

**LEGISLATIVE ASSEMBLY OF THE
NORTHWEST TERRITORIES
5TH COUNCIL, 32ND SESSION**

**RECOMMENDATION TO COUNCIL
NO. 10-32**

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NORTHWEST TERRITORIES

RECOMMENDATION TO COUNCIL NO. 10
(First Session, 1966)

RADIO COMMUNICATION
ANDERSON RIVER AND PEEL RIVER

DISPOSITION

Accepted as Read.....

Amended.....Sec Text

Rejected.....Sec Text

Deferred.....See Text

Not Considered.

RADIO COMMUNICATION
ANDERSON RIVER AND PEEL RIVER

Introduction

At the February 1965 Session, Council discussed the possibility of setting up radio communication between trappers operating in the Peel River, Arctic Red River and Anderson River areas and the nearest communities. Council thought the need for some form of emergency communication was essential. (Debates, 29th Session, Page 99).

A Recommendation at the June 1965 Session pointed out that establishment of radio communication was technically possible. Funds would have to be provided by the Territorial Government. Three types of radio sets were described. One set had been used with some success by the Geological Survey of Canada and another in Northern British Columbia. A third set in present use by the R.C.A.F. was designed primarily for ground-to-air communication presumably on a VHF frequency. Costs of the sets ranged from \$250 to \$350.

Council recommended that the radio communication system which has been in existence for some time in Saskatchewan be studied and a further report be prepared. (Debates, 30th Session, Page 486).

Description of Saskatchewan System

I. The Saskatchewan Government radio communication system is highly complex and is operated in an efficient and business-like manner. It is not a simple system designed to maintain emergency communication with isolated trappers or groups of families. The system as it is today is the outgrowth of a communication network of 15 sets established in 1936 for forest conservation and fire suppression. An illustration indicating its growth is that 977 radio sets are in use and in 1964, 137,000 written messages were handled. Moreover, it must be kept in mind that the chief purpose of the system is to provide point-to-point communication for provincial government departments and agencies who have responsibilities in the development of resources in the northern part of the province. In fact, the so-called communication regions are co-incident with the administrative regions delineated by the Department of Natural Resources. Other users are encouraged to use its facilities in line with the Department's policy, to harvest the Province's northern resources of fish, fur game and timber. Today the system is used by prospectors, hunters, fishing camp operators, mining exploration and drilling crews, trappers and fishermen.

II. For purposes of radio communications the province of Saskatchewan is divided into two parts. This description will relate to the northern part since more use is made of radio communication in the northern section and, some sections of northern Saskatchewan are geographically similar to the Peel River and Anderson River areas.

III. The Saskatchewan Government Radio system is operated by the Communications Branch of the Department of Natural Resources with headquarters at Prince Albert. The system is designed around eight key stations in the eight major regions into which the northern part of the province is divided. One such region has its key station located at Buffalo Narrows. Any person using a set rented from the Communications Branch in the Buffalo Narrows region wishing to send a message to an addressee in the province, or outside the province, establishes contact with the Buffalo Narrows station and sends his message. If the addressee lives in the northern part of the province but in another region, for example LaLoche, the Buffalo Narrows key station passes the message to the LaLoche Key Station which delivers the message. Should the addressee live in LaLoche the message would be phoned and confirmation mailed later. If the addressee lives in Saskatoon, the Buffalo Narrows station would transmit the message to the Prince Albert key station which would turn the message over to either Canadian National or Canadian Pacific to be sent by commercial telegraph circuits. For each message handled the user

is assessed a nominal handling charge and billed at the end of each month. The Communications Branch and CN/CP Telegraphs, incidentally, have entered reciprocal agreements whereby either of the organizations can collect tolls and handling charges assessed against messages either originating within the Saskatchewan radio system or terminating in the system.

Equipment

The equipment used in the system has been designed and built by the technical staff of the Communications Branch. Distances involved and power available had to be kept in mind when designing the equipment. Over the years seven standard sets have evolved. Some of these are for particular needs, e.g. mobile sets for Highway maintenance crews. Only fixed station types will be discussed here and only those considered most suitable for use in the Northwest Territories.

