

REPORT

SPECIALISTS FUNCTIONAL REVIEW

June 14-18, 1982

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Indian and Northern  
Affairs Canada

Affaires indiennes  
et du Nord Canada

Technical Services  
and Contracts

Services techniques  
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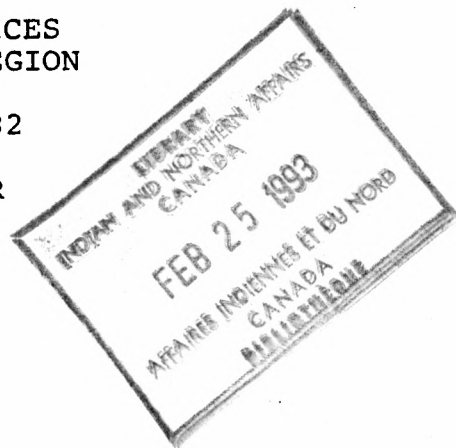
# REPORT      RAPPORT

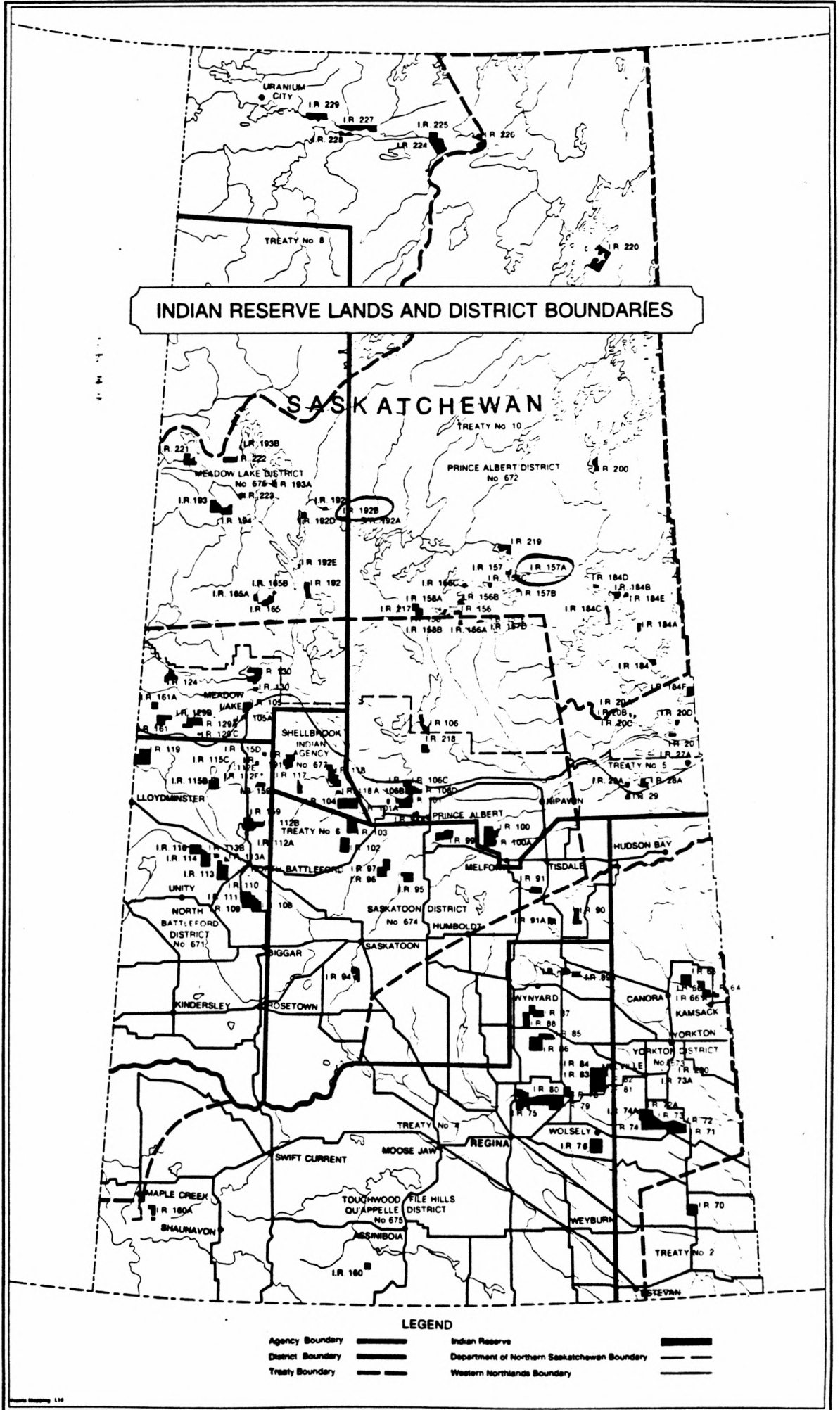
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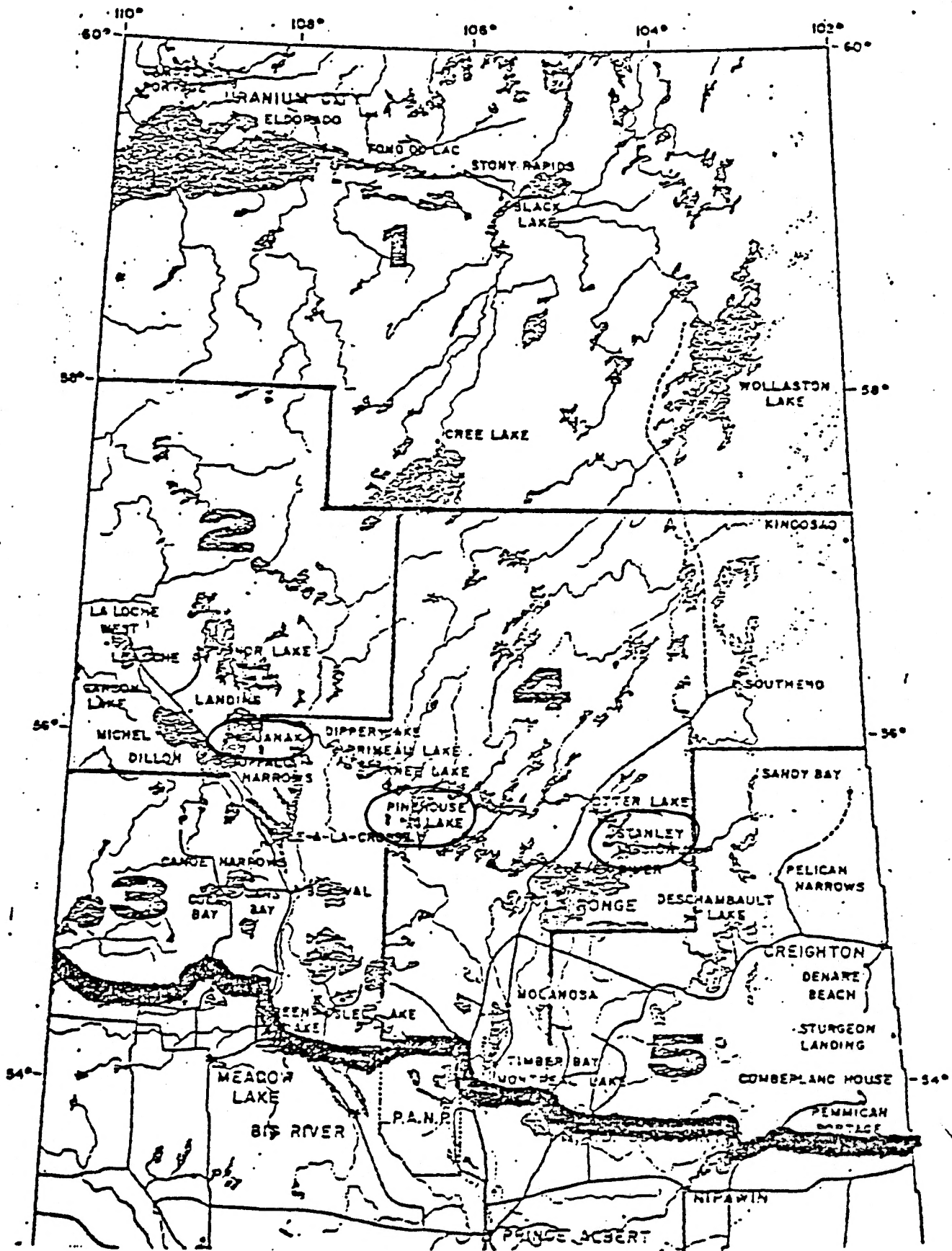
SPECIALISTS'S FUNCTIONAL REVIEW  
ELECTRICAL  
MUNICIPAL SERVICES  
SASKATCHEWAN REGION

JUNE 14-18, 1982

N.A. DINOVIETZER







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## 1.0 INTRODUCTION

### 1.1 Purpose

The purpose of this functional review was to provide Management with:

- a) an appraisal of electrical power operations;
- b) regional requirements in the development of policies, standards and guidelines;
- c) recommendations on necessary corrective action;
- d) determination of the effectiveness of DFM 10-7/67.5 and 47.6 and comments relating to DFM 10-7/69.2 and 69.3; and
- e) assessment of compliance with policies and standards.

