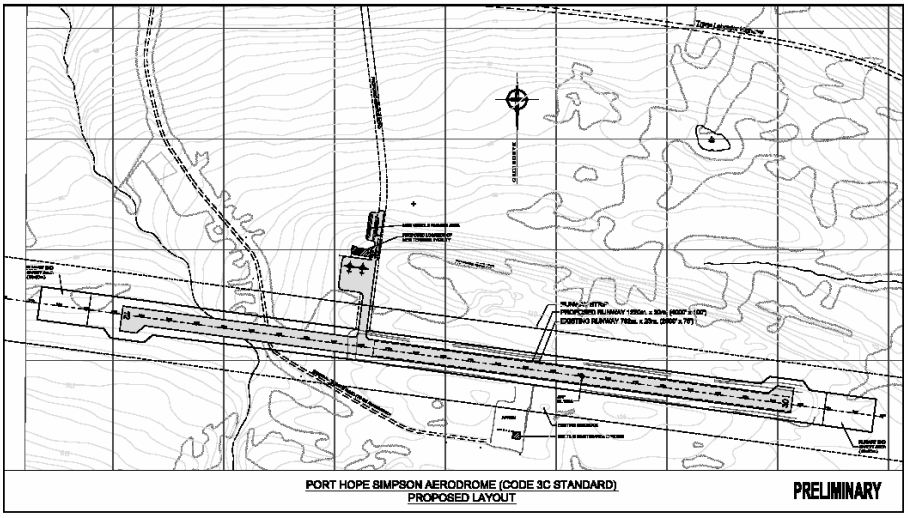
Southern Labrador Regional Airport
Pre-Design Study

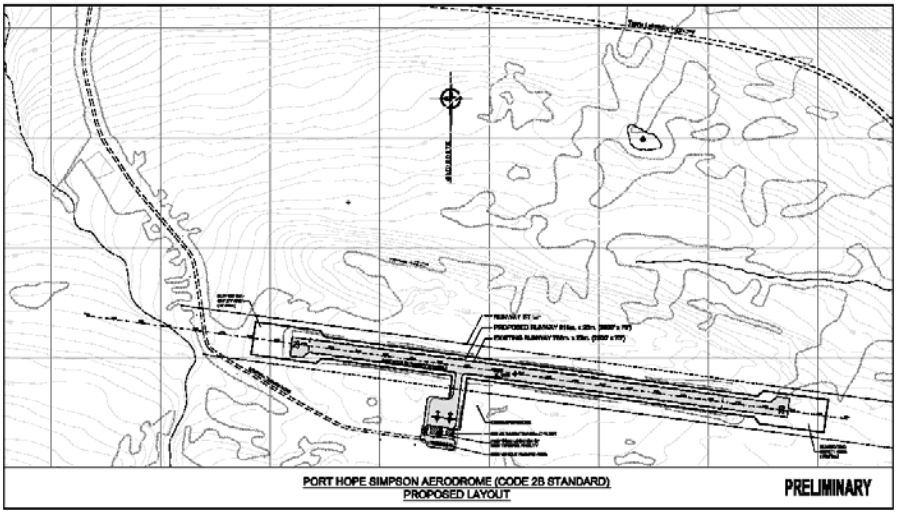
Port Hope Simpson, Labrador

Prepared for:

Department of Works, Services and Transportation
EDM Project # 20340



Proposed 1220 m x 30 m Runway



March 8, 2005

March 8, 2005

GOVERNMENT OF
NEWFOUNDLAND AND LABRADOR

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1.0 General

1.1 Background

The Government of Newfoundland & Labrador, through the Department of Transportation & Works, has given approval to EDM Consultants Limited to proceed with an assessment of infrastructure needs for a regional airport facility at Port Hope Simpson, Labrador. This contract also covers the Pre-Design, Design, Contract Administration and Resident Site Inspection Services during construction for the project, when the assessment stage is complete.

1.2 Terms of Reference

The Terms of Reference are summarized as follows:

? Review airport operations of all Southern Labrador airstrips.
  - Review demographics and prepare forecasts
  - Determine the future plans of airlines.

? Identify infrastructure requirements for a regional approach to air services in Southern Labrador.

? Prepare the Pre-Design, Design, Working Drawings and undertake Contract Administration for the required infrastructure.

1.3 Regional Airport Definition

Key items, which define an airport and its usability, are summarized as follows:

? Runway length, width, etc.

? Navigation and approach aids

? IFR approach minimums

These items are determined by the following three criteria: (i) design life of the facility; (ii) type of aircraft presently being used and those projected to use the facility; and (iii) the terrain within a four (4) kilometer radius of the aerodrome.

1.4 Existing Port Hope Simpson Aerodrome

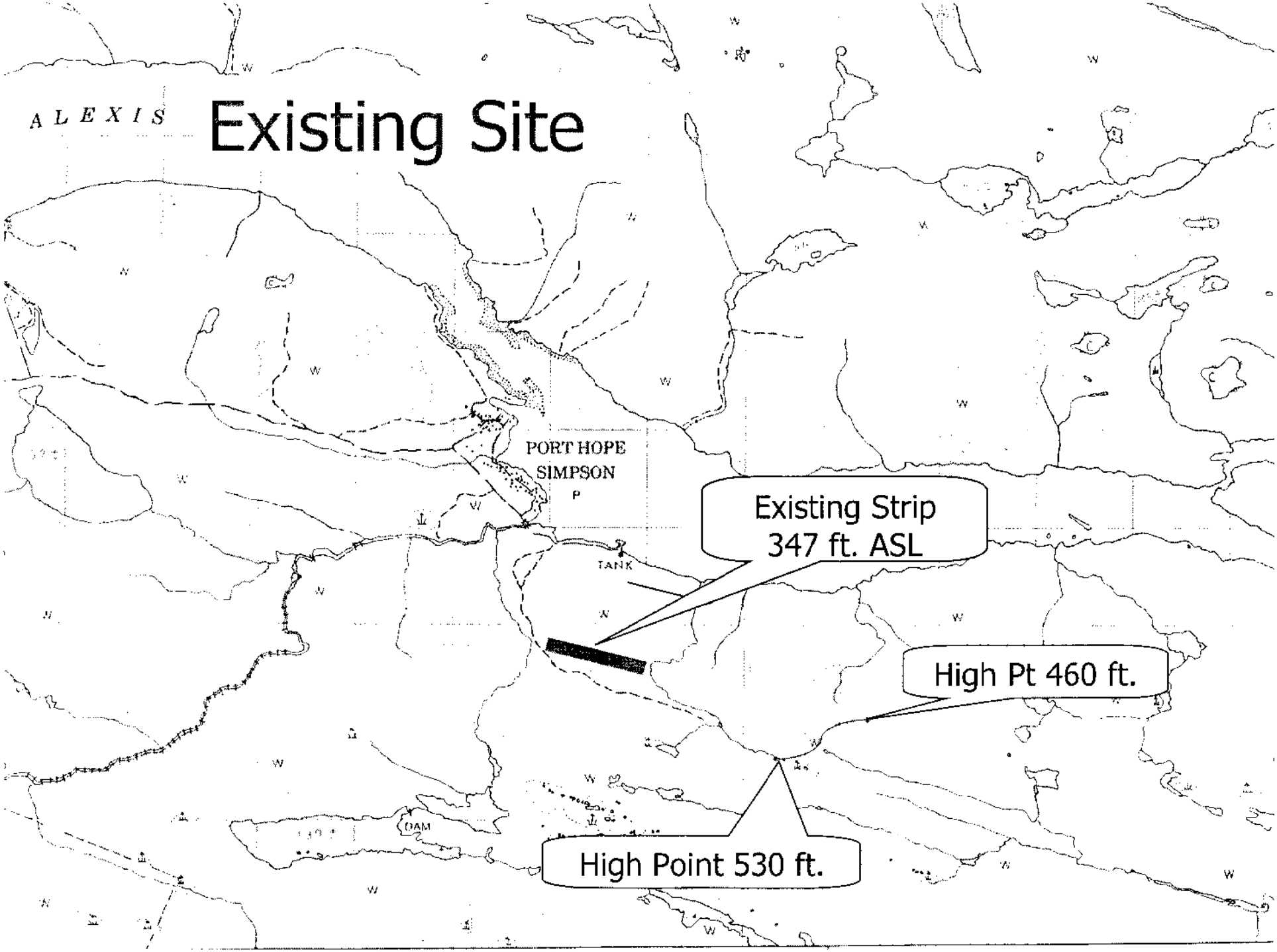
The existing facility consists of a 2,500 foot long x 75 foot wide gravel runway (RWY 12/30) built in the early 1980's. The runway is located 1.5 km south of the Town at an elevation of 347 feet above sea level. Other infrastructure at the site includes a taxiway, aircraft parking area, vehicle parking area and a maintenance shelter. The Aerodrome Reference Code would be 1A.

