precipitation is in the form of snow which may fall at any time of the year.

2.1.4 Wildlife

The wildlife around Eureka is plentiful. Hares, foxes, wolves and muskoxen are often seen in and around the station. Seals can often be spotted sunning themselves on the ice during light season. Peary Caribou, Polar Bears and lemmings are seen occasionally, while weasels are spotted only once in awhile.

The Arctic is a bird watchers paradise as many species come to nest or stop here for awhile before continuing further north. Bird species sighted in the Eureka area include yeagers, Arctic terns, snow buntings, gulls, ptarmigan, snowy owls, ruddy turnstones, snow geese, ducks, Brandt's, hawks and ravens.

Hunting of animals or birds is not permitted without a license from the territorial government or a local Hunter's and Trapper's Association.

Due to the ever-present danger of rabies, visitors and staff are cautioned not to feed the animals. Always keep in mind that these are wild animals, no matter how cute and fluffy they may be.

2.1.5 Flora

Eureka is known as the garden spot of the Arctic. Even though the climate is very dry with little precipitation falling and a short summer season, many colourful flowers manage to grow. If you look carefully you might even spot a few tufts of grass.

The vegetation has been forced to adapt to a harsh environment. The growing season is short and there is always a chance of frost. The plants remain close to the ground and have a shallow root system due to the permafrost. The stems are fuzzy to insulate them against the cold.

In Eureka, a variety of plants may be found: purple saxifrage, mountain avens, locoweed, arctic poppies, daisies, arctic willow and the ever pesky dandelion.

Since permafrost restricts drainage, the ground becomes water logged and marshes develop. Arctic cotton is only found in these very wet areas.

2.2 STATION ACTIVITIES

2.2.1 The Staff

The normal Meteorological Service of Canada (MSC) staff complement at Eureka Weather Station comprises of:

Station Program Manager (SPM)
 Senior Aerological Observer (SAO)
 2 Meteorological Technicians
 1 Cook
 1 Handyperson

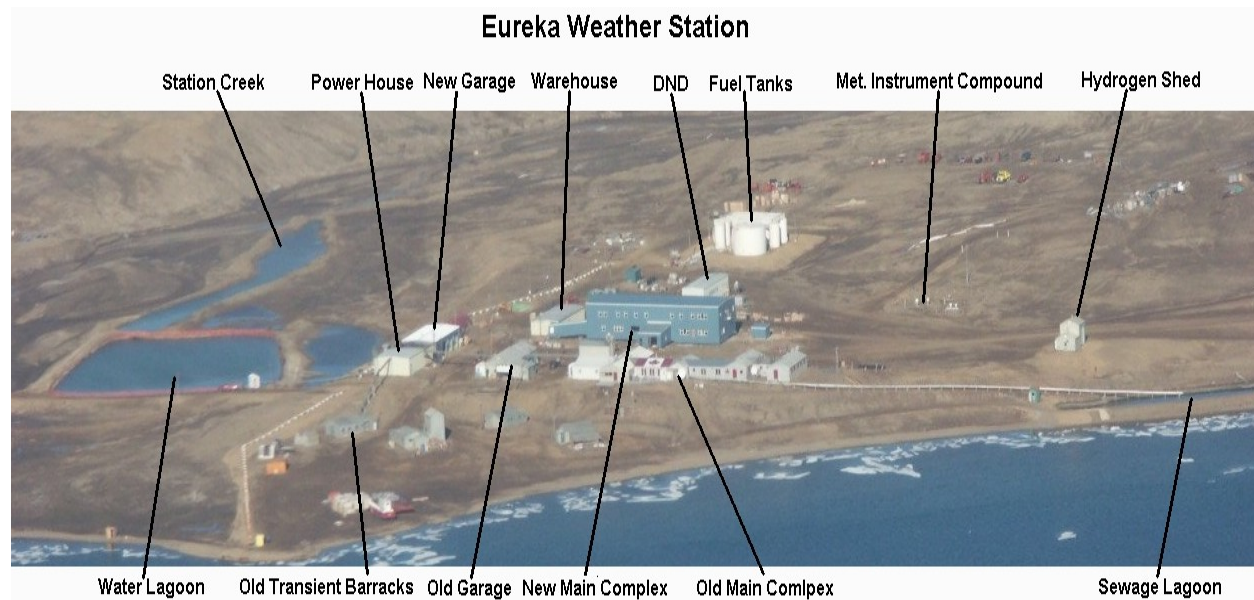
In addition, two contracted employees, a heavy equipment operator (HEO), and a mechanic (MDG) are on site to maintain the buildings, electrical generating systems, all station vehicles, runway, and road systems. There is also usually one CANDAC (Canadian Network for the Detection of Atmospheric Change) operator on site to take care of the PEARL (Polar Environmental Atmospheric Research Laboratory), ØPAL (Zero Altitude PEARL Auxiliary Location) and SAFIRE (The Surface and Atmospheric Flux, Irradiance, Radiation Extension) site.