### 1.2 Scope

The scope of the functional review included the examination of the activities, resource allocation and safety of DIAND personnel in the areas of electrical power generation, supply, distribution, transmission and the demand of electricity.

### 1.3 Procedure

The review was conducted at Saskatchewan Regional Office with site visits and meetings on June 14 to 18, 1982. The review covered the areas listed in Appendix "A" which was previously provided to the Region.

Patuanak I.R., Pinehouse and Stanley Mission I.R. communities were visited with W.C. McLachlan, Manager of North Saskatchewan Electric Ltd. on the 2nd and 3rd day of the functional review.

Interviews with A/Regional Director (E&A) and Regional personnel were carried out. An examination of various records, contracts, agreements, designs and maintenance procedures were also completed.

A de-briefing and review of the findings was carried out with A. Bemister, A/Director (E&A) on June 18, 1982.

### 1.4 Participants

#### Technical Services and Contracts Branch, Ottawa

N.A. Dinovitzer, Sr. Electrical Engineer, Municipal Services  
Division

#### Engineering and Architectural, Saskatchewan Region

G. Pitzel, Sr. Construction Advisor



2.0 FINDINGS AND RECOMMENDATIONS

An overview of the electrification situation in Saskatchewan Region is presented in Appendix "B". This overview provides greater insight in the electrical development of the region as well as the current rate structure and cost sharing of capital projects with the utility.

- 2.1 It was found that power supply and distribution system agreements with the Utility did not incorporate survey maps showing the right-of-way assigned to the Utility and location of the lines. Although the Utility would prefer having such maps identifying the right-of-way, it is willing to continue with sketches identifying the approximate location of the lines and which are attached with recorded agreements. The agreements do identify that the exact location on-site must be by mutual agreement between the Utility and Band Council.

This condition of lack of survey maps to complete the agreement with the Utility was reviewed by N.A. Dinovitzer with F.J. Singleton, Director, Lands, G. Swan, Senior Lands Advisory Officer, R.B. Simison, Sr. Lands Advisory Officer, and C.J. Provost, A/Deputy Registrar, all from

ACTION BY

I&I Program, Reserves & Trusts and it was determined that such surveys were not required.

No action required.

N/A

2.2 It was found that heat emanating from diesel generators and wasted to the outdoors could possibly be utilized to heat the water of a central water supply system to a community by one or two degrees. Such heat could raise the temperature of the water to the extent that the electrical heat trace would be required to operate only a fraction of the time presently required during the winter months. Such an approach could also reduce the electrical load on the generators during a period of the year when diesels are loaded to their full capacity.

IT IS RECOMMENDED THAT:

- a) an analysis be carried out to determine if it is economically viable to recover the waste heat from diesel generators to increase the temperature of water flowing in a community central water supply system to reduce the electrical consumption of the heat trace, and

HQ/Municipal  
Services  
Division

ACTION BY

b) based on the results of (a) above and if funds can be obtained from EMR, a pilot project be undertaken to demonstrate the feasibility of utilizing the waste heat from diesel generators to preheat community water supplies.

HQ/Municipal  
Services  
Division

2.3 It was found that the material known as "Zeolite" can be used to store heat and it can be charged with passive heat by blowing warm air onto it and can be discharged to active heat by blowing moist air onto it. Research on the utilization potential of this new material is currently under study at Carleton University, Ottawa, and prototype production is being carried out by a manufacturer in Winnipeg.

IT IS RECOMMENDED THAT a review of the potential application of capturing, storing, transporting and release of heat be carried out to find out the feasibility and cost effectiveness of utilizing waste heat from diesel generators in residences or schools.

HQ/Technological  
Development  
Division

c) Government Commercial

33¢/kWh consumed

Minimum bill \$10.00 per month.

These rates are set by the Province and are not negotiable because they are Province-wide. The agreements with the Utility deal mainly with land access rather than power consumption (see Appendix "D"). The supply of electricity to each consumer is done through a consumer agreement (card) between the user and the Utility and details of the supply to be provided are identified on this card (i.e. rates, amount of electricity etc.).

The 100A/240 volt service to all residential consumers connected to diesel supply is a thorn to the utility mainly because of its inability to inspect residences on reserves to ensure that 240 volt appliances are not used, and occasional differences in points of view with Band Councils or Consumers (see Appendix "F").