Lighting Systems include runway and taxiway lighting, aerodrome beacon, high intensity edge lights, omni directional approach lights, and wind direction indicator. Navigational aids consist of a non-directional beacon located approximately 1 km south of the field.

The following pages outline the location of the aerodrome and show the layout of the facilities.

For this project, the design evaluation and criteria will be based on Transport Canada Standards as defined in TP 312, "Aerodrome Standards and Recommended Practices". The manual contains Standards and Recommended Practices (Specifications) that prescribe the physical characteristics and obstacle limitation surfaces to be provided for aerodromes and certain facilities and technical services normally provided at an aerodrome.

The specifications for individual facilities, detailed in the manual, are interrelated by a reference code system and by the type of runway required.


Existing Site
ALEXIS
PORT HOPE
SIMPSON
TANK
DAM
Existing Strip
347 ft. ASL
High Pt 460 ft.
High Point 530 ft.

Trans Labrador Highway

GRID NORTH

EXISTING RUNWAY 762m. x 23m. (2500' x 75') GRAVEL SURFACE

TOP OF SLOPE & LIMIT OF FILL AREA

EXISTING SERVICE ROAD

UTILITY POLE

EXISTING APRON

ARP
EL.106.3

EXISTING RUNWAY LIGHTS

EXISTING WINDSOCK

EXISTING BARRIER

EXISTING MAINTENANCE SHELTER

EXISTING PARKING

PORT HOPE SIMPSON AERODROME
EXISTING LAYOUT

PRELIMINARY

Aerodrome Reference Code:

The code is composed of two elements which are related to the aircraft performance characteristics and dimensions. When applying TP 312, the aircraft which the aerodrome is intended to serve are first identified and then the two elements of the code.

TP 312 provide Table 1-1 Aerodrome Reference Code

Code element 1		**Code element 2**		
Code number	Aeroplane reference field length	Code letter	Wing span	Outer main gear wheel span [a]
	(1)		(2)	(3)
1	Less than 800 m	A	Up to but not including 15 m	Up to but not including 4.5 m
2	800 m up to but not including 1200 m	B	15 m up to but not including 24 m	4.5 m up to but not including 6 m
3	1200 m up to but not including 1800 m	C	24 m up to but not including 36 m	6 m up to but not including 9 m
4	1800 m and over	D	36 m up to but not including 52 m	9 m up to but not including 14 m
		E	52 m up to but not including 65 m	9 m up to but not including 14 m

[a]. Distance between the outside edges of the main gear wheels.

2.0 Review of Southern Labrador Airport Operations

2.1 Aerodromes

During the 1970's and 1980's, eight aerodromes were built to service Southern Labrador, namely;

- Cartwright
- Paradise River
- Black Tickle
- Charlottetown
- Williams Harbour
- Port Hope Simpson
- Fox Harbour (St. Lewis)
- Mary's Harbour

In 2001, a highway from Red Bay to Cartwright was completed, linking the above noted communities, except Black Tickle and William's Harbour, to the north shore of Quebec and the remainder of the island using a ferry service provided by the Newfoundland and Labrador Department of Transportation and Works from St. Barbe on the island portion of the province to Blanc Sablon on the north shore of Quebec for approximately eight (8) months of the year. This factor changed the whole dynamics of transportation requirements for the residents of Southern Labrador.

In February 2000, the Government of Newfoundland & Labrador established a committee to participate in the process of Community Consultations regarding future transportation needs in Coastal Labrador following the completion of the Trans-Labrador Highway between Red Bay and Cartwright. The results of this process were presented in a reported entitled "Southern Labrador Transportation Committee Report – March 2001".

The report recommended the following:

"19.That airstrips in Black Tickle and William's Harbour are to remain as status quo.

20. Where airports are to be closed, that tender proposals be called for the future use of those facilities.

22. The airport in Cartwright remain open and maintained as planned.

23. One airstrip be operated and maintained in the Norman's Bay to Lodge Bay vicinity. A majority of the committee members indicated Port Hope Simpson as a preferred site. Dissenting opinions amongst committee members indicated that every consideration be given to the airport in Charlottetown, Port Hope Simpson and Mary's Harbour.

24. The airport in the Norman's Bay to Lodge Bay vicinity be improved and maintained as deemed necessary."

2.2 Needs Assessment

The initial focus of our work was to meet with various stakeholders, local interest groups, and government agencies, etc. Appendix "A" contains a list of stakeholders that were consulted.

The Stakeholders can be placed into two groups, namely:

- Those who represent the people.
- Those who represent the airlines.

In April 2002 the Minister of Transportation and Works identified Port Hope Simpson as the future Regional Airport for southern Labrador.

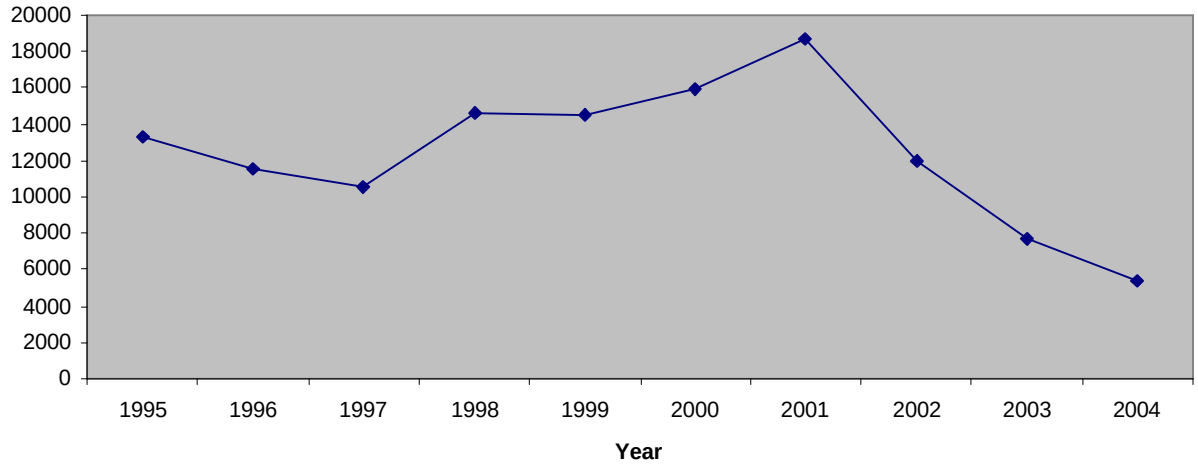
Generally speaking, all stakeholders foresee Cartwright and Port Hope Simpson as the two (2) key airports to service southern Labrador. There would also be the requirement to maintain the strips at Black Tickle and Williams Harbour due to the lack of a road connection. All stakeholders expressed the wish for a regional facility that would meet the long term needs of southern Labrador.

