Nunavut

FSC GROUP

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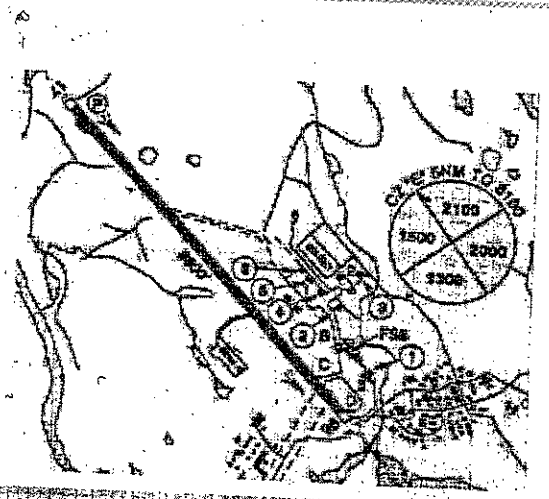
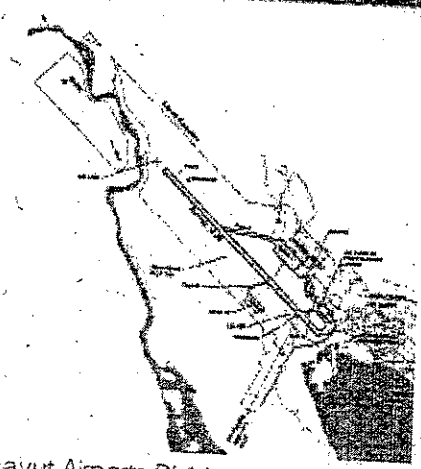
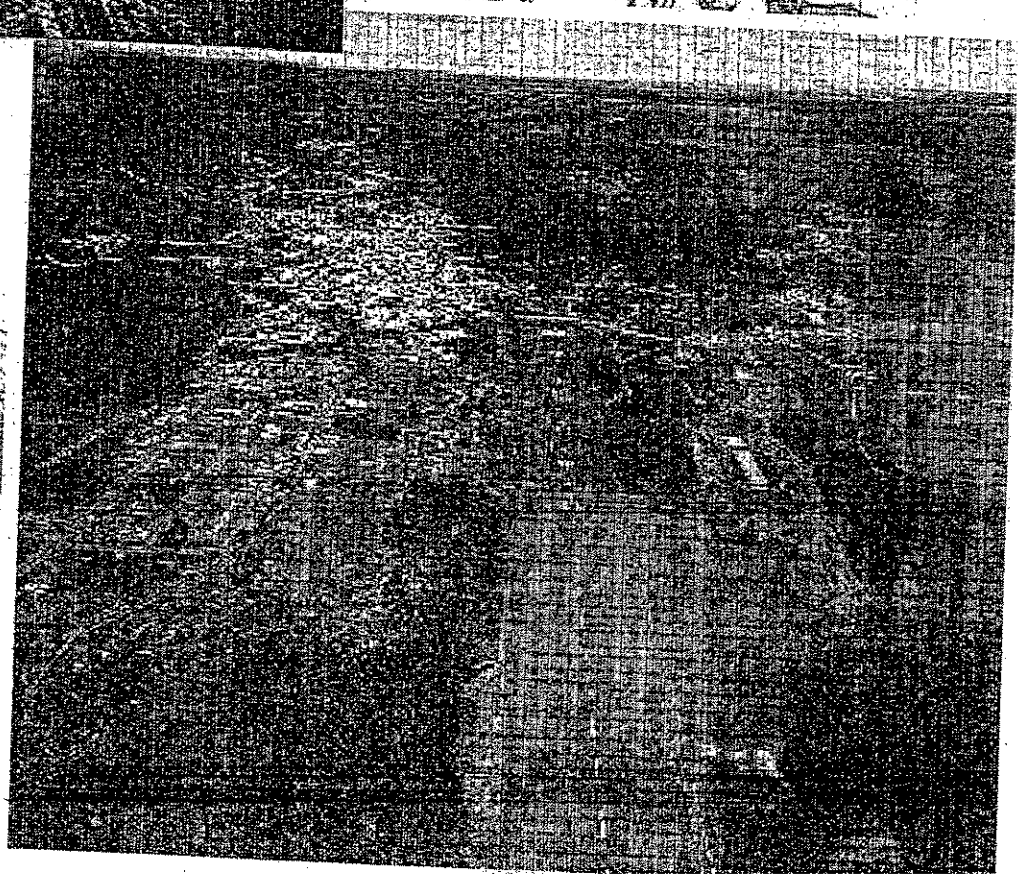
ACAPProposal
Re-Opening of Taxi A & Rehabilitation of Apron 1 Iqaluit Airport Iqaluit, Nunavut