Although limited service (20A/240 volt) supply would be preferred by the utility, rigid enforcement is not contemplated while diesel generators still meet demand. From DIAND's point of view it is preferable to continue with the existing principle of higher rates beyond 315 kWh/month to encourage limiting electrical usage where the generators are operating under maximum capacity.

There are tentative plans to connect all communities electrified by diesel generation to provincial grid or small scale hydro systems. The implementation of this conversion depends on availability of funds. Although electrification (from grid) has a relatively high priority in

2.4 It was observed during the site visits that power generation, transmission and distribution facilities being built to NSEL standards, that these installations are safe, well supervised and maintained by NSEL personnel.

No action required.

N/A

2.5 It was found that DIAND, Saskatchewan Region has totally withdrawn from direct generation of electricity and is strictly a customer of the provincial utility companies. As such all electrical power facilities on I.R.S. in this region are owned and operated by the provincial power utility and there is no requirement to develop additional installation and operational standards or recommend corrective action.

No action required.

N/A

2.6 It was found that since all electrical power facilities on I.R.S. in this region are owned and operated by the provincial power utility that electrical supply and distribution facilities comply with the proposed DRM 10-7/69.8 "Power Standards and Codes".

No action required.

N/A

TERMS OF REFERENCE  
FUNCTIONAL REVIEW AND EVALUATION  
(TECHNICAL SPECIALIST'S REVIEW)  
POWER SUPPLY  
SASKATCHEWAN REGION/DIAND

SCOPE

- This functional review and evaluation will examine the activities, resource allocation and, safety of DIAND personnel in the areas of electrical power generation, supply, distribution, transmission and the demand of electricity.
- Sites to be inspected - Lac La Ronge, Pine House, Patuanak and Southend/Reindeer.
- Interviews with Regional Director (E&A) and Regional Technical personnel will be carried out. Three days of various interviews, and examination of records, contracts, design and maintenance procedures. Summary of findings to be discussed with the Regional Director (E&A) prior to completion of Functional Review.

Purpose

This functional review and evaluation will provide Management with:

- a) an appraisal of electrical power operations;
- b) Regional requirements in the development of Policies, Standards and Guidelines;
- c) recommendations on necessary corrective action;
- d) determination of the effectiveness of DRM 10-7/67.5 and 47.6 and comments relating to DRM 10-7/69.2 and 69.3; and
- e) assessment of compliance with policies and standards.

AREAS UNDER REVIEW

1. Regional responsibilities for electrical power supply as perceived by Regional personnel and operational implementation:

a) electrical and mechanical expertise available at regional, district and site level.

- Work contracted-out, quality control, level of service and level of maintenance.

b) electrical supply

i) generated on site

- owner and operator of facilities;

- stand-by power;

ii) grid supply

- agreements;

- criteria for negotiation;



- forms of agreements and role of E&A in developing conditions, etc.

c) areas of responsibility/electrical.

- housing, transmission, distribution, street lighting, generation, sub-station
- design, maintenance.

d) utilization of electricity.

- supply per house - 2 or 3 wire system;
- limited supply;
- full/unlimited supply;
- cost recovery by:

consumer, DIAND, fixed monthly cost, rate cost

- how is cost of electricity determined and how is it paid for?

- loads permitted/monitoring/enforcement;
- metering conditions at residence - permission to meter consumption;
- regional policy on: grid supply, diesel generator on site, security of fuel supply (quantity supply and theft);
- cost of fuel;
- power interruption records

Utility facilities - Diesel generation and grid supply

DIAND facilities - Diesel generation

Band facilities - Diesel generation

- agreement reviewed before payment of invoices;
- who pays for repairs and maintenance and who carries it out.

Cost

Frequency

Vandalism

- Forms of agreement

role of E&A in developing conditions, negotiation etc.  
for utility power agreements.

2. Capital program - long term.

- how determined.
- recent projects.

3. Devolution

- training to bands.

4. Maintenance - replacement policy.

- level;
- recapitalization vs design life;
- by whom;
- training needed to reduce replacement/breakdown?

5. Equipment.

- standardization of types of generators, sizes;
- distribution system installed to Provincial utility standards?
- availability of tools (electrical test equipment).

6. Inventory.

- number of reserves/settlements;
- availability of electricity at each site;
- equipment ownership at each site;
- condition of inventory at each site.

7. Safety of DIAND Personnel.

- electrician accreditation and by whom;
- T.B. policy

- training required to do work on high and low voltage, climb poles, operate house, inspect of distribution lines;
- codes/fire, electrical, safety;
- inspection of new and existing facilities - by Hydro?
- relations with utility and agressiveness to take over supply of electrical power and distribution.