2.2.2 Buildings, Power Generation, and Water Supply

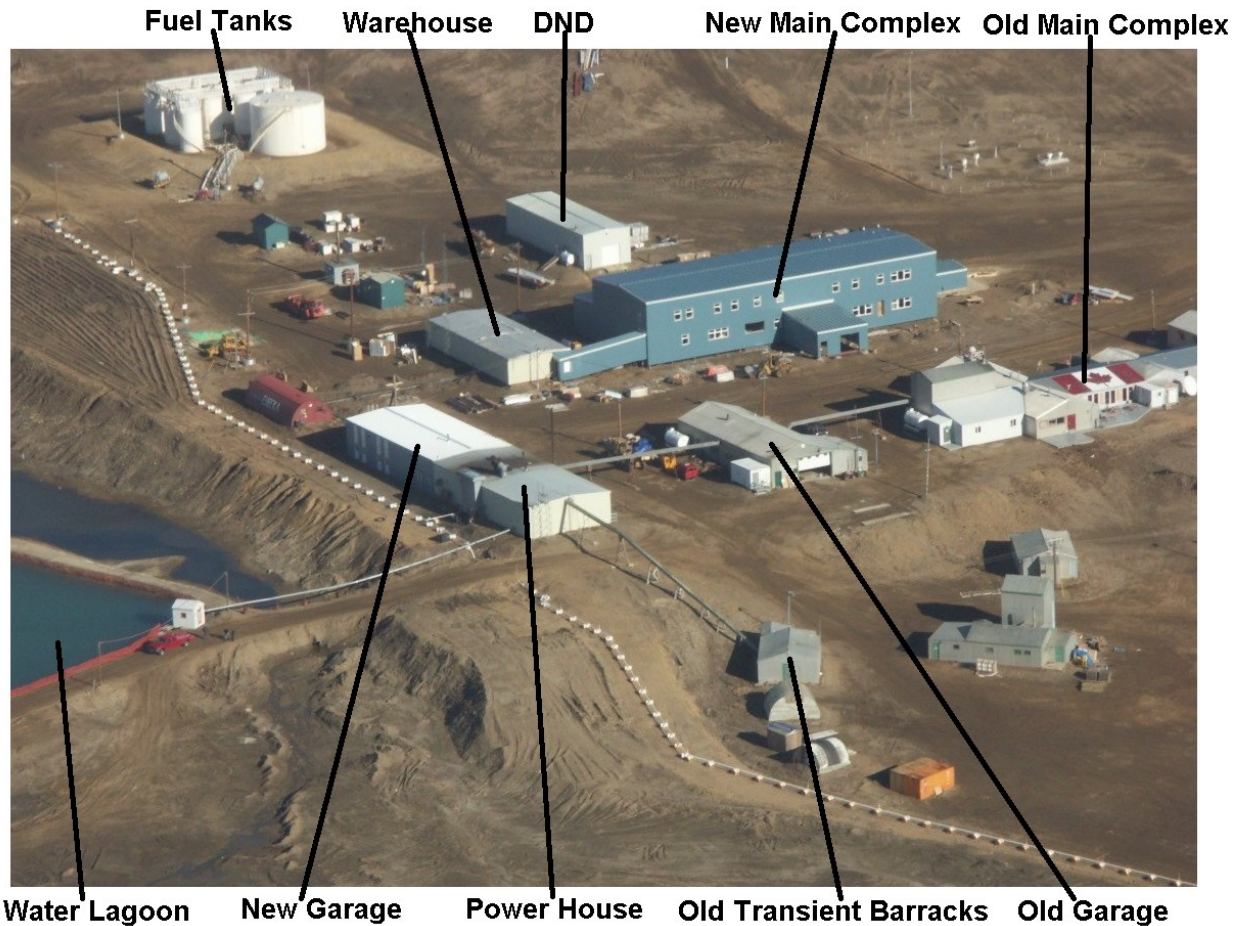
2.2.2.1 Buildings and accommodations

The main operations' building is a 16,000 square foot building built in 2004 & 2005 which includes offices, recreation area, TV room, smoking room, laundry room, kitchen, pantry and dining room on the first floor and all the accommodations on the second floor. There are 19 rooms for accommodations in the complex. Normally the staff occupy between eight and nine rooms. Visitors are then housed in the remaining rooms. If there are more visitors than rooms (a common occurrence), the guests will either be placed two or more to a room. Only the staff rooms have private bathrooms. There is, however, a central male and female washroom on both floors in the main facility to accommodate residents.