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Rankin Inlet, Nunavut

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1. *Introduction*

1.1 Purpose

The purpose of this proposal is to secure Airport Capital Assistance Program funding to rehabilitate Taxiway A and Apron 1 at Iqaluit Airport. Project Implementation is planned for the summer of 2001.

1.2 Profile of Iqaluit

The Territory of Nunavut was established in April 1999 and the Town of Iqaluit became a City when it was designated as the new territorial capital. The catchment area for the airport includes Nunavut and especially the Eastern Arctic, Baffin Island communities and the City of Iqaluit. The Baffin Region includes 15 communities ranging in size from 270 people to 4,220 people in Iqaluit. Apart from these communities, the Baffin Region includes Arctic Bay, Broughton Island, Cape Dorset, Clyde River, Grise Fiord, Hall Beach, Igloolik, Kimmirut, Nanisivik, Pangnirtung, Pond Inlet, Resolute Bay and Sanikiluaq.

During the fall, winter, and spring, all material sent to the Eastern Arctic arrives by air through Iqaluit Airport. The Iqaluit Airport is the only year-round means of access to the community. The airport, located at sea level, is capable of handling all large aircraft.

Scheduled air service from the south is available through both First Air and Canadian North. Iqaluit Airport serves as a gateway to all of the Baffin Island communities and will be the principle service point for Nunavut. It is also the gateway to Greenland and points east, Yellowknife and points west, Kuujuak and northern Quebec, Montreal and Ottawa.

1.3 Airport History

Iqaluit Airport was originally constructed during the Second World War in support of North Atlantic ferry operations. Key dates in the airport's history include the following:

- 1942 Runway 09/27 constructed by the U.S. government (5,000' x 200' gravel).
- 1943 Runway 17/35 construction commences.
  RCAF hangar constructed near Runway 18 threshold.
- 1944 Airport sold to Canada for $6.8 million, RCAF assumes airport responsibility.
- 1947 US rehabilitates runway and facilities.
- 1952 DEW Line construction begins.
- 1953 Runway 17/35 extended and Runway 09/27 closed.
- 1954 Transatlantic commercial air services begin technical stops using C-54 aircraft.
- 1957 Runway 17/35 extended to 9,000', widened to 200', and repaved .
  Department of Transport assumes airport responsibility from RCAF.
  Airport assumes offensive role with transfer of USAF personnel to Strategic Air Command.
- 1959 USAF completes construction of a base for KC-97 and KC-135 aerial tankers.

2.4 Airport Financial Position

The total current estimated cost of operating Iqaluit Airport amounts to $2,674,400 per annum. The report of expected revenues prepared by the Airport Manager for the year ended March 31,1999 indicates that revenue should total $816,300 for the year. Based on the anticipated revenues and full operating costs the airport will have incurred a loss of $1,858,100 for the 1998-99 financial year.

The airport is unable to generate the sums necessary to self-finance the proposed restoration works. The past three years' Financial Statements are provided in Appendix D.

2.5 Airport Infrastructure

Iqaluit Airport currently consists of one runway, three taxiways, three aprons, a terminal building and various other structures. A copy of the airport facility information from the current Canada Flight Supplement is contained in Appendix E. Figure 1 Airport Layout shows the site plan for the airport.

Photographs of the areas involved are also included in Appendix E.

2.5.1 Apron I

Apron I was originally constructed in 1958 to serve aircraft of the U.S.A.F. Strategic Air Command. Use of a substantial portion of Apron I may have ceased as early as 1963 when the U.S.A.F. base was closed. Apron I was indicated as being closed during the 1970's on Transport Canada airport drawings although it is known to have been used when warranted by aircraft traffic for periodic overflow parking and occasionally as a means of access from Taxi A to Taxi B.

The southern end of the apron became actively used for aircraft parking during the 1970's and 1980's and was subsequently overlaid in 1993. Four aircraft hangars were constructed beside this portion of the apron over a period of years and are currently in use. Access to one of two former U.S.A.F. hangars located on Apron II now owned and used by First Air uses the southern end of Apron I.