It should be noted that due to the change in the dynamics of transportation in southern Labrador, as a result of the completion of the highway, previous data of air passenger traffic is not suitable for forecasting future numbers.

In initial discussions in early 2003 with Air Labrador, they had foreseen a scheduled air service operating from Goose Bay to Cartwright, Port Hope Simpson, St. Anthony and then continuing on to its Quebec shore service, and return, using Beach 1900 aircraft. In recent discussions (October 2004) with Air Labrador, they have indicated that the number of passengers traveling has been declining steadily and now feel that the type of service previously envisioned is no longer considered viable. Also, there is the consideration of servicing Black Tickle / Williams Harbour, which essentially requires a Twin Otter type service.

Now that the transportation demographics have been more clearly defined (addition of 2003 and 2004 statistics, see Table 1.3), Air Labrador indicates they do not foresee enough traffic to warrant a Beach 1900 type service. The numbers have declined enough to indicate that to even maintain the viability of Twin Otter service would require the combining of Medivac, mail, and passenger services. Air Labrador has given the required and appropriate notice to the Canadian Transportation Agency effective April 13, 2005 to discontinue scheduled passenger and cargo/express service to the southern Labrador communities of Cartwright, Black Tickle, Charlottetown, Port Hope Simpson, William’s Harbour and Mary’s Harbour.

Table 1.3: Total Annual Passenger Movements
Southern Labrador 1995 to 2004
(Note: 2004 projected)



Our preliminary conclusions from this process are as follows:

? Both Cartwright and Port Hope Simpson should be developed as regional airport facilities.

? Black Tickle and Williams Harbour should remain open.

2.3 Proposed Facilities/Infrastructure

Based on the results of consultations and discussions with various stakeholders, as outlined in the previous section, new and improved aerodrome facilities in the Port Hope Simpson area are essential. Due to the lack of clarity in the future of air services in southern Labrador, two options for the proposed new facilities have been prepared for comparative purposes, as follows:

1. A facility suitable for the operation of a Twin Otter type service and the Health Board's Medivac aircraft. Based on Transport Canada Standards (TP 312) this would require a Code 2B Aerodrome.

2. A facility suitable for the operation of a Beach 1900, De Havilland Dash 8 or similar aircraft. Based on Transport Canada Standards (TP 312) this would require a Code 3C Aerodrome.

Discussion of the two options, and the pros and cons of each, is outlined in the sections that follow.

3.0 Evaluation of Existing Port Hope Simpson Aerodrome Site

3.1 Summary of Evaluation

Several site visits were made to the existing site during August and September 2003. Subsequently, a detailed analysis of the site was undertaken from two perspectives; namely, constructability and usability.

The results of that evaluation are summarized in 3.1.1 and 3.1.2, which follows.

3.1.1 Constructability

The existing site presents a number of opportunities and constraints, namely;

A. Opportunities

The existing site is within 2 km of the existing community and within 1 km of the Trans Labrador Highway.

Existing infrastructure includes:

- 760 m (2,500') x 23 m (75') runway
- non-directional beacon
- maintenance shelter
- access road
- runway lighting system

B. Constraints

On the Northwest end, the terrain drops significantly resulting in a large quantity of backfill material being required to accommodate the lengthening of the runway. In addition, the stream supplying the community's water supply is located near the end of the present runway.

3.1.2 Usability

To assess the usability of a new facility at the present site, EDM Consultants Limited commissioned Approach and Navigation Systems Inc. of Moncton, New Brunswick to prepare an assessment of the site and develop a likely scenario for Navigational Aids and Certifiable IFR Approaches for the proposed facility. Their report is contained in Appendix "B". The conclusion presented was as follows:

> *"The current runway at Port Hope Simpson was assessed for operational effectiveness. Terrain obstacles in the vicinity are troublesome, resulting in relatively high approach limits and circling restrictions. The terrain conditions also prevent certification to a status better than non-instrument. Should an alternative site be available where the effects of terrain obstacles are lessened, accessibility would be considerably improved. Installation of good navigational aids and an enhanced lighting configuration, as recommended, would result in a very effective airport, available at most times in day/night IFR conditions."*

3.2 Conclusion

Due to the lack of detailed weather data, it is not possible to determine the usability factor of the existing site, but due to the high approach limits we can predict, with a fair degree of certainty, that it will be below 90%. This issue was further discussed at a meeting in St. John's with Department of Transportation & Works and Airline Representatives. Letters (see Appendix C) from Air Labrador, Provincial Airlines and the Grenfell Mission outline their concerns about the existing site.

Therefore, based upon the scope of this engineering study, it has been concluded that there are two primary options that should be considered, namely,

Trans Labrador Highway

GRID NORTH

EXISTING TREE LINE

RUNWAY END
SAFETY AREA
(60x70m.)

RUNWAY STRIP

PROPOSED RUNWAY 915m. x 23m. (3000' x 75')

EXISTING RUNWAY 762m. x 23m. (2500' x 75')

12

NEW CODE 2B RUNWAY (915x23m.)