The Operations building, garage and power house are heated by a heat recovery system using heat from the electrical generators to heat water that is pumps to the aforementioned buildings. This system has resulted in a substantial savings in heating costs. Other buildings on the site are shown below.



EUREKA WEATHER STATION



2.2.2.2 Generators

The station electrical needs are supplied by the powerhouse. There are three 410 kWh Cummings generators. It is possible to run two units in parallel to share the loads when the need arises. Staff and visitors are cautioned to conserve energy and keep power consumption to a minimum, especially during winter. Fuel is limited and is only re-supplied once a year by ship.

2.2.2.3 Water Supply

One of the few drawbacks to Eureka is the lack of a fresh water supply. A small man-made lagoon has been built beside Station Creek. During the "spring runoff", the water from the creek is pumped into this lagoon. Whenever required, the station will then pump the water into any one of its three large primary storage tanks with chlorine automatically added while pumping. Later on, the water is then transferred into two secondary holding tanks and piped throughout the station. Water shortages towards the end of winter are not uncommon, and water rationing is always a distinct possibility. Guests are always cautioned to keep this fact in mind at all times and to **CONSERVE** water. A reverse osmosis system in the main complex produces good drinking water to all the washrooms, dining room & kitchen area, while all the water has been passed through a water softening system to remove the large amounts of calcium that is present in the water.

2.2.2.4 Airport

MSC operates and maintains a 4800 ft. gravel airstrip. Airport facilities and Navaid equipment are minimal and no fuel sales are available. If you require aviation fuel (Turbo Diesel) in Eureka you will have to purchase it from an airline company in Resolute (Kenn Borek) and have them bring in your fuel in advance of your visit. There is no AvGas for sale in Eureka and little, if any in Resolute.

A Navaid is a navigational aid, usually an electronic device to help pilots navigate aircraft to certain points of reference.

2.2.3 Transportation - aircraft, local vehicles

2.2.3.1 Transportation to Eureka

Arrival to Eureka is usually via Canadian North or First Air from Edmonton to Yellowknife, then Canadian North to Cambridge Bay and then Kenn Borek Air to Resolute Bay, or First Air out of Ottawa to Resolute via Iqaluit. Staff will catch a chartered Summit Air flight out of Yellowknife to Eureka on the monthly produce flight or on any other available flight to the area. Visitors, who are not travelling to Eureka in support of the station operations, must charter a plane from Resolute.

During the light season there is an increase in aircraft activity into and around Eureka, which facilitates arriving or departing as there are more flights to choose from. The dark season sees a marked decrease and for many months the only plane is the monthly produce flight.

2.2.3.2 Transportation on site

The MSC has several vehicles at Eureka. There are several 3/4 ton pickups and passenger vans, two snowmobiles, two ATV's, a Track Truck, and several mountain bikes. These vehicles are for MSC personnel only. ATV's are not for rent. The keys are left in the vehicles to facilitate easy access in case of fire or other emergency. This is not an invitation to use the vehicle. If transportation is needed, a request has to go through the SPM and it will be arranged.

2.2.4. Available Services

2.2.4.1 Mail service

Stamps may be purchased from the small, but well equipped, post office on site. Usually one of the staff undertakes the duties of the Post Office and is in charge of processing the incoming/outgoing mail.

Eureka's mailing address is:

Eureka Weather Station
Eureka, Nunavut
X0A 0G0

Mail arrives and departs at least every 4 weeks on the produce charter. On many occasions other incoming planes are kind enough to bring mail to the great delight of all the staff.

2.2.4.2 Medical Facilities

A limited stock of medical supplies is on site. If you are not feeling well, please report to the SPM who will offer assistance if required. The nearest medical attention is through Resolute Bay Nursing Station. The nearest hospital is located in Iqaluit or Yellowknife. If you require regular medication, bring enough to last your entire tour. The medical supply is not a drug store, but for emergency use only. Persons having allergies or a chronic medical condition, such as diabetes, etc., are requested to inform the SPM in confidence so that emergency diagnoses will be simplified.

2.2.4.3 Customs and Immigration

The SPM is also the customs officer. Therefore, if you are arriving from outside the country you are required to make a declaration to the SPM (general and personal declaration).

2.2.4.4 Shopping

Eureka has a variety of souvenirs which are always in high demand. Credit cards are not accepted but money can be transferred to the Station Fund account via internet. There is a limited supply of personal items so make sure you bring your own, toothpaste and shampoo.

2.2.4.5 Fishing License

If you would like to try your hand at fishing for arctic char in the Park, a fishing license may be bought from the Wildlife Officer in Resolute.