8. Policy - Departmental and others.

- What is missing;
- What is required;
- Areas of concern;
- Problems with planning and/or resources;
- Future Planning;
- Energy conservation practices related to electrical supply.

## APPENDIX "B"

### Saskatchewan Region Electrification Overview

The Saskatchewan Region/DIAND has totally withdrawn from direct generation of electricity and is strictly a customer of Provincial Utility Companies. All I.R. communities in the region are electrified. However, seven (7) communities are dependent on diesel power supply which is provided by North Saskatchewan Electric Ltd. (NSEL), a subsidiary of Saskatchewan Power Corporation (SPC). These seven communities are: Fond du Lac, Black Lake (Chicken), Wollaston (Lac la Hache), Southend, Deschambault, Patuanak (Knee Lake, Wapachewunak) and Dillon (Buffalo River). All other I.R. communities in this Region are supplied from provincial grid. It is noted that Grand mothers Bay and Sturgeon Landing have recently been connected to the provincial grid via transmission lines.

The costs of installation of transmission lines and distribution to provide power from the SPC/NSEL provincial grid to remote communities are usually shared as follows: 1/3 utility, and the remainder shared by the organizations requesting the service based on population of each organization residing in the community.

All residential consumers of electricity in the Saskatchewan region are supplied a 100A/240 volt service except in grid connected communities

where the consumer will require a larger electrical entrance panel if electric space heating is installed. Communities supplied from diesel generator stations are allowed 100A service but are not permitted electric space heating nor 240 volt appliances such as dryers, stoves, hot water tanks, etc. The latter restrictions are enforced by the utility with the cooperation of all concerned (see Appendix "E"). It is noted that region advised that none of the government/DIAND buildings which house outside families or other buildings have 240 volt residential equipment as mentioned in Appendix "E". All other users are supplied electricity as required.

The rates of electricity for communities served by diesel generation are:

a) Residential

\$4.05 per month "basic charge" for service (minimum)

\$3.46¢/kWh for the first 315 kWh

16.5¢/kWh for the balance used in the billing period

b) General Commercial Service

\$5.25 per month including the first 30 kWh

6.9¢/kWh for the next 420 kWh

23¢/kWh for balance used in same month

Minimum bill \$5.25 per month

this Region, lack of funds by DIAND/I&IA Program and slow-down in Provincial economic conditions are having their effect. At least one major Provincial transmission line has been deferred indefinitely and new plans have to be developed. At best the full service electrification (i.e. off oil) program will continue on an "if and when" funds are available and on a "piece meal" basis. The two transmission lines built in 1980/81 and mentioned earlier made use of the Federal Government/DREE Western Northlands program funds. It is noted that SPC has advised that such transmission lines can be built on the basis of an 8 year pay-back period or less. This appears quite attractive as Treasury Board has recently approved a landline project with a 15 year pay-back period for the Manitoba Region.

It is of particular interest to note the good working relationship between DIAND/Region E&A and SPC/NSEL. The incident identified in Appendix "F" is an isolated case and does not warrant further action.

The electrification development pattern in the Saskatchewan Region supports HQ's goal to have the Provincial utilities as the supply authority that will own and operate all electrical supply facilities and also promote the "off-oil" program.

SPC and NSEL are responsible for the O&M costs wherever it supplies electricity. These O&M costs are recovered from all users through electrical rates; however, in communities on diesel supply the utility charges a rate close to the going provincial rates and every one enjoys full service except for the restriction on the use of 240 volt



appliances as mentioned previously. In these cases the utility absorbs the O&M costs which exceed those covered by the fees paid.

As expected the reliability and continuity of service from the provincial grid supply is better than on-site generation. This is an overall observation from Region E&A and the Utility.

*Apr. 1982*

KATCHEWAN WESTERN NORTHLANDS										REGIONAL 5 YEAR CAPITAL UPDATE AND FORECAST					DATE: March 31 1982		Page 4 of 4
PROJECT NO.	RCM/PM	78/79	79/80	80/81	81/82	82/83	83/84	84/85	85/86	86/87	TOTAL	TBM OR REMARKS					
Leon Landing	61190		-	-	58.9	-	-	-	-	-	58.9	Complete					
Scharbault Power											(426.0)						
de du Lac Power											(729.0)						
Union Power											(218.0)	1983-84					
Isarak Power											(803.0)	1983-84					
Isarak Power											(185.0)	1984-85 complete					
Mathend Power											(1,488.0)						
Caston Power											(1,941.0)						
<b>Total 611 (page 1 - 4)</b>		1310.25	3,581.3	2,452.8	3,571.3	6,892.0 (179.6)	572.1				18,794.05						

*Alene Fair  
2/18 + power*

*647 3  
896  
276*

E-28313

THIS AGREEMENT, made in triplicate, this twenty-first day of April,  
in the year of Our Lord, One Thousand, nine hundred and sixty-nine.