ARP
EL.106.3

30

EXISTING SERVICE ROAD

EXISTING WINDSOCK

EXISTING MAINTENANCE SHELTER

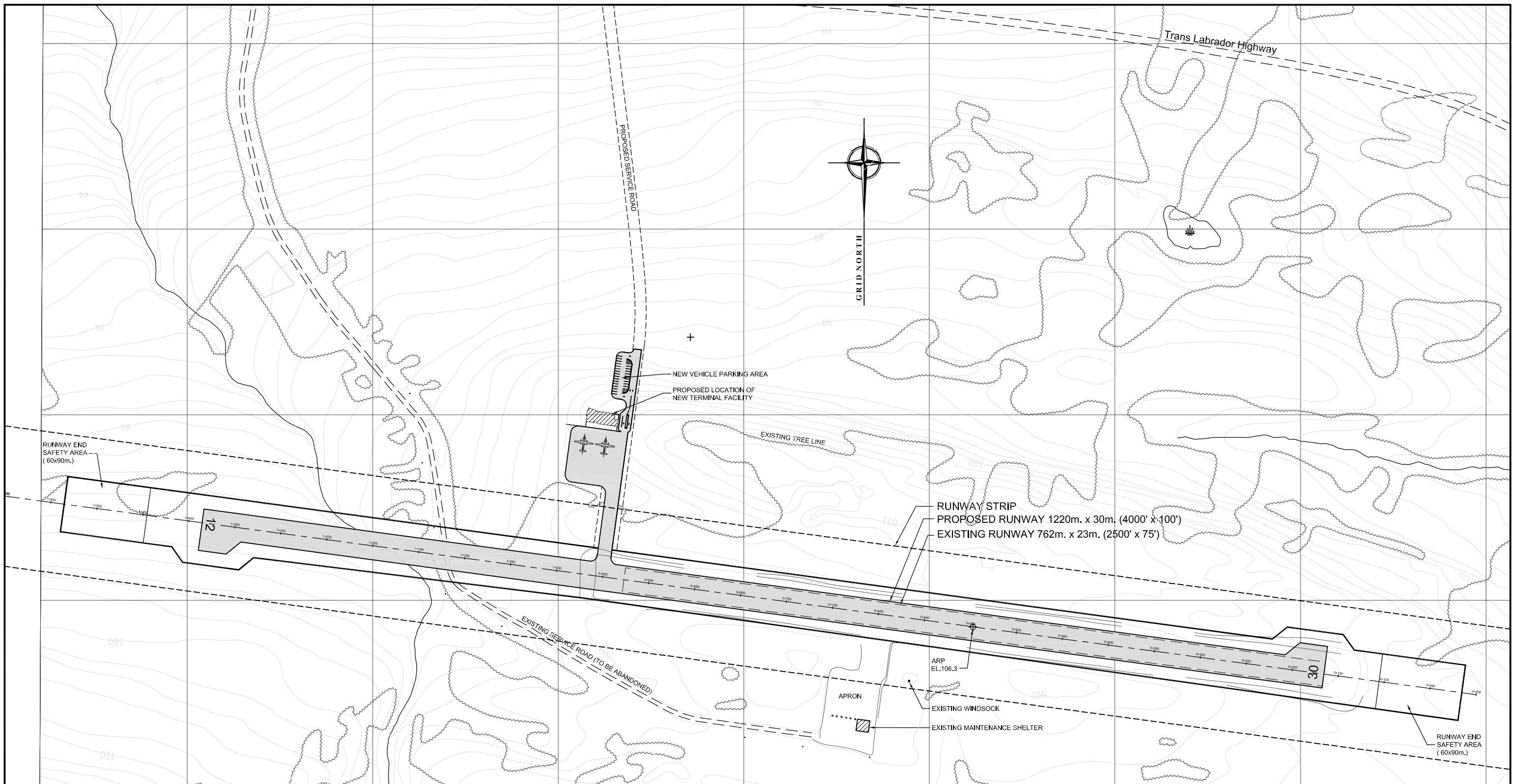
PROPOSED LOCATION OF
NEW TERMINAL FACILITY

NEW VEHICLE PARKING AREA

RUNWAY END
SAFETY AREA
(60x70m.)

PORT HOPE SIMPSON AERODROME (CODE 2B STANDARD)
PROPOSED LAYOUT

PRELIMINARY



PORT HOPE SIMPSON AERODROME (CODE 3C STANDARD)
PROPOSED LAYOUT

PRELIMINARY

1. **Code 2B Aerodrome**
   - Runway 915 m (3,000 feet) x 23 m (75 feet)
   - Surface – Asphalt
   - New Terminal Facility (35 persons)

This Option would involve improvements to the existing site and would generally be suitable for Twin Otter type services and use of the present Medivac Aircraft types.

2. **Code 3C Aerodrome**
   - Runway 1,220 m (4,000 feet) x 30 m (100 feet)
   - Surface – Asphalt
   - New Terminal Facility (50 persons)

This facility would be suitable for the use of Beach 1900, the Gulf Stream Turbo Commander, and De Havilland Dash 8 type aircraft and would accommodate the De Havilland 215 Water Bomber.

Due to constraints with the present site as outlined in the previous sections, it is recommended that two alternatives be considered if the second option is selected, namely:

1. Improvements to the existing site;
2. Construction of the facility on a new site

In terms of a new site, it is believed that there are at least two (2) potential considerations: the first is northwest of the present site and the second is southwest of the present site, towards Mary's Harbour. Potentially, a new site may offer a much improved usability factor and construction cost similar to the cost of upgrading the present site.

To prepare a preliminary comparative analysis, we recommend the preparation of a "Desk Study" of the two (2) sites estimated to cost between $40,000 and $50,000.

4.0 Engineering Work Completed to Date

4.1 General

To fully evaluate the present site, detailed site topography surveys were undertaken and preliminary design completed for two (2) runway options; a Code 3C (4,000' x 100') runway, and a Code 2B (3,000' x 75') runway. The preliminary design drawings are presented under separate cover.

4.2 Design Criteria

The Design Criteria used is presented in the following table. All references are to Transport Canada's "Aerodrome Standards and Recommended Practices", referenced as TP312, hereinafter.

Parameter	3C	2B
Runway Length	<1,800	<1,200
Runway Width	30 m	23 m
Runway Shoulders	15 m	15 m
Longitudinal Slope	1%	2%
Sight Distance	3 to 3 m over ½ Length	2 to 2 m over ½ Length
Transverse Slopes	1.5%	2%
Runway Strips - length	45 m	23 m
End Safety Area	90 m for end of strip	2 x width
Strip	150 m wide	75 m wide
No Fix Object	Within 60 m	Within 45 m
Longitudinal Slope on Strip	1.75% Maximum	2% Maximum
Strength	75 m	40 m
Slope (side)	5%	5%

4.3 Discussion of Both Options

A comparative analysis of each option in terms of key design criteria has been prepared and is presented as follows:

1. Runway

	Code 2B	**Code 3C**
Length	3000 feet	4000 feet
Width	75 feet	100 feet
Surface	Asphalt	Asphalt

2. Terminal

Code 2B: Recommended a 230 m^2 Terminal building providing Basic Medivac, freight storage, cold storage, baggage handling, washroom facilities, and waiting area for 35 people.

Code 3C: Recommended a 420 m^2 Terminal building providing Medivac, freight storage, cold storage, baggage handling, weather and mechanical equipment rooms, airline desk, manager's office, washrooms, café/concessions, secure waiting area, and a main foyer designed to handle 50 persons.

Schematic Designs are presented under separate cover.

3. Design Aircraft Types (examples only)

Code 2B - De Havilland Twin Otters
Rockwell Turbo Commander
Beechcraft King Aircraft 350

Code 3C - De Havilland Dash 8
Beechcraft 1900

4. Other Considerations

A Twin Otter type scheduled service will have a reasonable usability factor at the present location. However, if the Code 3C option was considered, higher performance (Dash 8 Type) Aircraft have greater approach restrictions, resulting in a lower usability factor. Therefore, we recommend alternate site be investigated if this option is selected.

4.4 Overall Project Cost

Based on costing criteria, as outlined in Appendix "D", the first budget assessment (Class C) is summarized as follows:

	Code 2C	**Code 3B**
COST ESTIMATE	**ESTIMATED COST**	**ESTIMATED COST**
Access Road	$ 165,000	$ 200,000
Earthworks	458,400	5,436,920
Paving & Finishes	1,085,000	1,400,300
Terminal Facilities	414,000	756,000
Navigational Aids & Lighting	575,000	1,040,000
Power Supply		100,000
Contingencies	714,811	2,367,303
TOTAL	$ 3,412,211	$ 11,300,523

5.0 Conclusions and Recommendations

Due to the evolving nature of transportation systems (air, sea, and road) in Labrador, it is difficult to predict the long-term (i.e. 15+ years) needs of southern Labrador at this time. The completion of the highway into Goose Bay, Air Labrador's announcement to discontinue service to southern Labrador on April 13, 2005, along with possible changes in Health Care Delivery will also have significant impacts on the requirements for transportation infrastructure. Therefore, based on these factors, plus the uncertainty surrounding the airline services in southern Labrador, the following recommendations are made:

1. The status quo, without upgrading, be maintained.

2. If some of the uncertainty surrounding the airline services in southern Labrador are clarified, then consideration should be given to upgrading the present aerodrome at Port Hope Simpson be upgraded from a Code 1A Standard to a Code 2B Standard, with an asphaltic concrete runway, estimated cost of $3.4 million.