2.2.5 Recreation

Living in a remote part of the world offers Arctic employees ample opportunity to engage in outdoor activities. For those who enjoy the outdoors, Eureka offers beautiful scenery for the hiker and photographer. Fossils, rocks and Arctic flowers can be collected. There are a few sets of cross-country skis and snowshoes available. Often there is an iceberg close to the station which can be conquered. There are video games, music and books for those who seek their leisure indoors. Typical recreation equipment includes a pool table, shuffle board, table tennis, chess, checkers, cards, darts, etc. Some equipment is also provided for outdoor sports such as softball and soccer. A satellite dish provides live television channels but signal strength and reliability of equipment is not always good so frequent outages are common. There are several VCRs & DVDs on site and many movies to view. If you are into fitness, there is a small exercise and weight room on site. Internet access is available but bandwidth is limited and the connection speed is comparable to 56K.

2.2.6 Communications

Weather data from the Eureka Weather Station is transmitted via LAN through the Skull Point satellite link. The backup system consists of modem use through phone line or by Iridium phone.

There is a telephone line to Winnipeg that is more or less reliable. Internet and e-mail access for the staff is available in the Expedition room.

Since there is only one phone line, personal calls are restricted to after business hours. There is a fax machine in the office, for your convenience.

Numbers are:	Phone: (613) 945-3145 (dial tone)	ext. 4460 (for SPM) ext. 4461 (for Wx Office or SAO) ext. 4446 (for Rec. Room) ext. 4497 (for PEARL)
	Fax: (613) 945-3145 (pause)	ext. 4455
	Iridium: 011 8816 314 67594	
	Email: eureka wxstn@ec.gc.ca	

2.3 STATION OPERATIONS

2.3.1 Medical clearance

Before departing from the south, all staff is required to pass a medical. A visit to the dentist is also a must. Visitors are reminded that there are no doctors or hospitals in Eureka and if you must take a prescription drug please bring a sufficient amount to cover your stay as these can not be purchased in Eureka.

2.3.2 Visitor Permit Application

Before being permitted to visit Eureka and use our services, all visitors must first obtain permission from:

Aerological and Surface Operations Programs Section

Support Clerk

Environment Canada

Suite 150 - 123 Main Street

Winnipeg, MB R3C 4W2

Phone: (204) 983-6038

Fax to: (204) 984-2072

Visitors are asked to keep in mind that Eureka is not a resort, it is a Weather Station. Luxuries found in a hotel are NOT available here.

2.3.3 Costs of provided services:

Cost of accommodations and services are published annually on our Schedule of Fees.

Current public rates are:

	<u>Public Rate</u>
Meals	
Breakfast	55.00
Lunch	55.00
Dinner	120.00
Accommodations	
Per Bed Day	250.00
Comprehensive Daily Charge	480.00
Daily Station Usage Fee (for Shower & Laundry) Per person if not staying at the station	20.00
Electricity per kWh	1.143
Fuel Drum Disposal	30.00
Labour Per Hour (3 hour minimum may apply)	150.00
Vehicle per hour	
Light Wheeled Vehicle with Driver (transportation to or from airstrip – 1 hour minimum either way)	150.00
Heavy Equipment with Driver	
Grader	230.00
Front End Loader	230.00
Bull Dozer	270.00
Aircraft Movements	
Light Aircraft	140.00
Heavy Aircraft	415.00
Diesel & Mo Gas (per litre)	N/A

If you require office space, please inform the SPM. A quiet work location is not always possible but the SPM will do his/her best to accommodate the request.

2.3.4 Time Zone

Eureka operates under Eastern Standard Time year round.

2.3.5 Meal Hours

Monday to Saturday	Breakfast	07:30 to 08:00
	Lunch	12:00 to 12:30
	Supper	17:00 to 17:30
Sunday	Brunch	11:00 to 11:30
	Supper	17:00 to 17:30

All times are local. Occasionally, the number of people on site may require that meals be served in two shifts of one half hour each. Staff and visitors will be notified of any changes.

NOTE: ALL INSIDE AREAS ARE NON-SMOKING EXCEPT THE SMOKING TV ROOM.

2.3.6 HAWS Code of Conduct

Employees of MSC and other residents of this station are assured of:

- A safe and healthy workplace and living conditions.
- An atmosphere free of harassment and one in which they are guaranteed personal dignity.
- The right of personal choice provided that it does not compromise the above.

In order to promote these principles all residents and guests are expected to abide by the following guidelines:

A) PERSONAL HEALTH. Wherever possible remain healthy (proper rest, diet, exercise, hygiene, annual checkups, etc). If a concern arises, share this in confidence with the SPM in order that he/she can assist you should it become necessary.

B) PROMOTE SAFETY. 'Safety First' should be an underlying principle for all activities, whether at work or play. Be particularly alert when working alone, when exposed to the elements or when working with flammable substances. Medical attention is at least three hours away and you can die from a minor injury.