WHEREAS:

HER MAJESTY QUEEN ELIZABETH THE SECOND,  
in right of Canada, hereinafter called  
"Her Majesty", represented by the  
Minister of Indian Affairs and  
Northern Development, hereinafter  
called the "Minister",

OF THE FIRST PART,

AND:

*Dillon, Buffalo River  
and Peter Pond - refer to same.*

SASKATCHEWAN POWER CORPORATION, a body  
corporate, having its Head Office at  
the City of Regina, in the Province  
of Saskatchewan, hereinafter called  
the "Permittee",

OF THE SECOND PART.

WHEREAS the Permittee has applied for permission to construct an  
electric power transmission line on Peter Pond Lake Indian Reserve Number One  
Hundred and Ninety-Three, in the Province of Saskatchewan.

AND WHEREAS the Council of the Peter Pond Lake Band of Indians for  
whose use and benefit the said Reserve has been set apart, has by Resolution  
dated April 7, 1969, approved the application.

NOW THEREFORE THIS AGREEMENT WITNESSETH that in consideration of the  
sum of One Dollar (\$1.00) paid to the Minister by the Permittee (the receipt  
of which is hereby acknowledged) and the covenants of the Permittee herein  
contained, the Minister under authority of Section 28 (2) of the Indian Act,  
Chapter 149, Revised Statutes of Canada, 1952, as amended, hereby grants unto  
the Permittee, its successors and assigns full and free right and liberty for  
the Permittee, its successors and assigns and its and their servants, agents  
and all others the licensees of the Permittee, from time to time to construct,  
erect, string, operate, maintain and extend upon the Reserve poles with guy  
wires, brackets, crossarms, insulators, transformers, anchors and their several  
attachments and one or more lines of wire for the purpose of transmission and  
distribution of electric energy.

IT IS AGREED AND UNDERSTOOD that the aforesaid permission is granted  
under the following terms and conditions to which the Permittee agrees:

1. THAT the aforesaid permission shall be exercisable by the Permittee  
for such period of time as the said right-of-way is required for the purpose  
of an electric power transmission line.

- 2 -

2. THAT the area to be occupied by the aforesaid transmission line and any extension thereof from time to time will be determined by mutual agreement between the Permittee and the Council of the Peter Pond Lake Band of Indians.
3. THAT the Permittee shall not assign the rights hereby granted without the written consent of the Minister.
4. THAT the said lands shall be used for the purpose aforesaid and for no other purpose.
5. THAT it shall be lawful for the Minister or any person thereunto authorized by him at all reasonable times to enter upon the said lands for the purpose of examining the condition thereof.
6. THAT the Permittee, its servants, employees, and workmen shall have and enjoy the right to unload and store material on the said lands for the erection, operation and maintenance of the said powerline and to do all such other acts and things as may be necessary or requisite for the purpose of properly erecting, operating, maintaining and patrolling the said powerline.
7. THAT the Permittee will at all times hereafter indemnify and keep Her Majesty indemnified against all actions, claims and demands that may be lawfully brought or made against Her Majesty by reason of anything done by the Permittee in the exercise or purported exercise of the rights hereby granted.
8. THAT the Permittee will not fence the said lands or any part thereof, and Her Majesty is to be allowed free access to and use of the said lands, except for building purposes.
9. THAT if there be default, breach or non-observance on the part of the Permittee at any time in respect of any term or condition herein contained which by the Permittee ought to be observed or performed, then the Minister or any person thereunto authorized by him may cancel this permit and re-enter the said lands and thereafter have and possess them as if this agreement had not been made.

IT IS HEREBY FURTHER STIPULATED AND AGREED that notwithstanding anything to the contrary herein contained, this agreement shall not be deemed to set up a tenancy by implication or otherwise.

IT WITNESS WHEREOF, the Director, Indian-Eskimo Economic Development Branch has hereunto set his hand and the Permittee has caused these presents to be executed and its corporate seal to be affixed hereto by its proper officers duly authorized in that behalf.