A set designated the 8BA by the Communications Branch is simple and reliable and is widely used by prospectors, mining survey parties and trappers. The set weighs 20 pounds and the battery pack 50 pounds. The transmitter section is crystal controlled and has an output of three watts. It is supplied complete with a quarter-wave antenna. Mimeographed instructions are supplied for operating the set and erecting the antenna.

On the prairies this set has been found to perform reliably and consistently up to 150 miles and in forested areas 75 miles. A battery pack is made up by the Communications Branch. It consists of a combination of A, B and C dry batteries, and is issued with the set when rented. Experience has shown that even with frozen batteries the transmitter will function although nowhere near optimum efficiency. Freezing does not harm the batteries to any extent and when thawed they will operate the transmitter at maximum output.

Three other models of radio transmitting and receiving equipment are in wide use in the Saskatchewan system. A Type 15 has been designed for use in areas where reliable AC electric power is available. This set has an output of 12 watts and five channels so that five transmitting and receiving frequencies can be used. Mining companies in particular have been making great use of this type of equipment. The sets are built in four sections, each one being easily removed and replaced with a similar section when maintenance or repair work must be done. A variation on this type has recently been introduced by the Communications Branch. The original set when designed was equipped with a receiver section using ordinary radio vacuum tubes. The set now has a completely transistorized receiver unit.

A fourth type designated the Type 11, has an output of 35 units and is also for AC operation.

The Saskatchewan Government has found that the most reliable frequency range is from 1.6 to 1.8 megacycles, although they have authorization from the Department of Transport to use other frequencies up to 5,780 Kcs. Although this frequency range lies just above the broadcast band, it is considered high frequency for design purposes. Because of the moderate distances involved which are about 75 to 150 miles, the Communications Branch, over the years, has found that it is more reliable to depend upon the ground wave emanating from a transmitter operating in the lower frequencies than a combination of ground and sky waves operating in the 5 to 6 megacycle frequency range and higher.

All the equipment referred to above, with the exception of the Type 15 set introduced with a transistorized receiver, utilizes radio vacuum tubes both in the transmitter and receiver sections. The Communications Branch, however, is presently seeking authority to purchase a number of completely transistorized sets at an approximate cost of \$385 each. It is the intention of the Communications Branch to gradually change to completely transistorized equipment. This will permit similar and lighter sets to be used with lighter battery supplies. This

may takesome time as it will be done gradually and present equipment will not be retired merely to replace it with transistorized sets. Some equipment designed and built 25 years ago is still in use in the Saskatchewan system. All equipment, moreover, meets with the Department of Transport Specification 116.

The radio set Type 8BA described above has been built at a cost of \$307 per transceiver. Maintenance amounts to approximately \$45 per year and includes material and labour. This figure of \$45 incidentally, includes the purchase of batteries which alone costs \$40 per pack, so it can be seen maintenance costs are extremely low. The utilization rate of all the equipment is 97% which in effect means of the 977 sets in the system only 29 sets at any one time are out for repairs, preventative maintenance or in-between rentals.

All the equipment in present use and the new transistorized equipment that will be introduced is, or will be, of the modulated carrier wave type of radio transmission as opposed to single side band. Because of technical difficulties and in line with their principle to keep equipment as simplified as possible, the Communications Branch has stayed away from single side band equipment.

It should be mentioned here that various frequencies have been assigned for use in the various regions, for instance the Lac LaRonge station will have a different frequency assigned to it than the station at Buffalo Narrows. Therefore, any equipment rented for use in the Lac LaRonge region will have a crystal controlled frequency for communication with the key station in that region only, while equipment in the Buffalo Narrows region will be of the key station frequency in that region. Key stations are equipped with much more elaborate equipment and can communicate with other regional key stations on a number of frequencies.

Rental Arrangements

The radio transmitting and receiving equipment, regardless of the type of set, is rented at \$66 for a six-month period. This is the minimum period. It has been found that the battery pack lasts an average of six months. Should the person renting keep the equipment beyond the six-month period he pays \$11 per month. The renter enters into an agreement with the Department of Natural Resources. A copy of the agreement is attached as Appendix A. The rent has been established merely to cover costs of maintenance and operation, rather than for a profit.