C) DRUGS & ALCOHOL. Illegal drugs or substances are prohibited at this station. While the consumption of alcoholic beverages outside of the workplace and during nonworking hours is permitted, moderation is encouraged and expected. A person who is intoxicated will be of little help during an emergency..

D) ENVIRONMENT. All residents are expected to conduct their activities in a fashion which will result in minimal damage to the natural environment or aggravation to wildlife.

E) HOUSE RULES. The station staff has a number of official 'house rules' for the benefit of all residents. Some of the items covered include: recreational equipment, quiet hours or areas, non-smoking areas, housekeeping chores, etc. All staff and visitors to the station are expected to become familiar with these practices and to abide by them.

2.3.7 Fire regulations

Know where the exits and extinguishers are.

In the event of a fire:

- activate fire alarm
- everyone proceeds to front vestibule
- if you are in your room:
 - 1) feel door, if warm, break the room window and exit through window
 - 2) in case room is filled with smoke, drop down on your hands and knees and crawl low under the smoke to the nearest exit.
 - 3) ensure all doors are closed

To keep the risks of a fire to a minimum, SMOKING IN BED IS NOT ALLOWED. Please smoke only in the designated smoking room.

2.3.8 Arctic clothing

MSC staff are issued arctic wear before coming up. This includes an arctic parka, ski pants, winter safety boots and mitts. It is wise to bring a toque and/or face mask, scarf, ear muffs, long johns, wool socks and

extra mitts or gloves as they are easily misplaced.

Visitors are also encouraged to purchase arctic wear as the winter jackets worn in southern Canada ARE NOT warm enough for an Arctic winter. A lighter jacket is suggested for the warmer months, although temperatures can still fall to near zero at times during the summer.

Anyone travelling to the station by plane from September to May must wear arctic clothes or carry them in hand as a safety measure.

2.3.9 Procedures when venturing away from station

Before leaving the station for a hike or drive always check the current weather conditions. Tell the meteorological technician on duty where you plan to go and how long you expect to be gone. Bring a portable walkie-talkie with you and check in regularly. If the wind picks up and/or dark clouds appear, turn back and return to the station immediately. Snow, blowing snow and fog can reduce visibility to near zero very fast. Hiking with a 'buddy' is a wise idea. Check in at the weather office when you return to the station.

When taking a vehicle ensure that it has fuel and check the oil and tires. Perform a radio check on the VHF radio to ensure it functions properly. Make sure the vehicle contains a shovel, flashlight, safety gear and first aid kit. Bring your arctic issue with you as you might have to walk back to the station if the vehicle breaks down, although it is recommended that you stay with the vehicle. Always get permission from the SPM before taking a vehicle.

2.3.10 Emergency conditions

Upon arrival at the station, the SPM will brief you on procedures to follow in the event of an emergency. An emergency consists of fires, polar bear sightings, power failures - anything that may endanger the lives of the people at the station. Use your common sense and report anything suspicious or worrisome to the SPM.

2.3.11 Items to bring

Blankets, sheets, pillows, towels, face cloths and soap are provided for. Anything else is your own personal choice. It is a good idea when arriving to bring a carry on bag with toiletries, and a change or two of clothing, as delayed luggage can occur. It can take up to 3 weeks for personal effects to catch up with you.

For long tours, a personal MP3 or CD player is an excellent idea. Naturally, your MSC arctic gear is a must, but a light jacket for summer and spring is helpful. As the snowmobile is frequently used, a ski mask can be quite useful. Sunglasses are necessary for spring until fall as the glare from the snow can be painful. Bug spray is handy, but can be supplied locally. A good digital camera is handy, as the wildlife is numerous and the scenery beautiful. A supply of cash is helpful for purchases.

It's a good idea to consider correspondence courses or some hobby to help you pass the time.

2.4 WEATHER AND SCIENTIFIC PROGRAMS

2.4.1 Weather Program

2.4.1.1 Hourly Weather - Eureka operates an hourly surface weather observing program, providing hourly observations for the period 0600Z-0300Z (1 am to 10 pm Local Standard Time). Special observations are

done between the hours of 1100Z and 2100Z (6 am to 4 pm Local Standard Time) in support of aviation forecasting and climate data services.

2.4.1.2 Synoptic Weather - Observations and measurements of meteorological data are made every six hours in support of forecasting both nationally and internationally.

2.4.1.3 Aerological Soundings - Two weather balloons are released per day, the first at 11:15Z, and the second at 23:15Z. The balloon carries an electronic instrument aloft. The data collected is then used by the forecasting system nationally and internationally. Additionally, once per week an ozone sounding is done in conjunction with the 23:15Z flight to determine ozone concentrations in the upper atmosphere.