SIGNED AND DELIVERED  
In the presence of

*John*  
*David Spruce*

.....  
As to the signature of the  
Director, Indian-Eskimo Economic  
Development Branch

*[Signature]*

.....  
Director, Indian-Eskimo Economic  
Development Branch

SASKATCHEWAN POWER CORPORATION

*[Signature]*  
.....  
Chairman

*[Signature]*  
.....  
Secretary

Indian and Northern  
Affairs Canada

Affaires indiennes  
et du Nord Canada

*Emis - Apr 21/82.  
Eed on 7. 1/1982  
had nothing to do  
with this.  
Bill  
K.*

Woodbine Place  
2332 - 11th Avenue  
Regina, Saskatchewan  
S4P 2G7  
April 8, 1982

- R. Filson
- B. Rees
- L. MacKenzie
- R. King

Subject: *None reference*  
Date: *None reference*

Diesel Generated Energy - Northern Communities

There are sixteen communities in northern Saskatchewan with a diesel generated energy source (for details see attached map).

The problem currently being encountered is that the diesel generators do not have capacity to carry 240 volt residential appliances. They do have the capacity to carry the water and sewage systems that are going into some of these communities but not the 240 volt appliances that development of this nature encourages. The policy of North Sask Electric to date has been to ban the use of appliances such as electric ranges, clothes dryers and water heaters and to encourage alternate sources such as propane and oil. The options open are to continue with this policy or to upgrade the generators at very substantial costs to meet the full need.

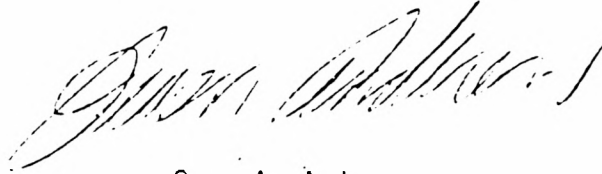
In view of our long term plans which have been developed jointly with D.N.S. and North Sask Electric to service these communities with a line source of energy, the option to upgrade current generators is not attractive. The problem currently experienced with the policy to encourage propane gas or oil for the essential 240 volt appliances as an interim measure is that local residents interpret it as discrimination. They contend that government buildings which house outside families do not have to abide by the restriction.

*discrimination?*

- 2 -

I would ask that you ensure that any planning or construction of facilities in which our department is directly involved considers the need for non-electrical heavy appliances at this stage in view of these circumstances. It will be more economical to use the alternate sources for heavy appliances until line sources can be brought in than to be placed in a position where major upgrading of diesel generators would be necessitated.

Please ensure that this directive is drawn to the attention of those involved in facilities that come under our direct control.