3. Cartwright Aerodrome be upgraded to a similar standard.

4. Consideration be given, as far as possible, to combining scheduled passenger service together with Medivac services, to facilitate a viable Twin Otter service. This service could then include Black Tickle and Williams Harbour.

5. In the future, should the need arise to have Beech 1900, Dash 8 or similar aircraft service southern Labrador, then Port Hope Simpson would require a full regional airport facility at a projected cost of $11.3 million (2003 dollars). If and when this option is considered, an alternate site, near Port Hope Simpson, should be investigated.

Appendix "A"
List of Consulted Stakeholders

Appendix "A"

List of Consulted Stakeholders

The following stakeholders were consulted during the preparation of this report:

1. Mr. George J. Furey
   Director of Flight Operations
   Provincial Airlines Limited
   P.O. Box 29030, Hangar No. 2
   St. John's, Newfoundland
   A1A 5B5

2. Mr. Don Sampson
   Chairman
   Labrador White Bear Development Association
   P.O. Box 150
   Charlottetown, Labrador
   A0K 5Y0

3. Mr. Brent Acreman
   Chief Pilot
   Labrador Airways Limited
   P.O. Box 310, Station A
   Happy Valley-Goose Bay, Labrador
   A0P 1S0

4. Ms. Ida Powell
   Mayor
   Town of Charlottetown
   P.O. Box 151
   Charlottetown, Labrador
   A0K 5Y0

5. Mr. Ben Farrell
   Director of Air Operations/ Chief Pilot
   Grenfell Regional Health Services
   St. Anthony, Newfoundland
   A0K 4S0

6. Ms. Margaret Burden
   Mayor
   Town of Port Hope Simpson
   P.O. Box 130
   Port Hope Simpson, Labrador
   A0K 4E0

7. Mr. Tony Powell
   President
   Labrador Travel Air
   Charlottetown, Labrador
   A0K 5Y0

8. Town Council Members
   Town of Port Hope Simpson
   P.O. Box 130
   Port Hope Simpson, Labrador
   A0K 4E0

9. Mr. Reginald Dingley
   Manager, Airport Transfers and Funded Programs
   Transport Canada
   95 Foundry Street, 6th Floor
   Moncton, New Brunswick
   E1C 5H7

10. **Ms. Yvonne Jones**
    Member of the House of Assembly
    Cartwright-L'Anse au Clair
    P.O. Box 8700, Confederation Building
    St. John's, Newfoundland
    A1B 4J6

11. Ms. Nina Pye
    Mayor
    Town of Mary's Harbour
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    Mary's Harbour, Labrador
    A0K 3P0

12. Mr. Calvin Ash
    Director of Commercial Operations
    Provincial Airlines Limited
    P.O. Box 29030, Hangar No. 2
    St. John's, Newfoundland
    A1A 5B5

13. Mr. Gary Mosher
    Mayor
    Town of St. Lewis
    P.O. Box 106
    St. Lewis, Labrador
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14. Mr. Ward Pike
    VP Marketing and Sales
    Labrador Airways Limited
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15. Mr. Roger Pike
    President & CEO
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    P.O. Box 13485, Station A
    St. John's, NL
    A0P 1S0

16. Mr. Greg Viscount
    Executive Vice-President
    Labrador Airways Limited
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17. Ms. Roxanne Notley
    Strategic Opportunities Officer
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    Development Corporation
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    Cartwright, Labrador
    A0K 1V0

Appendix "B"

Approach Navigation Systems Inc.
Report on Existing Site

PORT HOPE SIMPSON AERODROME

ASSESSMENT OF
RUNWAY CHARACTERISTICS AND NAVIGATIONAL AIDS

Submitted by:

APPROACH NAVIGATION SYSTEMS INC.
258 DIEPPE BLVD,
DIEPPE, N.B.
E1A 6P8
(506) 854-2967

Contact Persons:

Brian Ahern, President

Charles Cormier, Vice-President

September 9, 2003

INTRODUCTION

A significant upgrading of the aerodrome at Port Hope Simpson, Labrador, is being proposed. The current facility has a 2500 foot long runway, moderate lighting, and GPS approaches. The new facility will serve as the primary air access to the local region, and will likely feature a 4000 foot runway, improved lighting, an air terminal building, and enhanced air navigation systems. Preliminary discussions have acknowledged that the current site may not be an optimum location relative to aviation operations due to the close proximity with steep terrain in most directions. It was agreed that ANS Inc should assess a number of factors and make general recommendations on the following aspects:

- Airfield dimensions, including runway length and width, taxiway and apron size, and required graded strips alongside
- Obstacle Clearance Surfaces required for certification to at least Non-Precision Approach standards
- Navigational aids to support a day/night IFR operations
- Lighting and other visual aids

The primary aircraft intended for this aerodrome include the Twin Otter, Beech 1900, and Dash 8. Due to its size and wider wingspan, the Dash 8 will be the critical aircraft. Some relevant data on the Dash 8-100:

- Wingspan 25.9 m (85')
- Height of tail 7.5 m (24'7")
- Length 22.3 m (73')
- Max gross weight 36,300 lbs
- Minimum runway length required – Landing 3,250' Take-off 2,575'

The analysis and recommendations will respect the relevant regulatory documents, particularly:

- TP312, Aerodrome Standards and Recommended Practices
- TP308, the Criteria for the Development of Instrument Procedures
- Canadian Aviation Regulations (CAR's), and the Standards associated with it such as Obstruction Markings and Aerodrome Lighting
- TP 13692 Aerodrome safety Circular 2001-013

AIRFIELD CHARACTERISTICS

Reference Codes. To determine the minimum dimensions and characteristics of the operating surfaces of the aerodrome, the reference codes pertaining to the critical aircraft should be identified in TP312 table 1-1. The 4,000 foot field length falls within the Code Number 3, for lengths 1200-1800 metres. Code Letter C applies for the wingspan between 24-36 metres. The required airfield will be therefore **Code 3C.**

Runway Width. Concerning width, the table in TP312 paragraph 3.1.1.9 recommends that the minimum width of a Code 3C runway is 30 metres, which is 100 feet. This is fully endorsed as the minimum in a single runway operation in the north, in respect of surface icing and crosswind hazards.

Longitudinal Slope. TP312 specifies maximum longitudinal slope of a Code 3 runway at 1.5 per cent. The current runway appears to be crowned, where the central area is at 347 feet ASL and the thresholds both dropping to 335 feet ASL. This equates to a 1.0 per cent slope.

Transverse Slope. The runway transverse slope should not exceed 1.5 per cent nor be less than 1 per cent, and of symmetrical camber, to promote rapid water drainage.

Turnaround Area. A space is recommended at each end of the runway to facilitate a reversal of aircraft heading during taxi to position for takeoff. Expanding the threshold area to 200 feet width for a length of 200 feet would accommodate efficient turnaround, and minimum strain on the aircraft and runway surface. This additional 100 foot wide maneuvering area would be included within the shoulder and strip area.

Runway Shoulders. While runway shoulders are only recommended for code D runways, they are encouraged for this runway to minimize the hazard to aircraft running off the runway. They must have sufficient bearing strength to support the Dash 8 at 36,300 lbs max weight, and treated such that stones and debris are prevented from being ingested in engines or striking the aircraft. The shoulders should be sloped neutral or downward, to a maximum of 2.5 per cent. Part 3.1.5 of TP312 recommends graded shoulders that extend symmetrically, are flush with the runway edge, and result in an overall total width of runway and shoulders of 60 metres. Therefore, shoulders of 15 metres should extend each side of the 30 metre runway.