2.4.2 Additional Programs

2.4.2.1 Radiation - Eureka currently has two radiation instruments which monitor solar, atmospheric, and terrestrial radiation (RF1 & RF4).

2.4.2.2 Sunshine – Bright sunshine is no longer recorded.

2.4.2.3 Snow Survey - Done twice monthly to determine density and other properties of snow cover.

2.4.2.4 Geomagnetic Monitoring - A magnetometer is located on site which records data about the earth's magnetic field.

2.4.2.5 Ice Thickness - Measurements of sea ice thickness are taken in Slidre Fjord during the winter period.

2.4.2.6 Freeze-up/Break-up - Daily shore observations are made to determine the state of the spring and fall ice flow.

2.4.2.7 PEARL (Polar Environment Research Laboratory) & ØPAL (Zero Altitude PEARL Auxiliary Location) - Located at Eureka, and formerly known as the ASTRO (Arctic Stratospheric Ozone Observatory) Lab, PEARL became fully operational in 1993. It was a world class ozone research facility owned and operated by Environment Canada and played an important role in the global monitoring and understanding of stratospheric ozone. The modern facility is located 14 km West of Eureka at 600 meter elevation and became a centre for international research hosting scientists from around the world conducting studies on ozone depletion, UV radiation, stratospheric aerosols (Japanese), and trace gases associated with ozone depletion. Measurements taken at ASTRO provided the first evidence of the catalytic destruction of ozone by ClO (hypochlorite) during cold stratospheric temperatures associated with the Arctic vortex. The ozone observatory enabled Canada to take its place in a new global network of highly sophisticated ozone-measuring stations. Operations at the ASTRO Observatory were closed due to financial constraints, however, the observatory is being revitalized through funding awarded to CANDAC by the Canada Foundation for Innovation to lead a research consortium and expand research activities with the MSC and others at the old ASTRO facility. The Canadian Network for the Detection of Atmospheric Change (CANDAC), a Canadian university consortium has a great interest in using the facility in collaboration with researchers from the Meteorological Service of Canada and others to gain better insight into the atmospheric chemistry of the stratosphere. The university research consortium (CANDAC) is comprised of researchers from the University of Toronto, Dalhousie University, University of Waterloo, University of New Brunswick, University of Saskatchewan and the Centre of GeoSpace Studies.

In 2005, the Polar Environment Atmospheric Research Laboratory (PEARL, formerly ASTRO) became a continuously operating research-level station with a large complement of instrumentation for measuring atmospheric properties from the ground to around 100km. Complimenting PEARL is the Zero altitude PEARL Auxiliary Location (ØPAL), which was constructed close to the weather station in 2005. The two observatories rely on the facilities at Eureka for life support and other infrastructure needs.

2.5 THINGS TO DO AND SEE

For the history buff, there are several known archaeological sites along the north shore of Slidre Fiord, three of which are situated just west of Eureka, along the old road to Skull Point. These three sites were recorded in 1977, but since that time they have been largely destroyed due to construction activity. The nearest site to Eureka originally consisted of approximately 25 tent rings, food caches, and hearths. Today only nine features have survived. The site belongs to the Thule Inuit cultural period. Two other sites are located closer to Skull Point. One is a Thule tent ring with associated food caches, and the other consists of a food cache with a possible tent ring of unknown cultural affiliation. Other feature sites are located along Slidre Fiord about 6 km east of the station. Please do not disrupt the sites as they are historic.

For the amateur geologist or rock collector, Eureka is abundant in fossils, rose rocks and the very observant may find pieces of petrified wood.

For the sport minded individual, hiking is very popular as there are numerous areas to explore. Two and a half miles northeast of the station is an old airstrip that was used in the early days of Eureka. To the east of the station are the oil exploration trails that go to the end of the fiord. These trails are very scenic. To the west, located are the Skull Point hills and PEARL. Six miles northeast there is Black Top Ridge with a magnificent view from its 2700 foot altitude.

2.6 OTHER GOVERNMENT AGENCIES

2.6.1 Department of National Defence (DND)

2.6.1.1 OPERATION (Op) NEVUS

DND occupies a new facility at the air strip during the short summer season. Every year during the months of May, June and July, the military increases the population of Eureka. They come to do maintenance on the communication system between Alert, Eureka, and Skull Point. Work and maintenance is also done on the road from the weather station to Skull Point and to re-supply fuel caches between Eureka and Alert.

The military contingency varies from 25 up to 40 personnel at certain times of the season. There are helicopters, twin otters, Buffalo, and Hercules aircraft sometimes on site. A small crew returns in September to close and winterize 'Fort Eureka'.