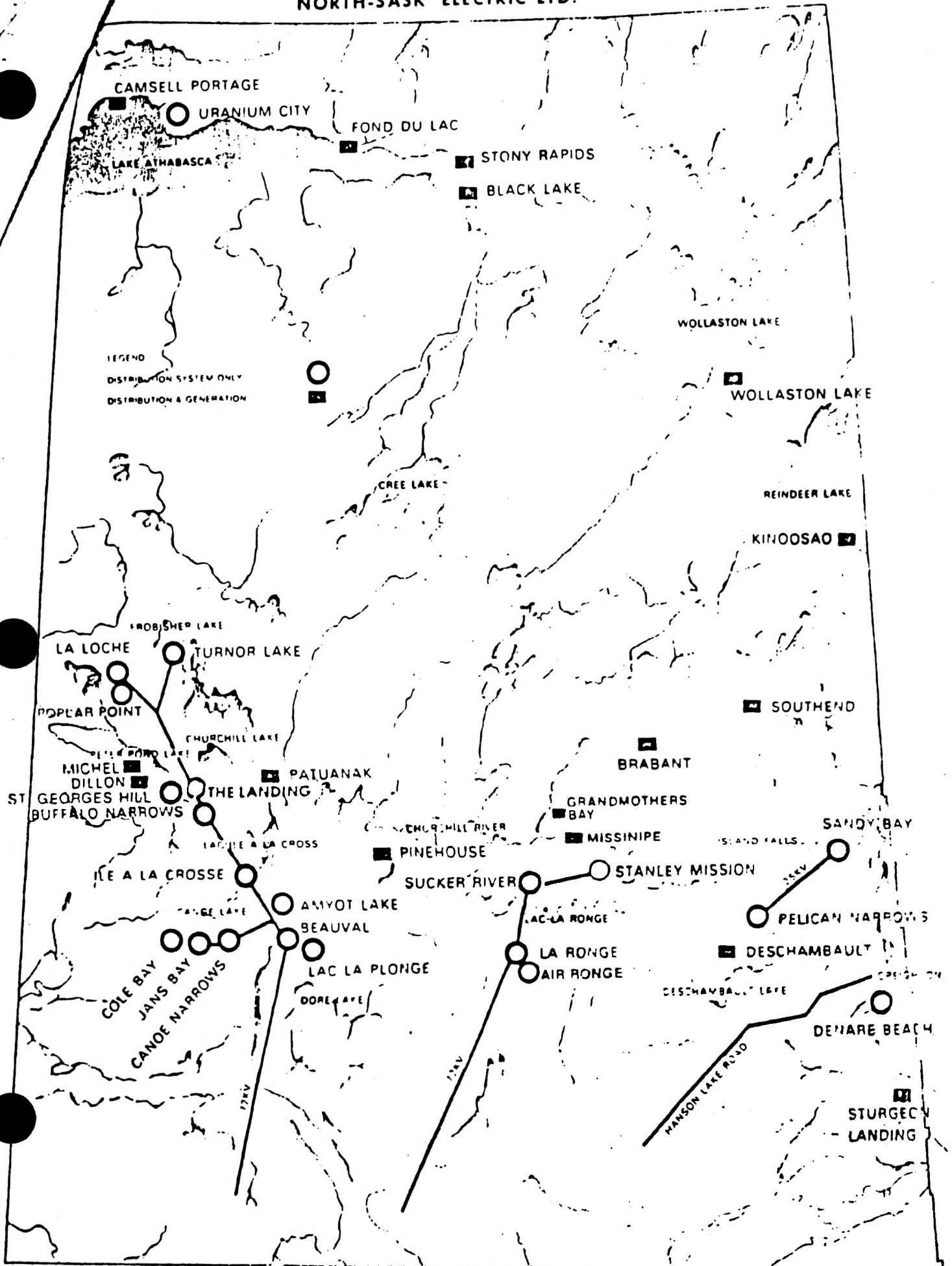


Owen A. Anderson  
Director General  
Saskatchewan Region

c.c. F. Hodgkinson  
Director  
Saskatchewan Power Corporation

E. Korchinski  
Director of Operations  
Saskatchewan Region

# NORTH-SASK ELECTRIC LTD.





1979, May 21

Department of Indian Affairs  
MEADOW LAKE, Saskatchewan

ATTENTION: Mr. J. Whitehawk  
District Manager

Dear Sir:

Following, as you requested during our telephone conversation on May 18th, is a brief outline of events that took place in Dillon on May 15, 1979.

Mr. Doug Macdonald, Assistant Superintendent, Mr. Dan Lavallee, Service and Maintenance Operator and two apprentice linemen visited Dillon to read meters and to carry out collection of overdue accounts.

At the time there were 17 residential customers whose accounts had not been paid for at least three months.

These customers had been repeatedly requested to take care of their delinquent accounts, and were advised by letter that our staff would be in Dillon on May 15th, and that their service would be discontinued unless the accounts were brought to a current status.

During the course of the day, two customers were disconnected for non payment. One was reconnected the same day after the account had been paid.

North-Sask Electric staff was subjected to severe verbal abuse while carrying out their duties.

In one case, they were not allowed to enter a customer's yard in order to discuss an overdue account or to read the meter.

Chief Noltcho was most upset by the fact that our people were on the Reserve without permission.

He advised Mr. Macdonald that he wanted a cheque

- 2 -

for \$3,000 for having our plants on the Reservation for the past ten years. If the cheque was not in his hands by that afternoon, he threatened to blow up the power plants.

Later the same day, Chief Moltcho phoned me requesting that we remove the power plants from the Reserve immediately. I informed him that we would be pleased to consider his request but only after we had received instruction from him in writing.

To date I have not heard further from him.

Mr. Macdonald was advised that our staff, in the future, would not be permitted on the Reserve without first obtaining permission from the Chief.

It is my contention that North-Sask Electric cannot continue to provide service to the residents of Dillon under these conditions.

This is not the first time we have experienced similar problems; I draw to your attention my letter to you dated November 16, 1978.

Enclosed is a copy of an agreement signed by Department of Indian Affairs on April 7, 1969, which provides access to the Reservation for the purpose of construction, maintaining and operating a power distribution system.

I would suggest that a meeting be arranged by your Department with members of the Dillon Band Council and North-Sask Electric Limited in order that this problem can be resolved one way or the other.

Yours truly,

W. C. McLachlan  
Manager

WCM/1a

Enclosure

cc: Fred Hodgkinson  
E. B. Campbell