Runway Strip. The runway strip is a defined area including the runway, where certain conditions exist, intended to reduce risk to aircraft that may overfly it or overrun the runway. No obstacles are permitted within the strip other than visual aids required for navigation. The length of the standard strip is 60 metres before and after both thresholds. The width for a Code 3 non-precision instrument runway is 75 metres each side of the centerline. All around, 45 metres from centerline and ends should be graded. The slope of the grade cannot exceed 1.75 per cent longitudinally and no more than 2.5 per cent transversally.

Runway End Safety Area. A safety area should also be provided at both runway ends but is not mandatory. It should extend at least 90 metres beyond the 60 metre strip past the thresholds, and should be at least twice the runway width. It is cleared and graded, with maximum slope of 5 per cent.

Taxiway. The taxiway to serve a Code C aircraft must be at least 15 metres wide. The graded shoulder should extend 5 metres beyond the sides, which also accommodates the strip requirements, and should not be sloped more than 2.5 per cent.

Apron. An apron is recommended to allow parking of aircraft away from the runway while it is still in use. To meet the transitional slope requirements, it should be displaced from the runway such that the tail of the Dash-8 when parked is at least 420 feet from the runway centerline. A minimum apron size of 100 x 200 feet is recommended, and an additional 100 feet would be useful to park another itinerant aircraft, resulting in a proposed apron size of 200 x 200 feet. Buildings should not be closer than 15 metres from the apron edge.

Dimensions in summary are recommended as:

- Runway – 4000’ x 100’ (1220 m x 30 m)
- Turnaround area – extra 100’ width for 200’ length at each end
- Shoulders – 15 m each side of runway
- Runway Strips – beyond shoulders laterally 60 m, of which 30 m graded; beyond runway ends 60 m, of which 45 m graded
- Taxiway to apron – 15 m wide with 5 m shoulder, 370 feet long
- Apron – 200’ x 200’

OBSTACLE CLEARANCE SURFACES

If the new airport is to support scheduled air carrier service it must be certified, and must meet the specifications for obstacle clearances defined in Chapter 4 of TP312. There can be no penetrations of the Obstacle Limitation Surfaces in normal circumstances, unless mitigating action or procedures are adopted. The current site is certified, appearing to be to non-instrument status, which still permits approaches to no lower than 500 feet above touchdown. It will be reviewed relative to the requirements of a Code 3C runway, supporting non-precision instrument status, which will permit approaches to as low as 250 feet above touchdown where possible.

Outer Surface. This surface is a 4000 m radius around the centre of the runway, at a height of 45 m or 150 feet above the aerodrome elevation. It protects normal in-close maneuvering in marginal weather and night conditions. There are numerous penetrations around the existing location: 40-50 m just south, 100 m well south, and 60 m northwest.

Take-off/Approach Surface. This surface starts at the edge of the runway end strip, 60 m from the threshold. It diverges at 15% and rises at a slope of 2.5% or 1:40 ratio, for a distance of at least 3000 m. There are penetrations of the slopes in both directions. Terrain penetrates 57' at a position 4000' east of the runway, and there is a 13' penetration at 16,400 feet west of the runway. These penetrations would prevent certification to instrument status.

NAVIGATIONAL AIDS

Background on Instrument Procedures. The design of IAP's is governed by stringent criteria outlined in TP308 and elsewhere. The IAP gives the pilot navigational guidance to align his aircraft with the runway and to descend to lower safe altitude as he gets progressively closer. Depending on the phase of approach and accuracy of the navaids, a **Required Obstacle Clearance (ROC)** is specified which must be added to the height of the highest obstacle in a defined area below the flight path. Each segment of a procedure is limited by rules pertaining to alignment and descent gradients, to ensure aircraft in close proximity to the ground are not required to turn or descend too aggressively.

The most critical aspect which dictates the effectiveness of an approach is the **final approach** phase. An ROC is specified according to the accuracy of the approach aid, and is applied against the highest obstacle beneath the final segment to determine the minimum approach height, often called the minimums or limits. The higher the limits, the more difficult it may be for the pilot to see the runway to conduct a normal landing. The more accurate the approach aid, the lower may be the limits.

The next critical aspect is the **missed approach** phase, which is the area beyond the runway that must be assessed to ensure safe climb and navigation should an approach to landing be unsuccessful. This segment applies a shallow climb gradient in the event of loss of a critical engine during the overshoot.

Most approaches also provide the pilot with an option for a **circling approach**. Rather than landing straight ahead, the pilot may maneuver in close proximity to the runway, at a specified altitude, until able to land at the opposite end of the runway. Occasionally, an IAP may be circling only, because terrain or other factors preclude an approach that is aligned with either end of the runway. A special feature of circling is that maneuvering may be prohibited on one side of the runway, which would then eliminate a troublesome obstacle located there from consideration.

Using these assumptions, the approach options the existing site are summarized as follows:

ILS. The most accurate, but most expensive approach aid, is ILS. Examination of the final approach segments indicates significant terrain penetrations within two miles of the runway at both ends. ILS is not feasible.

VOR. Moderately priced, VOR is normally used primarily as an enroute aid, but provides a relatively narrow final approach for IAP's. Nonetheless, high terrain would result in high limits to either runway for a straight-in approach. For cost reasons, it is not recommended.

NDB. Low-priced, NBD is common in the north. It is used for enroute navigation, and can be a reasonable approach aid to one runway if placed 3-4 miles aligned with it. To serve both ends, it should be located on the airfield. Furthermore, to achieve a reasonable approach limit, a DME should be co-located with it, which enhances the accuracy considerably. DME allows for shorter final segments, and for missed approach to commence prior to the threshold, which can be very advantageous in lowering limits.

GPS. GPS approaches offers low cost and flexibility, but many aircraft are not yet equipped nor are crews trained to conduct approaches as yet.

Recommendation. The existing site at Port Hope Simpson is served by two GPS approaches only. The procedure from the west has moderately high limits at 716 feet above touchdown, due to high terrain in close proximity. The approach from the east at 536 feet above touchdown is better, but still affected by terrain. The assessment of the existing site confirms that circling south of the field should be prohibited because of higher terrain.

The practical navigational configuration at Port Hope Simpson would be an NDB/DME combination located at an optimum position on the field, providing a conventional approach option. GPS procedures should also continue as an option for those aircraft so equipped. Circling south of the runway is not effective. Relocating the runway to a more favourable site away from precipitous terrain would significantly lower approach limits and improve accessibility to Port Hope Simpson.

AIRPORT LIGHTING

The runway lighting should be in conformity with TP312, and particularly, the Obstruction Markings and Aerodrome Lighting Standards associated with the Canadian Aviation Regulations (CAR's).

Lighting at an airport is very useful at night or in marginal weather conditions, to assist the pilot to locate the airport, to align his aircraft with the runway, to judge descent rate, and to safely taxi on the maneuvering surface after landing. This is particularly helpful in areas of featureless terrain, or regions where there are few lights from habitation or roadway systems to give visual perception. Most locations in Labrador are surrounded by precipitous terrain that may be quite featureless with snow cover or obscured in low overcast conditions. To mitigate these circumstances, a reasonable airfield lighting system is strongly recommended.