2.6.1.2 Skull Point, Satellite Communication Station

Skull Point is an unmanned satellite communication station operated by DND that links Eureka, ASTRO Lab and Alert to the outside world.

Because communication satellites are orbiting the Earth over the equator, Skull Point (10 km west of the station) is the most northern location (80 deg. N) from which satellite signals can be picked up. From there the signals are transmitted to Alert, Eureka, and the ASTRO Lab via microwave, as illustrated on Figure #1, below. To increase the reception of the satellite signals (known as a diversity system), a second satellite dish has been installed higher on the mountain dominating Skull Point, at an altitude of approximately 1200 feet. This site is called Upper Paradise and works in parallel with Skull Point in receiving the satellite's signals.

Six microwave radios are needed to relay satellite signals to Alert. These relays are situated at approximately equal distances from each other and are positioned on the most prominent points in their area in order to clear any obstructions - microwave being line of site transmission only. These relays close the 500 kilometre gap between Skull Point and Alert, and are powered by batteries which need to be replaced once a year. Located in one of the most remote areas of the world, these relays can only be accessed by helicopter during the light season.

Because of its location, a direct microwave link between the ASTRO Lab and Skull Point is not possible. Therefore, communication between ASTRO and Skull Point are done via Eureka which serves as a hub repeater between the two stations.

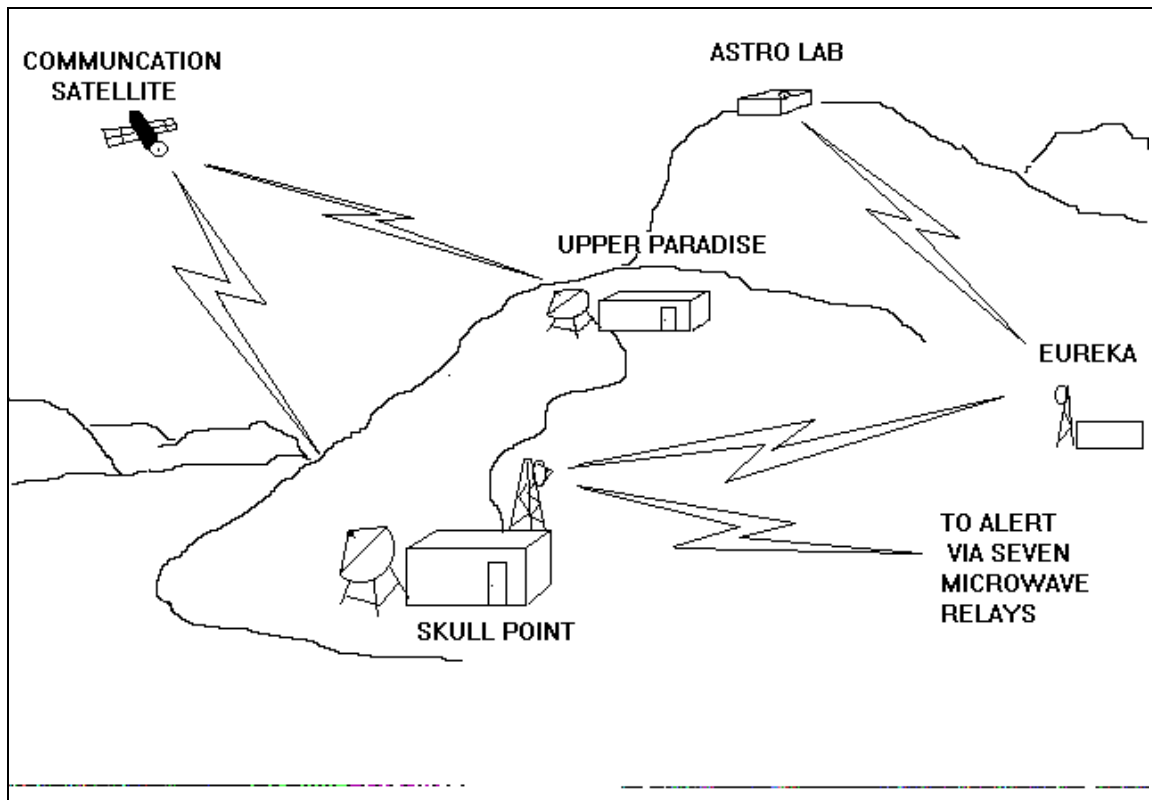


Figure # 1

2.6.2 NRCan Polar Continental Shelf Program (PCSP)

PCSP is a government agency dedicated to helping those who wish to do scientific studies in the Arctic. Every summer they set up camp in Eureka and use it as a base of operations to the many camps on the surrounding islands. PCSP supplies air support and government grants to graduate students in the sciences so they can then spend a summer researching their theses in the Arctic.