The centre portion of Apron I was reopened temporarily during the summer of 1993 to provide temporary access to the north end of Runway 17/35 when the runway was being progressively overlaid. Transport Canada recommended closure of most of Apron I as a cost efficiency in their August 1994 Development Plan and this was carried out. The airport was transferred to the GNWT in April 1995 and since then the apron has been used for aircraft parking on an "as required" basis.

Appendix F contains the Construction History and Condition reports relevant to Apron I.

2.6 Airport Operation and Maintenance Practices

Pavement surfaces are regularly inspected by Nunavut Airports Division personnel as described in the Iqaluit Airport Operations Manual on file with Transport Canada.

2.6.1 Apron I

Maintenance of Apron I is carried out by the airport operations contractor, Narwhal Arctic Services.

Apron I is currently used and occupied by a number of operators and aircraft including the following:

✈ Ken Borek Air Services	1 DHC-6 Twin Otter 5 - 6 King Air 100 and Beech 99
✈ Air Baffin	1 Piper Pa-31 Navajo 1 King Air 100
✈ Canadian Helicopters	1 Sikorsky S-61
✈ Private Owners	1 - 3 Light aircraft

Apron I supports short-term parking of transient aircraft that have recently included such aircraft as the following:

✈ Canadian Forces	CC-130 Hercules CF-18 Fighters CC-115 Buffalo (Search & Rescue Operations)
✈ NATO Air Forces	C-130 Hercules KC-135 Tanker C-141 Starlifter C-5A/B Galaxy Nord 262 Atlas
✈ Government of Canada	Challenger DHC-7 Ice Reconnaissance
✈ Aircraft Manufacturers	Bombardier CRJ-50 Bombardier DHC-8-Q400 Pratt & Whitney B-707 Engine test aircraft Airbus A-320 Cold Weather test aircraft Boeing 777 Cold Weather test aircraft Cessna Citation series test aircraft
✈ Exploration Companies	Fixed wing aircraft - seasonal operations Rotary wing aircraft - seasonal operations

3. *Project Specific Data*

3.1 Project Need and Justification

The primary justification for rehabilitating Apron I is to alleviate zoning violations for large aircraft parking and to return the apron to serviceable condition.

The primary justification for re-opening Taxi A is to remove existing zoning violations for Apron III, to relieve related safety problems with Taxiways C, and D and to alleviate airport delays, as further described below.

3.1.1 Airside Standards and Safety

Apron III is located sufficiently close to Runway 17/35 to permit only one, or two (with approved deviations), Code C jet aircraft to park in compliance with TP 312E zoning requirements. Traffic has increased in recent years to double this level on a daily basis and an average of one wide body aircraft (Code D or E) visited the airport each week during 1998.

One B-747 suffered significant structural damage when manoeuvring to park and refuel within the normally prohibited runway strip area of Apron III. A waiver allowing this area to be used had been issued by Transport Canada in 1992, however the B-747 in question exceeded the expected violation by about 8.8m. and violated the runway transitional zoning surface by 15.8m.

Since Apron III is no longer able to safely accommodate current levels of scheduled traffic alternate apron facilities are required. Rehabilitation of Apron I is the most cost effective solution to meeting current apron demand in accordance with airport safety standards.

It is further necessary to reopen Taxi A to alleviate other airside safety issues and violations of standards.

Taxi A is required for access to Apron I without further aggravating the safety issues and standards violations noted above.

Access to Apron III from the runway is limited to Taxiways C and D. Access is restricted when large numbers of aircraft are using this apron resulting in a grid lock situation with aircraft unable to clear the primary runway. This results in temporary closure of the airport while the runway is used for the reorganization of large aircraft parking which must be carried out without the aid of ATC ground controllers, on a purely voluntary basis by pilots. A safety hazard is thereby created for airport operations as well as for enroute aviation when this designated alternate airport is unexpectedly closed to traffic navigating on North Atlantic and trans-polar routes. Iqaluit is located approximately 1 hour's flying time from any other suitable airport for this trans-oceanic traffic at these northern latitudes.