Light intensity. For lighting to be effective in degraded daytime visibility or at night it should be of adequate intensity and all components should be harmonized to suit the particular location. The intensity of the runway edge lighting should be compatible with the Approach Lighting System, and where a medium or high intensity lighting system is installed, controls should be incorporated to allow for the adjustment of light intensity to meet the prevailing conditions. These adjustments may be applied directly by the pilot by radio control or on verbal request to an operator on the ground.

PAPI System. A Precision Approach Path Indicator (PAPI) is a highly recommended system used to guide the pilot in determining a final descent angle to the optimum touchdown point.

Aerodrome Beacon. An aerodrome beacon, flashing a white light at 20-30 times per minute, must be operated at an aerodrome intended for use at night. However, it is highly recommended by the Regulator, if the aerodrome may be used by aircraft navigating during periods of reduced visibility or if it is difficult to locate the aerodrome from the air due to surrounding lights or terrain. It is normally located adjacent to the apron.

Runway Edge Lights. The standard in TP312 is that medium intensity runway edge lights shall be provided for a runway intended for use at night where the code number is 3 or 4. Periods of low visibility or lack of daytime contrast would justify high intensity edge lights to better serve the purpose in daytime. An additional recommendation would be that the system be wired in two loops, powering alternate edge lights from dual constant current regulators, which allows half the lights to operate should a loop be broken or a regulator fails. The small incremental increase in cost is warranted.

Approach Lighting System. A simple Approach Lighting System should be provided on a non-instrument runway where circling guidance is necessary, or where the code number is 3 or 4 and is intended for use at night. The exception is when the runway is used in conditions of good visibility and sufficient guidance is provided by other visual aids. The advantage of the simple Approach Lighting System is that the lights are omni-directional and are flashed in sequence, beginning with the outermost light and progressing toward the threshold. This function allows for easy target acquisition of the thresholds and provides the pilot with directional information upon the first visual contact. We recommend this system be installed at both ends of the runway to mitigate the effects of the terrain, the high approach limits, and to assist the pilot with alignment.

Threshold Lights. The standards require six threshold lights on each end of runways with a width less than 45 metres, when edge lights are installed. They should match the intensity, and be adjustable. These are particular useful on gravel runways and in areas of little vegetation, for the pilot to discern the threshold more easily.

Apron Floodlights. The apron should be illuminated by at least two floodlights, should aircraft be required to remain overnight, undergo repairs, or be loaded or unloaded in darkness. Mounting on fold-over towers would ease maintenance.

Taxiway Markers. To reduce costs of installation, it is suggested to install retro-reflective markers on the edge of the taxiway and apron, rather than edge lights. These low-cost markers are approved by Transport Canada, require no power, and are easily removed for snow clearing.

Aircraft Radio Controlled Airfield Lighting (ARCAL). An ARCAL system will allow the pilot to activate and adjust the intensity of the aerodrome lights remotely from his aircraft. This permits the facility to operate unmanned, and the lights to shine only when needed.

Wind Direction Indicators. Since the runway is longer than 1200 metres, a windsock is required at each end, approximately 60 metres outwards from the edge and 150 metres upwind of the end. Both should be illuminated to enhance visibility in marginal weather and at night.

The recommended minimum lighting requirements are:

- Aerodrome Beacon
- High Intensity Edge Lights
- Omni Directional Approach Lights (High Intensity)
- High Intensity Threshold Lights
- Apron Floodlights
- Retro-Reflective Taxiway Markers
- Aircraft Radio Controlled Airport Lighting
- Illuminated Wind Direction Indicators

SUMMARY

The current runway at Port Hope Simpson was assessed for operational effectiveness. Terrain obstacles in the vicinity are troublesome, resulting in relatively high approach limits and circling restrictions. The terrain conditions also prevent certification to a status better than non-instrument. Should an alternative site be available where the effects of terrain obstacles are lessened, accessibility would be considerably improved. Installation of good navigational aids and an enhanced lighting configuration, as recommended, would result in a very effective airport, available at most times in day/night IFR conditions.

Appendix "C"

Letters From Concerned Parties

Labrador Airways Ltd.
P.O. Box 310, Station A
Happy Valley/Goose Bay, Labrador
A0P 1S0

Telephone 709•896•6720
Facsimile 709•896•8905

September 16, 2003

Mr. Brad Chaulk
E.D.M. Consultants

Dear Mr. Chaulk:

Air Labrador would like to thank you for the opportunity to present its views and concerns on the proposed regional airport at Port Simpson, Labrador. As you are aware Air Labrador has been providing service to Newfoundland and Labrador for many years and we pride ourselves on doing a very good job and our reputation in this area speaks for itself.

Air Labrador understands and agrees with the reasoning behind choosing the existing site at Port Hope Simpson for the construction of a regional airport. However, having said that we also feel that there are a lot of other factors than just a central location that have to be considered.

At present, Air Labrador provides a very reliable service to all the communities on the Labrador coast including Port Hope Simpson with our DHC-6 (Twin Otter) aircraft. Once this regional airport is up and running and the remainder of the strips on the southern coast of Labrador are decommissioned Air Labrador would without a doubt still want to provide just as reliable a service, but instead of a Twin Otter it would most likely be a Beech 1900

As it stands right now Port Hope Simpson is serviced mostly VFR (Visual Flight Rules) by the Twin Otter because this aircraft affords us the ability to come in underneath the bad weather by being able to fly lower and slower with great maneuverability. With an aircraft such as our Beech 1900 we would not have this option so on bad weather days, which there are a great deal of, we would have no choice but to do an Instrument Approach. Given the present location of the Port Hope Simpson airstrip and its height above sea level the minimums on the approach would have to be very high, thus decreasing the likely hood of executing a landing. I would think that if there were going

to be a regional airport to serve all the communities on the south coast of Labrador then it would need to be placed at the best possible location so as to insure maximum usability.

Air Labrador is not saying that the decision to use the existing site at Port Hope Simpson is a wrong decision, just that given all the experience that this company has flying in and out of Port Hope Simpson that maybe some consideration should probably be given to looking at an alternate site, still in the Port Hope Simpson area, but somewhere where the airport can be placed a little closer to sea level. This along with good approaches, i.e. GPS approaches, would most certainly increase the usability of the airport.

Once again thank you for the opportunity to share our opinion, and please feel free to contact us again if we can be of further assistance.

Regards,

Brent Acreman

Brent Acreman
Chief Pilot
Air Labrador

Grenfell
Regional Health Services

Charles S. Curtis Memorial Hospital John M. Gray Centre
St. Anthony, Newfoundland

Child, Youth and Family Services

September 10, 2003

Sept 15/03

Mr. Bradford Chaulk
EDM Consultants Limited
P.O. Box 3802, Viking Trail
Deer Lake, NL
A8A 3M1

Dear Mr. Chaulk,

On behalf of Grenfell Regional Health Services I would like to thank you for the opportunity of being able to attend the briefing on the proposed airport at Port Hope Simpson, Labrador.

As you are aware, Grenfell Regional Health Services provides health care to residents of southeastern Labrador. This care varies from routine patient care to emergency or Medevac care.

For over fifty years, we have been flying Medevacs and as you can imagine this service poses many challenges in remote areas such as the south east coast of Labrador. Things such as weather availability, daylight or darkness, runway location, runway conditions including length and wind direction play significant roles in determining if the patient can be flown out.

