Chesterfield Inlet, Nunavut

Crushing & Rehabilitation of Airside Surfaces

Project Brief

1. Project Statement:

- Crush and accumulate gravel in one phase and, rehabilitation of airside surfaces in the second phase at Chesterfield Inlet Airport
- CAP priority level one (1)
- TEC: $2,479,270.00

2. Airport: Eligibility and Background information

- **Background information:**

The Chesterfield Inlet airport was built in 1977 with a 914m x 30m runway. The facility was rehabilitated and expanded in 1993. The runway is now 1,098m long, by 30 m wide. The taxiway is 70 x 15 m and the apron is 90m x 60 m. All airside surfaces are gravel.

As with all communities in Nunavut, the airport at Chesterfield Inlet is the only year-round reliable means of transportation to and from the community. All perishable groceries, medicine, mail, as well as all but the heaviest durable goods are transported by air. All government service workers, the judiciary, medical professionals, and telephone and electrical system technicians depend on air services to deliver essential services to the community. All medical travel in and out of the community is dependant on the serviceability of the airport.

- **Community:**

Until the 1950s Chesterfield Inlet was the Hudson Bay Companies main supply centre for other "posts" in the area. It was also the site of the largest RCMP barracks and the largest Roman Catholic mission in the eastern arctic, as well as medical and education centre. Inuit people often gathered in Chesterfield Inlet to seek employment or to trade goods. The role of the community changed in the 1960s. Statistics Canada reported a population of 409 in 2004.

As with most northern communities, business activities include the manufacturing of art artifacts, commercial hunting and fishing, guiding, government services jobs, transportation and construction. The catchment area is limited the hamlet of Chesterfield Inlet, and government or business travel.

- **Status:**

History of ownership and operation of the airport in the early days is limited, but Nunavut Airports Division have owned and operated the airport since 1999 when

the Territory was formed. It was transferred from Transport Canada and Indian Affairs to the Government of the Northwest Territories as part of the "Arctic B&C Transfer Agreement" of February 26, 1991. The Government of Nunavut, Department of Community Governments and Transportation operates the airport as a certified aerodrome; certificate # 5151-C110 issued April 1, 1999.

- **Service:**

Two air carriers, Calm Air and Kivalliq Air offer scheduled air service to and from Chesterfield Inlet and surrounding communities. Official Statistics show the number of scheduled passengers for the years 2002, 2003, and 2004 were 2,952, 2,248 and 1,454 respectively, for an average of 2,218. In addition, the R.C.M.P, Kenn Borek Air and Skyward Air operate non-scheduled air service into the community.

- **Finance:**

The applicant provided departmental financial information from Department of Economic Development and Transportation for a three-year period ending March 2005, as well as a written statement to the effect that no other source of revenue or funding is available to support this project. This airport is operated as an essential service to the community and funded from the Government of Nunavut general revenues. A long-term capital plan for this airport was not provided, but PNR has yearly consultation with the Government of Nunavut, to ensure that the "financial need" requirement exist for this project.

The Chesterfield Inlet Airport is unable to self-finance this rehabilitation project.

3. Project information:

- **Detailed project description:**

In general, the project consists of xxxxxxxxxxxxxxxxxxxxxxxx
Details are as follows:

- Supply & install Field Electrical Centre (FEC) with various wire, cables, and connectors;
- Supply and install new airfield lighting controls and regulators;
- Remove VASIS, and build PAPI pads and connect existing PAPIs;
- Recommission High Intensity Lighting and replace Omni-directional approach lighting (ODAL) for Runway 34T;
- Remove, replace Runway-end identification lights (ODALs) for Runway 16T;
- Remove and replace one of two Illuminated Wind Direction Indicator (IWDI);
- Remove and replace pulpits, underground cable duct and edge lights to runway, taxiway, and apron.

- **Evaluation of project components:**

The major concern in Coral Harbour is the airfield lighting controls and the constant current regulators. These systems were installed between 1943 and 1945. They are

oil filled heavy-duty regulators, operated by oil switches. They were state of the art equipment in its day, but this system is now outdated.

The control system has suffered numerous failures in the past six years. The FEC shelter is an unheated, uninsulated steel building normally used a heavy equipment shelter. Frost and condensation have penetrated the hermetically sealed relays. Temporary fixes and deterioration has led to the point where many functions have been re-routed through formerly spare functions in the terminal blocks. Spare relays have been utilized as replacement for failed units. In 1998, the high intensity (HI) edge lights were decommissioned due to multiple cable breaks, multiple burned out and darkened lamps drawing excessive power consumption. The low intensity (LI) was retained in service and is non-compliant with the current edition of TP 312.