2.7 SPECIAL EVENTS AND HAPPENINGS

2.7.1 Sea Lift

Between late August and the middle of September the northern re-supply ship via Canadian Coast Guard icebreaker arrives in Eureka. It brings a years supply of bulk diesel, aviation fuel, vehicles, equipment, building materials, dry goods and non-perishable items such as soap, cleaning supplies, facial tissue, toilet paper, oils, lubricants, etc.

2.7.2 Trips and Expeditions

Eureka's proximity to Axel Heiberg Island and Ellesmere National Park Reserve makes it a major jumping off point for the many scientific and tourist expeditions in the area. In addition, Eureka is the farthest north

permanent civilian site. Hence, the many assaults on the North Pole generally pass through Eureka to the final jumping off point at Ward Hunt Island. The re-supply planes for the expeditions must refuel at Eureka.

2.8 SPECIAL INTERESTS IN THE VICINITY

2.8.1 Geodetic Hills - Axel Heiberg Island

In 1985, Geological Survey of Canada geologists discovered a fossil forest site near the Geodetic Hills on Axel Heiberg Island, about 50 km west of Eureka. Fossil forests are groups of tree stumps preserved virtually in growth position. The first discovery of fossil forests in the Canadian Arctic was in the beds of Cenozoic age in 1886. It was only at this time that geologists realized the significance of the preserved wood. To date, there have been a total of five fossil forests found on Ellesmere Island and Axel Heiberg Island.

Studies of these ancient forests help to indicate the geography, climate and ecological character of the area during the time when the forests thrived. The region had a hilly, mountainous landscape with unconnected sedimentary basins. The climate was temperate to warm temperate with rich vegetation and large floodplains that suggest there was abundant precipitation with mild winters and warm summers. The regional flora consisted of lowland or floodplain forests and presumably more widespread, mixed woodland and shrub land. The forests were rich with evergreen and deciduous conifers as well as angiosperms.

An outstanding characteristic of the Geodetic Hills and Hot Weather Creek sites is the style of preservation of the wood and floor litter. Much of the woody tissue is retained such that the appearance and other properties of the organic material remain similar to those of the original materials. In fact, the wood is so well preserved that it will burn like fresh firewood.

Flood events are assumed to have caused the sudden overwhelming burial of the forests. There was no evidence of bacterial or fungal decay, so degradation through hydrolysis is likely. The relative proportions of lignin and cellulose found in the fossil wood are similar to those of historical, waterlogged wood suggesting a similar history of immersion in anaerobic bog water for long periods of time.

(Information was compiled from AES documentation and the following reference: Tertiary Fossil Forests of the Geodetic Hills Axel Heiberg Island Arctic Archipelago. Geological Survey of Canada bulletin 403)

2.8.2 Quttinirpaaq National Park

Established in 1988 as Ellesmere Island National Park Reserve (NPR), it became Quttinirpaaq National Park in 2001 following implementation of the Inuit Impact and Benefit Agreement for National parks under the Nunavut Land Claim Agreement. Encompassing Canada's northernmost lands, Quttinirpaaq National Park is an enclave of sedimentary mountain ranges, ice caps, glaciers, fjords and fertile Arctic oases. The park covers 37,775 square kilometres on northern Ellesmere Island and is Canada's second largest national park. Arctic Hare, Muskoxen, Peary Caribou and about 30 species of birds can be seen in the park. You should be prepared to exercise no-trace camping to maintain the wilderness value and sensitive features of the area. Due to its remote northerly location, visitor facilities and services are few in the park reserve. Trails, bridges and other hiker facilities are virtually non-existent. Only base camps offer emergency shelter.

For further information contact:

Chief Park Warden
Quttinirpaaq National Park
Nunavut Field Unit, Parks Canada
Iqaluit, NU
X0A 0H0
Ph. (867) 975-4673
Fax (867) 975-4674

Email: nunavut.info@pc.gc.ca

2.8.3 Alert

Canadian Forces Station (CFS) Alert is the most northern permanently inhabited settlement in the world. It is situated on the North eastern tip of Ellesmere Island. Alert was first settled in the early 1950s as a weather station of the Joint Arctic Weather Station System (JAWS). The Canadian military station was established in 1958 and has been expanding ever since.

The Alert weather station has a staff of two - an SPM and a meteorological technician. They are responsible for two daily aerological flights, a weekly ozone flight and various other programs. Surface weather was automated in the summer of 1991.

The population of Alert is approximately 40 people - military, civilian employees of DND and employees of Environment Canada.

CFS Alert is an operational unit of the Supplementary Radio System (SRS) of Canadian Forces Communication Command. It participates in the standard research program involving radio transmission and reception in the high latitudes, as well as providing a high frequency direction finding capability for search and rescue.