In summary Iqaluit Airport is unable to accommodate itinerant Code D and Code E aircraft, even on an exceptional basis, without frequent safety violations when these aircraft periodically arrive and mix with scheduled traffic. Iqaluit Airport must be able to accept the arrival of a Code E aircraft, allow it to safely

3.1.4 Summary

Apron I should be rehabilitated for four reasons:

- To eliminate safety violations, congestion, and delays on the existing main apron;
- To permit the ***safe ground operation*** of large aircraft during technical stop and diversion operations;
- To increase overall ***airport apron capacity*** that is currently below peak hour demand requirements;
- To increase ***operational use and flexibility*** of existing taxiways and aprons.

Taxiway A should be re-opened for four reasons:

- To increase overall ***airport capacity*** that is currently below peak hour demand requirements;
- To permit the ***safe ground operation*** of large aircraft during technical stop and diversion operations;
- To ***reduce congestion, delays and safety hazards*** on the existing taxiways and apron;
- To increase ***operational use and flexibility*** of existing taxiways and aprons.

3.2 Project Scope and Definition

The scope of the project is two fold:

- To return Apron I to a fully operational status for use as the main air carrier apron capable of safely accommodating all aircraft types now using the airport. The apron requires a PLR 12 load rating and a Code E taxilane.
- To return Taxi A to a fully operational status as a 23 m. wide, Code E taxiway capable of safely accommodating all aircraft currently using the airport.

Since the Field Electrical Centre is not included in this application, the design incorporates an electrical sub-station to provide the necessary power distribution. This distribution includes the taxiway and apron lights, illuminated runway signs, apron flood lights, aircraft power pedestals (not part of the ACAP application funding), and associated equipment for communications (PLC).

3.2.1 Apron I

The original ACC paved area constructed in 1958 is approximately 155 m. in width and 540m. in length.

Storm runoff from the crowned apron surfaces drains to ditches located on each side of the apron and cut into bedrock in some areas.

A major surface drainage channel located just east of Apron I carries a large seasonal volume of melt water from nearby mountainous terrain. Recent blockages of this channel have resulted in major flooding of Apron I. Improvements to the surface drainage channel are required to maintain the integrity of Apron I.

A geotechnical investigation has been completed confirming the embankment recommendations.

3.2.3 Site Topography and Drainage

Vegetation is sparse to non-existent throughout the airport property.

The land in this site slopes gently towards Apron I, and acts as a flood plain for the more elevated terrain that surrounds it. Summer melt water from the rock outcrop located northwest of this area and from the mountainous terrain located northeast of the 'Upper Base' development, drains through a major surface drainage channel.

The current municipal granular source and a former waste metal disposal area are to the north of the site. A stream flows from the north of the granular source, and is primarily diverted to a drainage channel located to the east of the airport property.

This site was the location for a variety of casual activities since being decommissioned by the air force in 1963. These activities have included storage of vehicles, aircraft, construction equipment, materials and supplies as well as a hazardous materials temporary holding area. Some of these activities were believed to have resulted in changes to the original topography due either to direct action or seasonal flooding and lack of maintenance of the off-airport drainage system. A limited topographical survey of the new sites was carried out to provide up to date information for planning and cost estimating purposes.

The granular source is drained by a second drainage channel, which travels south through low lying ground adjacent to the proposed First Air cargo facility, and then parallels the north east edge of Apron 1. Both drainage channels meet southeast of Apron 1 and the RCMP hangar. The combined channel continues south and then crosses under the main airport access road near the existing air terminal building.

The elevation of ground water in the granular source, and thus the amount of recoverable gravels from the source, is controlled by the elevation of this second drainage channel. A 1999 FSC report, Iqaluit Future Granular Sources, set the proposed outfall elevation of the granular source at 23.0 m. absolute.

Any drainage changes must provide adequate capacity to meet the spring runoff peak flows, and must also allow maintenance of the water level in the granular source at or below 23.0 m.

Current Drainage Issues

Culverts currently exist at various road crossings including the airside access point along the northeast edge of Apron I, and the main airport access road. The culverts are 800 mm diameter, and the lowest invert elevation is 20.72 m.

These culverts are clogged with debris, which has caused large fluxes of melt water to overflow onto the Apron I area. The clogged culverts have also forced the drainage channel to shift to a path of less resistance. The drainage course is now coincident with part of the decommissioned utilidor that runs parallel and adjacent to the original drainage system.

At the existing groundside access point to Apron I, the abandoned utilidor passes through a large diameter