Grenfell Regional Health Services operates a Gulfstream Turbo Commander which is a pressurized twin-engine turbo-prop airplane. It falls in the category of a high performance aircraft and even though it is smaller in size than the twin-otter, it is 25 knots faster than the Dash 8 aircraft. Presently, we operate this aircraft in and out of Port Hope Simpson but due to the speed of the aircraft and the conditions of the existing runway, we are faced with many limitations. For example, we cannot land there at night, in strong crosswinds or when the surface is slippery.

These, along with many other factors, including landing limits and elevation have caused delays and even canceled flights where individuals' health and well being has been compromised. Medevac flights are not normally routine flights and as a result we cannot delay them due to weather or poor runway conditions which is possible with a scheduled airline service.

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I feel that the existing site is not an ideal location for an IFR airport. Its elevation and position in a valley with high hills all around does not promote a safe environment for aircraft to be operating. I also believe that there are other locations in this area which would be more suitable. It seems pointless to extend the present location and expect a better Medevac service and more dependable scheduled airlines when we know that there are many problems at the current site now.

This issue is very important to Grenfell Regional Health Services and we certainly appreciate being included in any discussions that will result in a new airport that is more accessible and safer to operate from.

Should you require any further information or wish to discuss this in any way, please feel free to contact me at any time.

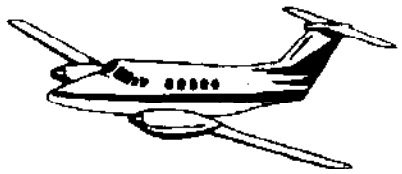
Yours sincerely,

Ben Farrell

Director of Air Operations/Chief Pilot
Grenfell Regional Health Services

BF/dp
Cc: Mr. John Budgell

LABRADOR TRAVEL AIR LIMITED
CHARLOTTETOWN, LABRADOR, CANADA A0K 5YO, (709) 949-0273. 0214



Charter and Specialty Air Services

Multi Engine and Single Engine Aircraft
Wheel, Ski and Float Operation

September 11, 2003

EDM Consultants Limited
P.O. Box 3802
Deer Lake, NL A8A 3M1

Sept 12/03.

Attention: Brad Chaulk, P. Eng.

Re: Port Hope Simpson Regional Airport

Dear Sir:

Thank you for inviting me to attend the meeting on September 9, 2003 at the Confederation Building in St. John's regarding the above referenced project.

As a resident of Southeast Labrador with 28 years flying experience, I am pleased to support the efforts to provide a regional facility for the Port Hope Simpson area. I would like to take this opportunity to comment on the challenges we face at the existing facility and present my thoughts as to how these challenges may be overcome with proper planning in the initial stages of this project.

The existing airport at Port Hope Simpson is a difficult site. The current runway is too short and narrow to support modern commuter and air ambulance aircraft. The elevation at 347 feet above sea level is too high, which causes it to be greatly affected by fog and low cloud on a regular basis.

The preferred approach when weather is poor is from the west. High terrain close-in to the west causes high approach limits and requires aggressive rates of descent, resulting in considerable turbulence. It is a difficult challenge to successfully land.

A preferred site would be closer to sea level in elevation, at 100 feet or lower, which would reduce detrimental effects of fog and cloud. A location further inland generally favours better weather. Separation from high terrain would also reduce the rate of descent and turbulence.

I am available anytime to comment further. I welcome this important improvement in air service to the Port Hope Simpson region. If you have any questions, please do not hesitate to contact me.

Yours truly,

Tony Powell
President

Provincial Airlines Limited

September 11, 2003

Sept 11/03.

Mr Bradford B.Chaulk, P Eng.
EDM Consultants Limited
P.O. Box 3802, Viking Trail
Deer Lake, NL A8A 3M1

Dear Mr. Chaulk;

Subject to a meeting which I attended on Tuesday, September 9. 2003 with respect to the planning of a Regional Airport for the Port Hope Simpson area. At this meeting chaired by yourself, with personnel from Government of Newfoundland and Labrador Department of Transportation, Airline Operators from the area and Mr. Charles Cormier VP of ANS Inc. Mr Cormier gave a very interesting and informative presentation with respect to assessment of runway characteristics and navigational aids.

Planning a Regional Airport for Port Hope Simpson, to serve an area now served by a number of smaller airports and the twin otter aircraft is a step that should be given serious consideration. This is phase 3 in air transportation for the area. First phase was the float equipped single engine aircraft, second were the smaller airports with the twin otter and other small twin engine aircraft, I might add that I personally was deeply involved in both. The phase now in the planning stage is a regional airport and with it comes larger and more sophisticated aircraft. An airport of this nature should be planned with serviceability and safety in mind. By serviceability I mean the percentage of time that the airport can be accessed by a scheduled carrier.

The existing site in my opinion is too restricted because of the terrain and the height above sea level. This airport if expanded and developed will have a high percentage of unserviceability. As per Mr. Cormier's report it will have restricted approaches and as per quite a number of pilots who use the airfield it is prone to weather restrictions. Other sites close to that area are more suited from a serviceability point of view and to my knowledge the cost for developing a new site compared to the old one is approximately the same. Because of the new highway a more suitable site should be explored in that area. The existing airport as with all coastal airports was built at that site for convenient access but this should not be a factor at this point in time for planning a regional airport. St. Anthony airport is a good example. It is a regional airport and serves the greater part of the Northern Peninsula, but the site was chosen for many reasons but especially for its accessability from an air operator point of view.

G. J. Furey
Director of Flight Operations

St. John's International Airport
P.O. Box 29030, Hangar #2, St. John's, NL Canada A1A 5B5
Tel: (709) 576-1800 Fax: (709) 576-1802

Halifax International Airport
P.O. Box 220, Enfield, NS, Canada B0N 1N0
Tel: (902) 873-3575 Fax: (902) 873-3751

Appendix "D"

Criteria for Project Costing

Proposed Regional Airport

Port Hope Simpson

Novemeber 19, 2004

Preliminary Estimate for Code 2B Standard

Item	Description	Unit	Unit Price	Code 2B Quantity	Code 2B Total	Code 3C Quantity	Code 3C Total
1	Grubbing	ha	$ 10,000	2	$ 20,000	10	$ 100,000
2	Excavation						
	1. O.M	m3	$ 5	10000	$ 50,000	10000	$ 50,000
	2. Rock	m3	$ 12	6700	$ 80,400	7600	$ 91,200
3	Quarry Rock	m3	$ 10	21000	$ 210,000	500000	$ 5,000,000
5	Access Road	km	$ 125,000	1	$ 125,000	1	$ 125,000
6	Power	km	$ 50,000	0	$ -	2	$ 100,000
7	Class B	t	$ 12	11500	$ 138,000	22560	$ 270,720
8	Class A	t	$ 14	35000	$ 490,000	30200	$ 422,800
9	Asphalt	t	$ 85	7000	$ 595,000	11500	$ 977,500
	Phase I Total				**$ 1,708,400**		**$ 7,137,220**
11	Terminal	m2	$ 1,800	230	$ 414,000	420	$ 756,000
12	Lighting	LS	$ 400,000	1	$ 400,000	1.6	$ 640,000
13	Nav. Aids	LS	$ 150,000	1	$ 150,000	2	$ 300,000
14	Electrical Upgrades	LS	$ 25,000	1	$ 25,000	4	$ 100,000
	Phase II Total				**$ 989,000**		**$ 1,796,000**
	Contingency 10%				$ 269,740		$ 893,322
	Construction Total				*$ 2,967,140*		*$ 9,826,542*
	Planning & Engineering	15%			*$ 445,071*		*$ 1,473,981*
Overall Project Total					***$ 3,412,211***		***$ 11,300,523***