Emergency repair costs have increased substantially in the last few years due to maintenance problems. For each of the last 3 years, at least two unscheduled trips from qualified personnel in Rankin Inlet to Coral Harbour were necessary at considerable expenses and lengthy NOTAMs.

Given the source of the problem, the age some of the system, and the extent of repair work required, restoration of the identified equipment is essential to maintain existing certification level.

4. Recommendation:

- **Scope recommended:**

Upon review of the proposal by TC Technical Services, we recommend ACAP funding for all aspects of the project. Therefore, the scope recommended is as follows:

- Supply & install Field Electrical Centre (FEC) shelter with associated wire, cables, and connectors;
- Supply and install new airfield lighting controls and regulators;
- Remove VASIS, and build PAPI pads and reactivate existing PAPIs;
- Reconnect High Intensity Lighting and replace Omni-directional approach lighting (ODAL) for Runway 34T;
- Remove, replace Runway-end identification lights (REILs) for Runway 16T;
- Remove and replace one of two Illuminated Wind Direction Indicator (IWDI);
- Remove and replace pulpits, underground cable duct and edge lights to runway, taxiway, and apron.

- **Justification:**

The primary justification for rehabilitation of the electrical controls, regulators and cabling on the airfield is that most components are outdated and obsolete. The system is expensive to operate, and creates an unnecessary safety hazards. Few people are qualified to do repairs on this type of system. The existing field electrical centre (FEC) is unheated and not insulated.

The condition report and the most recent repair history for all items indicate that the equipment is unreliable, and beyond repair. The current condition of the system, the hours of darkness during the long winter months, and the remoteness of the airport and the community are all key factors in supporting this project. In addition, an unreliable lighting system poses a safety hazard.

TC Technical Services commented that the replacement of FEC, relays, connectors and regulators is warranted, and agreed with the prices and quantities proposed in the application. ACAP should fund the replacement of only one of two IWDIs, as only one is required to meet the regulations.

TC Technical Services also reviewed the design drawings, the specifications and the proposed tender documents, and confirmed that not only is the rational for the project well substantiated, but the projects as proposed are acceptable with minor changes to the specifications.

- **Urgency of project:**

The age of the system makes it most unreliable for a community that is subject to extreme weather conditions and long periods of darkness. Continuing deterioration is cause for increased safety hazards in this isolated community.

5. Summary of costs:

No.	Description	Cost
1	Field Electrical Centre:	$ 30,000.00
2	Runway-end Identification Lights, x4:	28,400.00
3	One Illuminated Wind Direction Indicator:	4,500.00
4	Underground cable duct:	3,500.00
5	Omni-directional Approach Lights:	70,000.00
6	Runway markers	1,600.00
7	Freight, wire, connectors, and spares:	52,000.00
8	Labour Cost, including transportation, room and board:	140,000.00
9	Tender, Management and Engineering Costs:	135,000.00
10	Contingency:	35,000.00
11	**Total estimated project cost:**	**$ 500,000.00**

- **ACAP cost-sharing:**

Nil.

- **Project phasing and cashflow requirements:**

Nunavut Airports Division (NAD) plans on carrying the project over two years. During the coming construction season, NAD will issue tender, mobilize the new FEC and the equipment, and initiate some of the work. Completion and

commissioning of the new system will take place in year two of the project. NAD will front all costs and submit one claim per year for refund of project costs.

6. Environmental review:

After reviewing the information provided, the Environmental review officer indicated that the proponent did not have an adequate plan to dispose of material removed from the site. The application provided enough information to make an environmental decision for CEAA approval, but must provide confirmation of review by the Nunavut Impact Review Board (NIRB) before the project can proceed. Environmental Affairs is willing to support the project should it be approved and funded once the applicant provides a disposal plan for the hazardous materials and a “release letter” from NIRB.

7. Performance Evaluation Data Sheet

Project Information

Airport:	Coral Harbour, NU
Project:	Airfield Lighting Replacement
Status:	Certified
ACAP Priority:	One (1)

Environment Friendly measures integrated:	Yes
Environmental Mitigation measures required / to be implemented:	Yes
Project is result of incident/accident:	No
Number of years the life of the asset has been extended by:	Fifteen (15)
Reduction of operating cost resulting from this project:	$15,000.00*

* Note: Repairs required to existing system has exceeded $8,000.00 in each of the past two years. It is difficult to estimate the reduction in operating cost as a result of using a system that will draw less power consumption. An estimate of $7,000.00 is used above, but this is a very conservative amount.