The lessee is not held responsible should the equipment be destroyed or damaged by fire, storm, water or theft during the period of rental. During the six-month rental period, new batteries will be supplied at the lessee's request, but he pays for them. All charges are F.O.B., Prince Albert and the renter must pay in advance the \$66 rent before the equipment is released to him. Should the equipment be damaged while in the lessee's possession, then he must make the necessary arrangements to have it returned to Prince Albert for servicing at his own expense. In some cases, at the expiration of the rental period, the equipment can be returned to a regional key station but this is the exception rather than the rule since maintenance facilities exist only in Prince Albert.

Each lessee must ensure that he has a private commercial licence from the Department of Transport before operating the equipment. This licence costs \$10 per year and the Communications Branch assists the lessee in obtaining this licence.

As of March 31, 1965, the majority of the 977 sets in the province were in use by government departments and agencies, but 201 were available for rental to other parties. The biggest non-government users are mining exploration parties and hunting and fishing camp operators. Trappers are not the big users and at the present time they constitute only 10% of those renting equipment.

General

It was mentioned above that the radio equipment is used extensively by provincial government and departmental agencies who have responsibilities to develop resources in the part of northern Saskatchewan. This part of the province is divided into a number of administrative regions and the headquarters are usually located at one of the larger settlements such as LaLoche, Lac LaRonge and Buffalo Narrows. These settlements have provincial administration buildings and it is the usual practice to install the radio equipment of the regional key station in this building. From a technological point of view, in order to cut down spurious interference, the Communications Branch would like to have all receiving equipment installed in a remote controlled location. This has not been done in all cases, although at Buffalo Narrows a separate transmitting and receiving site was built because the administration building proved to be an extremely noisy location for reception of radio signals. The most important station in the network is located in Prince Albert where the receiver and transmitting site is located well outside the city in order to keep away from interference associated with built up areas.

The larger regional key stations at Prince Albert, Lac LaRonge and Buffalo Narrows have two radio operators on strength. The remaining regional stations have one operator for a total of eleven operators in all. Regional key stations, incidentally, are in operation 12 hours a day, seven days a week, year round, with curtailed service on Christmas and New Year's Day. At the Prince Albert headquarters of the Branch, there are eleven radio technicians and an administrative staff of four.

The Recommendation at the June, 1965 Session included a reference to the Saskatchewan system saying "the system was more elaborate than is contemplated in that this system involved a central stationary receiving post which itself could relay stronger messages to populated centres". The study has shown that this is essentially correct and the system is indeed complex and highly-organized. The Council may not wish to set up such a system in the N.W.T. but continue to aim at a system whereby isolated trappers and families can be assured of communications in the event of an emergency, and be able to send and receive messages at other times.

Recommendation

A choice of equipment for rental purposes should be made. The Commissioner recommends that an experimental project be carried out. If Council gives approval in principle, the Commissioner would seek to rent, say, three sets from the Saskatchewan Government for testing in the Anderson River and Peel River areas. Despite the low output of this equipment, it performs well in Saskatchewan and might be suitable. If the combination of a low frequency in the short wave lengths and low transmitter output performs equally well in the two areas referred to above, steps could then be taken to purchase commercial equipment incorporating these features. The completely transistorized equipment the Communications Branch hopes to purchase for use in Saskatchewan may prove to be satisfactory for use in the N.W.T.

A base station in any such system is needed. There are three possibilities. The Department of Transport radio stations might act as the base stations -- or Canadian National Telecommunications -- or the Game Management organization.

THIS AGREEMENT made in duplicate this _____
 day of _____, A.D. 19__.

-BETWEEN-

HER MAJESTY THE QUEEN in the right of Saskatchewan, represented by
 the Minister of Natural Resources, hereinafter called "The Minister",
 of the First Part,

-AND-

_____ of _____, in the Province of
 Saskatchewan, hereinafter called "The Lessee",
 of the Second Part.

WITNESSETH that the Minister agrees to rent to the lessee one radio transmit
 receive unit known as type 8B, Serial No. _____, complete with one
 battery pack, for a period of six (6) months, computed from the _____
 day of _____, 19__, at the clear rental of Sixty-six Dollars
 (\$66.00) payable at or before the execution of this agreement.

And the parties hereto covenant and agree with each other as follows:

1. The Minister will service and repair the said unit so often and in such
 manner as may be necessary due to the normal wear and tear thereof. If the
 Minister shall make any repairs to the said unit which may be necessary because
 of the negligence of the lessee or because of any accident or because of the
 failure of the lessee to comply with operating instructions, the lessee will
 pay for such repairs upon receiving from the Minister a statement of the
 charge therefor.
2. If new batteries are required for the said unit during the said period
 of six (6) months the Minister will sell such batteries to the lessee at
 the then prevailing price.
3. The lessee will transport the said unit from the radio workshop of the
 Department of Natural Resources at Prince Albert, Saskatchewan, to the
 place where it is to be installed and return it to the said workshop upon
 the termination of this agreement and also transport it to and from the
 said workshop whenever it requires servicing or repairing, all without any

expense or charge to the Minister.

4. The Minister will insure the said unit and keep it insured during the said period of six (6) months against loss or damage by fire, storm, water or theft.

5. The Minister will furnish to the lessee during the said period of six (6) months key station facilities for all messages to and from the said unit.

6. The Minister will at the end of each period of one (1) month of the said period of six (6) months submit to the lessee an itemized statement setting forth particulars of each message sent to or from the said unit during the preceding month and stating the charge for each such message which shall be at the prevailing commercial rates, and the lessee will forthwith after the receipt of such statement pay to the Minister the total amount charged for such messages, such payment to be made by certified cheque or money order and forwarded to the Radio Branch of the Department of Natural Resources, Prince Albert, Saskatchewan.

7. In the use and operation of the said unit the lessee and his agents and servants shall be subject to the following conditions:

- (a) Instructions from time to time given by the operator of the key station shall be promptly and strictly observed and complied with;
- (b) Profane or obscene language shall not be used;
- (c) The station shall at all times be identified by the use of the call sign assigned to the said unit by the Department of Transport;
- (d) All transmissions shall be as brief as reasonably possible and in message form, and shall be routed through the key station operated on behalf of the Minister;
- (e) No transmission of an inconsequential nature shall be made;
- (f) The Channel on which the said unit shall operate shall be relinquished to the operator of the said key station whenever requested by him.

8. If the lessee shall make default in payment of any sum of money which may become payable by him pursuant to this agreement, or if he or any of his agents or servants shall fail to observe or perform any of the conditions set forth in clause seven hereof or shall in the opinion of the operator of the said key station make any improper use of the said unit or of the privilege of transmitting therefrom, then and in any such case the Minister may give the lessee seven (7) days' notice of his intention to cancel this agreement. Such notice may be given by the operator of the said key

station either in writing or by a radiogram to the said unit. Upon the expiration of the said period of seven (7) days this agreement shall be deemed to be cancelled without any further notice or action and the lessee shall have no further right to use the said unit or to send or receive any message to or from the said key station.

9. Upon the termination of this agreement, whether by effluxion of time or otherwise howsoever, the lessee will forthwith return the said unit to the said radio workshop, or such other place as may be designated by or on behalf of the Minister, in as good order and condition as when it was received by the lessee, reasonable wear excepted; and upon the lessee's failing to do so the Minister or any person authorized by him may enter the premises where the said unit is then kept and take possession of the said unit and remove it. If the said unit is not returned as herein provided the lessee will upon demand pay to the Minister a rent in respect of the period from the time the said unit should have been returned until it shall be returned or until it is removed by the Minister, such rent to be at the rate of Eleven Dollars (\$11.00) per month.

10. If and whenever the Minister and the Lessee shall from time to time agree to renew this agreement for a further period of six (6) months, all the terms and conditions herein set forth shall be in force and effect and binding on the parties hereto during and in respect of such period of six (6) months.

11. The lessee hereby agrees not to transfer, loan or sublet the said radio unit during the period covered by this contract, nor at any time following the expiry date of same.

IN WITNESS WHEREOF the Deputy Minister of Natural Resources has hereunto set his hand and seal on behalf of the Minister and the lessee has hereunto set his hand and seal.

SIGNED, SEALED AND DELIVERED
by the Deputy Minister of
Natural Resources in the
presence of:

Deputy Minister of Natural Resources

and by the lessee in the presence of: