DEPARTMENT OF COMMUNICATIONS - GOVERNMENT OF CANADA

DEPARTMENT OF TRANSPORTATION AND COMMUNICATIONS - GOVERNMENT OF NEWFOUNDLAND

JOINT FEDERAL/PROVINCIAL STUDY

QUALITY OF TELEPHONE SERVICE IN NEWFOUNDLAND

NOV 1977

STUDY TEAM

Federal DOC	Govt. of Nfld
R.W. Wilson	T.B. Grandy
W.F. Cunningham	W.D. Rowsell
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ACKNOWLEDGEMENT

The study team wishes to acknowledge the co-operation of the telephone companies throughout the course of this study. Newfoundland Telephone Company Limited, Canadian National Telecommunications and the Labrador Telephone Company Limited all gave readily and freely of their time and service to provide much of the information contained in this report and to accompany team members on the field visits. It is not possible to list here all those who participated in the study. However, special recognition and appreciation is extend to Mr. Justin Gosse, Canadian National Telecommunications and Mr. Gerry Brown, Newfoundland Telephone Company Limited who figured so predominantly in the study.

NEWFOUNDLAND TELEPHONE STUDY

I N D E X

NEWFOUNDLAND TELEPHONE STUDY

EXECUTIVE SUMMARY

A study of the quality of telephone service in Newfoundland was initiated by the Federal Minister of Communications, the Honourable Jeanne Sauvé and the Minister of Transportation and Communications for the Province of Newfoundland, The Honourable James Morgan, as a result of their discussions in Newfoundland on May 10, 1976. The study was carried out jointly by a group consisting of officials of the Department of Communications, of the Government of Canada and of the Department of Transportation and Communications of the Government of Newfoundland. It was conducted with the full co-operation of the Newfoundland Telephone Company Limited (NTC), the Canadian National Telecommunications (CNT) and the Labrador Telephone Company Limited.

Since many of the measurements and observations reported herein are condensed from the submissions of representatives from the common carriers and subscribers, this report does not necessarily represent the views of the Federal Department of Communications or of the Provincial Department of Transportation and Communications, and no commitment for future action is implied by this paper.

The study was initiated to present as objective an assessment as possible of telephone service in Newfoundland from the system measurements available.

The approach to the determination of the quality of telephone service was as follows:

1) During the summer of 1976, a subscriber opinion survey of over 1,200 householders in more than 300 communities was conducted by interview.

2) Commencing in October 1976, collections of quantitative data were provided on a regular basis by the carriers.

3) Field visits were made by members of the study team to representative parts of the province to inspect first-hand the telephone facilities in place.

In general, the study indicates that both CNT and NTC provide reasonably good service under sometimes extremely difficult conditions in the non-urban areas of the province. A correlation of the responses to the subscriber opinion poll indicates that a larger proportion of NTC subscribers are satisfied with its service. This fact is supported to some degree in the quantitative study based on data provided by both companies.

The performance indicators used in this study have demonstrated an improving trend in both companies. This is perhaps due in part to major improvements introduced by both CNT and NTC during the course of the study. NTC microwave construction in Labrador, for example, has had a positive effect. A major improvement by CNT has been the introduction of an electronic switching office in Gander.

The study has identified that the principal problem areas are service interruptions, difficulty in reaching the operator, and difficulty in obtaining individual telephone service. The problems are emphasized in many cases by such accompanying difficulties as lack of roads, inclement weather and rugged terrain.

It is anticipated that both companies will make use of the information included in this report in their continuing efforts to improve telephone service in the province.

NEWFOUNDLAND TELEPHONE STUDY

I OBJECTIVE

At a meeting in May 1976 it was agreed in principle between the Honourable Jeanne Sauvé, Federal Minister of Communications, and The Honourable James Morgan, Minister of Transportation and Communications for the Province of Newfoundland, that a joint study should be considered in respect to the quality of telephone service in Newfoundland.

The stimulus for such a study was the observation by Mr. Morgan and his officials that there was an apparent difference in service levels being provided by Canadian National Telecommunications (CNT) and Newfoundland Telephone Company (NTC).

Subsequently, federal and provincial officials established a study with the following objectives:

1) To identify the quality of telephone service provided in the Province of Newfoundland.

2) To compare objectively, service indices based on data provided by the Newfoundland Telephone Company and Canadian National Telecommunications in similar areas.

II BACKGROUND

Three telephone companies provide service in Newfoundland: Canadian National Telecommunications (CNT), the Newfoundland Telephone Company Limited (NTC), and The Labrador Telephone Company Limited. With the exception of the town of Gander, the territory served by CNT

is mostly rural and sparsely populated. CNT primarily serves the coastal regions of the island of Newfoundland, (See fig.1) providing approximately 25% of the total number of telephones on the island. The Newfoundland Telephone Company serves the more populated regions of the island and the whole of Labrador with the exception of Labrador City. The Labrador Telephone Company provides service in Labrador City only. Table 1 provides information on comparative systems data for CNT and NTC.

Table 1

SYSTEMS DATA

1977

	CNT	NTC
Individual lines	11,583	103,900
2-party	22,560	1,815
4-party	4,444	9
Greater than 4-party	909	12
Sub-Total main stations	39,496	105,736
PBX Locals	1,226	15,998
Extensions	6,934	39,005
Total telephones	47,656	160,739
% Subscribers with access to DDD	61%	94.6%
Business/residence phones	1:3.1	1:2.4
Phones/100 population	21.3	42.4

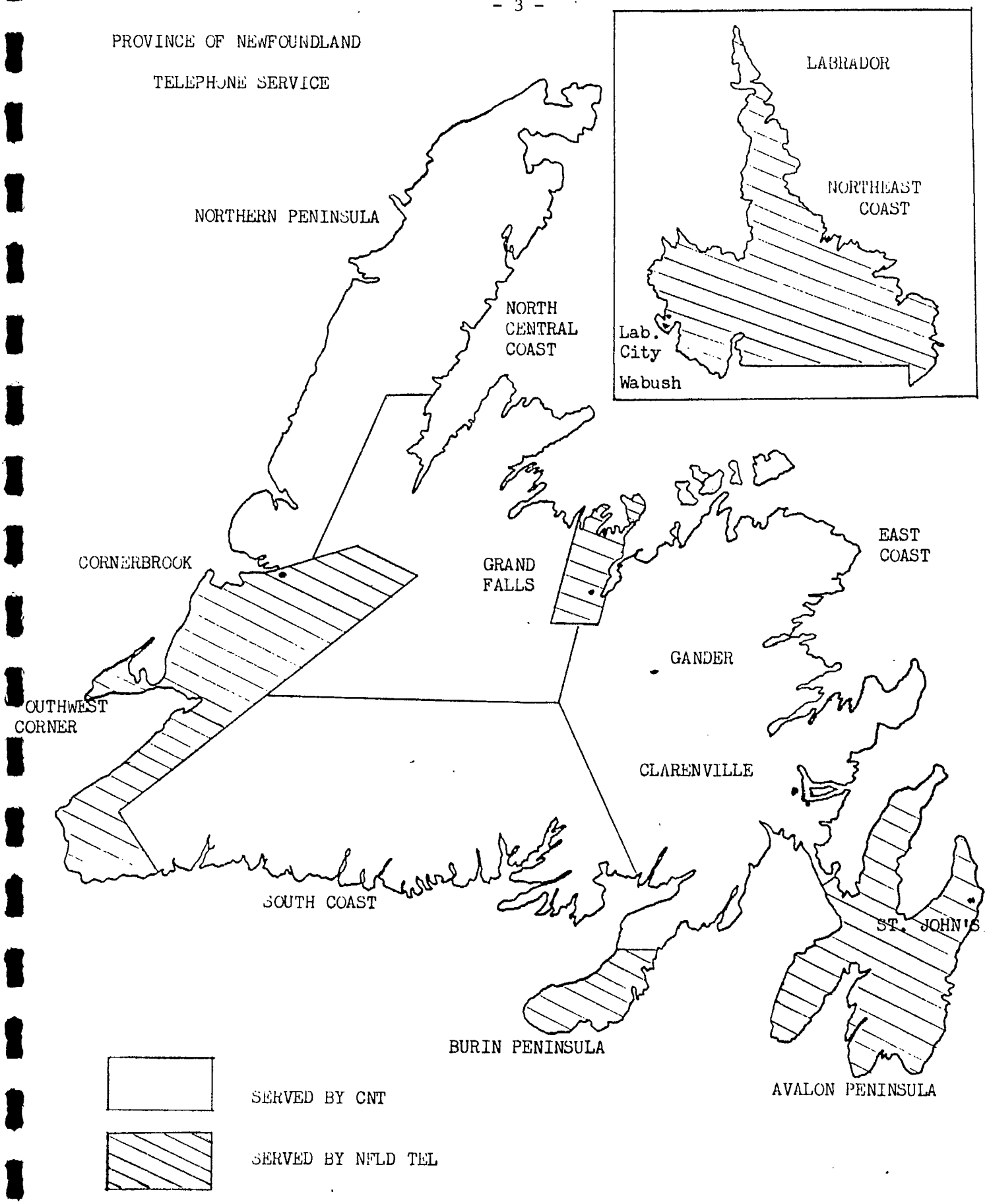

PROVINCE OF NEWFOUNDLAND
TELEPHONE SERVICE
LABRADOR
NORTHEAST COAST
Lab. City
Wabush
NORTHERN PENINSULA
NORTH CENTRAL COAST
CORNERBROOK
GRAND FALLS
EAST COAST
GANDER
SOUTHWEST CORNER
CLARENVILLE
SOUTH COAST
ST. JOHN'S
BURIN PENINSULA
AVALON PENINSULA
SERVED BY CNT
SERVED BY NFLD TEL

Figure 1

CNT facilities, although owned by the Government of Canada, are operated by the CNT. CNT is subject to federal regulation by the Canadian Radio-television and Telecommunications Commission. Newfoundland Telephone is provincially regulated by the Newfoundland Board of Commissioners of Public Utilities. Labrador Telephone Company is owned by the Iron Ore Company of Canada and is regulated by the same provincial authority. (Comprehensive historical backgrounds of CNT and NTC are included as Appendix A. Appendices E to H have also been included to provide relevant company operating statistics).

The study is intended to be a factual representation of conditions existing at the time of the study. The quantitative portion of the study is based completely on information provided by NTC, CNT and Labrador Telephone Company, while the qualitative survey represents a tabulation and analysis of the opinions of those interviewed.

III DESCRIPTION OF STUDY

The study consists of three parts:

1. Compilation of Quantitative Data

   In order to attain a reasonable degree of objectivity in this report, it was necessary to obtain quantitative data pertinent to the service provided by the operating companies. As the sources of this data were the telephone companies, it was necessary to enlist their aid in its compilation.

   The actual indicators used were those internal measurements of proven value in the industry. However, two problems arose. Firstly, although these indices were already in use by Newfoundland Telephone Company,

Canadian National Telecommunications had not introduced these means of measurement. Secondly, since it was the intent of the study team to examine the two companies on comparable grounds, it was necessary to employ indices which could apply to either company in similar areas.

The indices chosen therefore, were those for which data could be assembled quickly, on a regular basis, and those which would reflect conditions as seen by the user of the service and relate directly to his expectations. The indices that seemed most appropriate in terms of this study were as follows:

a) Customer reports per 100 telephones
b) Held orders per 100 main inward movement
c) Held regrades per 100 main inward movement
d) Per cent of trunk answer
e) % DDD completion
f) % Dial Tone delay

A complete definition and examination of these indices is included as Appendix B.

2) Subscriber Opinion Survey

A subscriber opinion survey was conducted during the summer of 1976 and is recognized as a subjective portion of the study (Appendix C). Because of the small sample and lack of rigorous statistical procedures, it provides a limited view of conditions at the time. Nevertheless, the survey provides a good indication of the way the rural inhabitants of Newfoundland perceive the telephone service they receive. It must also be noted that this survey was performed as an adjunct to a survey of radio

and television coverage in the province. As such, the choice of towns was different from that which might have otherwise been.

3) Field Visits

During the course of the quantitative part of the study, members of the study team visited many of the communities for the purpose of familiarizing themselves with field conditions. This was done in order to achieve a better understanding of the problems attendant to providing telephone service in different areas of the province and in particular to areas where access is limited because of weather and geography. While no quantitative data was collected during these visits, an attachment to this report describes briefly, for background purposes, some of the impressions gained. (Appendix D).

IV DISCUSSION OF RESULTS AND CONCLUSIONS

The subscriber opinion survey and the quantitative observations augmented by the visits of the study team provide a good indication of the quality of telephone service being provided in the non-urban areas of the province of Newfoundland.

In particular, there is agreement within the study confirming the difficulties of serving rural versus urban areas. This is not a novel observation as much effort has already been expended in examining various means of more adequately serving the rural population of Newfoundland and other locations in Canada.

It is recognized that the rugged geography and weather conditions experienced in the coastal areas of Newfoundland and Labrador contribute to the high cost and relative difficulty of serving the sparsely populated areas.

CNT serves a larger, relatively poorer geographic area on the island itself, with fewer business telephones and a lesser degree of service penetration than does NTC. In this respect it is noted among other factors, that the number of subscribers served by party lines is greater, and those with access to direct distance dialing is lower in CNT operating territory. (See Table 1 - Systems Data.) These factors are reflected in the overall performance of the companies.

It is significant to note that within the adjacent communities of Wabush and Labrador City, (served by NTC and Labrador Telephone respectively) where the serving areas are limited and fairly concentrated, there are relatively few problems. Any that do arise are repaired quickly. However, as one examines the northeast coast of Labrador, or the south coast of the island, problems of extensive sea or air travel and water corrosion of telephone plant give rise to more numerous repair problems and the inability to carry out prompt repair action.

One of the most frequently raised points was the desire on the part of the public for individual line service. The matter of the public desire for private lines has been identified in other reports (e.g. the 1976 DOC Inter-Branch Working Group on Rural Communications) as a major problem in rural telecommunications across Canada. The rural areas of Newfoundland are for the most part no exception. It is interesting to note however, that the standard grades of service available from NTC are individual and two-party service. Multi-party service has been virtually eliminated.

The introduction of performance indicators by CNT has been an interesting and profitable exercise in that it has resulted in the availability of better information as to the quality of service being provided and the ability to see where efforts might produce further improvement.

The indicators used in the study are only a few of those in use by NTC and throughout the telephone industry in general. However, based on the success of this type of measurement, CNT has intimated a recognition that the wider introduction of performance indicators would provide a positive basis for identification of priorities for service improvement.

As indicated previously, Appendix B of this report details the selection of indices used for purposes of this study as well as specific results and trends. Tables 2 and 3, however, provide a brief summary of information gathered for purposes of this study showing the best and worst cases for each index and a trend where applicable, in the respective companies.

Although the results do indicate a difference in service levels provided by NTC and CNT, it is necessary to examine the surrounding circumstances before any specific judgement is made.

Appendix C details the subscriber opinion survey method, scope and results and briefly describes some of the difficulties in attempting to find similar areas for comparison in the two operating companies. Although the size of the sample precludes any definite conclusions, the survey allows for the formation of some general impressions. In particular, it is interesting to note that neither company is unaffected by the difficulties of serving rural areas.

TABLE 2 - CNT Summary of Results

INDEX - NOV 76 - OCT 77	BEST	WORST	TREND
REPORTS/100 STATIONS AREA - OVERALL	5.25	7.25	Improving
% TRUNK ANSWER OVER 10 SECS AREA: CLARENVILLE GANDER	13% 1%	35% 5%	Erratic Constant
DDD COMPLETIONS - AREA: ST. JOHN'S TO GANDER ST. JOHN'S TO CLARENVILLE CORNERBROOK TO GANDER CORNERBROOK TO CLARENVILLE	 57% 47% 60% 54%	 45% 42% 51% 39%	 Improving Erratic Improving Erratic
DIAL TONE DELAY PERIOD - FROM MAY 25, 1977 11 A.M. 115 hrs. AREA - GANDER	NO TREND AVAILABLE DUE TO LIMITED SAMPLE ONLY. SAMPLE INDICATES .01% OF ATTEMPTS TOOK MORE THAN 3 SECS.		
HELD ORDERS/REGRADES (HO/R) PERIOD - DEC.31/76 MARCH 31/77 JUNE 30/77	HO 1158 HR 653 HO 525 HR 546 HO 810 HR 1200		No trend available due to limited sample

TABLE 3 - NTC Summary of Results

INDEX - NOV 76 - OCT 77	BEST	WORST	TREND
REPORTS/100 STATIONS AREA - OVERALL	4.19	6.25	Improving
% TRUNK ANSWER OVER 10 SECS AREA - OVERALL	9.5%	14%	Constant
DDD COMPLETIONS - AREA:			
ST. JOHN'S TO ST. JOHN'S	73%	64%	Improving
ST. JOHN'S TO BAY ROBERTS	67%	64%	Improving
ST. JOHN'S TO MARYSTOWN	74%	56%	Improving
ST. JOHN'S TO GRAND FALLS	69%	61%	Improving
ST. JOHN'S TO CORNERBROOK	71%	61%	Improving
ST. JOHN'S TO STEPHENVILLE CROSSING	65%	55%	Improving
ST. JOHN'S TO GOOSE BAY	60%	42%	Improving
CORNERBROOK TO ST. JOHN'S	79%	69%	Improving
CORNERBROOK TO BAY ROBERTS	74%	38%	Erratic
CORNERBROOK TO MARYSTOWN	70%	47%	Improving
CORNERBROOK TO GRAND FALLS	70%	61%	Erratic
CORNERBROOK TO CORNERBROOK	72%	63%	Improving
CORNERBROOK TO STEPHENVILLE CROSSING	68%	64%	Improving
CORNERBROOK TO GOOSE BAY	61%	35%	Improving
DIAL TONE DELAY PERIOD - MAY, 1977 AREA - OVERALL	NO TREND AVAILABLE DUE TO LIMITED DATA. DATA FOR MAY INDICATES .20% OF ATTEMPTS TOOK OVER 3 SECS.		
HELD ORDERS /REGRADES (HO/R) PERIOD - DEC.31/76	HO 356 HR 488		No trend available due to limited sample
MARCH 31/77	HO 404 HR 507		
JUNE 30/77	HO 288 HR 580		

The subscriber opinion survey indicates that the least satisfactory service was provided in the S.W. Corner and Northern Peninsula areas of the respective operating companies. In fact, it is possible to rank service (better to poorer) by region as follows:

	CNT		NTC
1	East Coast	1	Avalon Peninsula
2	North Central Coast	2	Grand Falls Area
3	South Coast	3	Burin Peninsula
4	Northern Peninsula	4	South West Corner

Labrador is not included in the above ranking, due to the limited number of communities visited, and the number of subscribers interviewed.

Although an in depth examination of the survey results for each of the above-mentioned areas is presented in Appendix C, Tables 4 and 5 provide a summary of the collective survey results. All percentages represent the number of respondents in each category.

During the examination of results, it was interesting to note that, with respect to the availability of basic telephone service, the "unobtainable" and "too expensive" categories appear to be approximately equal for the two companies.

The description of actual field conditions contained in Appendix D attests to the difficulties faced by both companies in servicing some of the rural areas of the province.

TABLE 4 - CNT TERRITORY SUBSCRIBER OPINION SURVEY RESULTS
%: PERCENTAGE OF RESPONDENTS

CATEGORY	NEVER	SOMETIMES	OFTEN
OUT OF SERVICE	25.5%	42.5%	32.0%
TRANSMISSION PROBLEMS	39.3%	44.6%	16.1%
DIAL TONE DELAY	52.5%	34.4%	13.1%
LONG DISTANCE PROBLEMS	29.1%	51.5%	19.4%

TIME TO REPAIR (DAYS)	1-2	3-4	5-6	≥ 6
	50.5%	26.5%	4.5%	18.5%

BASIC SERVICE AVAILABILITY	WITH TELEPHONE	WITHOUT TELEPHONE
	93.8%	6.2%

TABLE 5 - NTC TERRITORY SUBSCRIBER OPINION SURVEY RESULTS
%: PERCENTAGE OF RESPONDENTS

CATEGORY	NEVER	SOMETIMES	OFTEN
OUT OF SERVICE	42.9%	42.7%	14.4%
TRANSMISSION PROBLEMS	40.8%	42.4%	16.6%
DIAL TONE DELAY	59.7%	28.3%	11.9%
LONG DISTANCE PROBLEMS	52.9%	28.3%	18.8%

TIME TO REPAIR (DAYS)	1-2	3-4	5-6	≥ 6
	58.8%	20.6%	3.2%	17.4%

BASIC SERVICE AVAILABILITY	WITH TELEPHONE	WITHOUT TELEPHONE
	94.6%	5.4%

HISTORICAL BACKGROUND

APPENDIX A

CANADIAN NATIONAL TELECOMMUNICATIONS

TELEPHONE SERVICE IN NEWFOUNDLAND

1.0 Historical Background

Newfoundland entered Confederation in 1949 and at that time telephone service was provided by the following organizations:

(a) Grand Falls area - Anglo-Newfoundland Development Company

(b) Burin Peninsula - United Towns Electric Company

(c) Avalon Peninsula, Corner Brook and Port aux Basques - Avalon Telephone Company

(d) Central Newfoundland - Newfoundland Posts and Telegraphs Department

A total of 27 telephone exchanges existed, only three of which were dial offices. The remainder were common battery manual or magneto exchanges together with a number of multi-party rural telephone systems which were not connected to the long distance system. Long distance facilities on the Island were very limited and constantly congested. Connection to the outside world was by means of a single AM radio circuit between St. John's and Montreal which was operated only 12 hours per day subject to atmospheric conditions.

Canadian National Telecommunications took over the telephone service operated by the Posts and Telegraphs Department which consisted of the 50 line dial exchange at Gander and a number of rural multi-party lines. The total number of subscribers served is not known but it could not have exceeded 500. Since that time the number of CNT exchanges has grown to 127 as of 31 March 1977 serving 39,496 subscribers.

2.0 Local Telephone Service

All CNT exchanges are dial offices with a mixture of equipment types between step-by-step and crossbar common control. All new exchange purchases in the last 5 years have been of the common control crossbar type and planning is underway to introduce the most advanced, fully electronic, digital switching system in 1979.

At the time of Confederation the number of telephones per 100 population in the whole of Newfoundland was only 6. In the CNT area this has risen to 24. Similar improvements have been made in the class of service offered to subscribers. In 1965 30.9% of subscribers had multi-party service which could mean up to 10 subscribers on a line. Since then we have introduced a new 4 party class of service which now accounts for 8.9% of subscribers and the number of multi-party subscribers has dropped to 1.8%. Single party service is now provided to 29.3% of subscribers compared to 19.4% in 1965.

Table 1 summarizes the service for the years 1965, 1970, 1975, and March 1977.

3.0 Long Distance Service

Local telephone exchanges are connected to a toll centre by cable plant, radio systems or a combination of both. In 1965 CNT had 6 toll centres at various locations throughout the Island, all of which were equipped with automatic switching equipment. By 1975 we had reduced the number of toll centres to 2 (Gander and Clarenville) and in 1978 we plan to close the Clarenville toll centre and handle all long distance calls at Gander.

In September 1976 we replaced our automatic toll switching equipment and conventional plug and cord type of switchboard at Gander with a new 4 million dollar processor controlled long distance switching machine. In addition to a greatly improved switching capability, this system also provides the most modern equipment available for handling operator assisted long distance calls utilizing a CRT display and keyboard type of operation. This new system automatically places all incoming calls in a queue and they are then presented to the operator positions in correct sequence. As a result a very good speed of answer at an average of 2.5 seconds has been maintained at the Gander toll centre since the introduction of the new system.

In handling long distance calls our objective is to complete 65% of calls offered to the operator. In 1975 we achieved a 64.6% completion rate. In 1975, 36% of our subscribers had DDD service and this has now increased to 70%. By 1981 DDD will be extended to all our subscribers.

4.0 Service Objectives

4.1 Local Service

Because of the scattered geographic nature of our operation we have not been able to develop a single service objective to cover all locations. At our central attended locations such

as Gander our objective is to answer all service calls within 24 hours (weekends excepted). At more remote locations our objective is extended to 48 hours and all our unattended locations are visited twice every week.

Exceptions to these objectives are locations which are accessible only by boat or by chartered, float equipped, aircraft. We do not answer individual service calls at these locations within any specific period and in any event weather conditions often make them inaccessible. Whilst the bulk of service calls are cleared within the objective time, there are some which require a longer period. An example of this would be where the fault is in the cable plant, particularly lead covered cable, where it may take several days to locate and repair the fault. We expect to have replaced the last of our lead covered cable by 1979.

5.0 Future Programs

A program has been included in our 1977 Capital Budget to commence upgrading of exchanges to permit any subscriber within the base rate area to have single party service on demand and to offer similar service to subscribers outside the base rate area subject to the restrictions of construction costs in remote areas. The initial capital to be spent is budgeted at $250,000 and this will increase to $400,000 a year for 5 years to complete the program.

We expect to close the Clarenville toll office in 1978 and have all our long distance handled by the new processor controlled office at Gander. This will enable us to consistently meet our objectives in answering and completing calls.

6.0 Statistical Summary of Telephone Services as of 31 March 1977

.1	Number of main telephones	39,496
.2	Percent of communities served	almost 100%
.3	Number of exchanges	12%
.4	Percent of exchanges dial	100%
.5	Number of offices with DDD	49
.6	Percent of main telephones with DDD	61%
.7	Long distance calls completed in 1975	4,357,028
.8	Long distance calls dialled by subscribers (DDD)	52%
.9	1975 growth of completed calls	14.7%
.10	Number of telephones per 100 population	24
.11	Typical local rate structure	See table 2
.12	Typical grades of service	See table 3
.13	Capital Investment	See table 4
.14	Toll Centering Plan	See Map K11021

7.0 Tables

Table 1

Telephone Growth

Year	Total Subscribers	By Class of Service				Pho 100
		1 Party	2 Party	4 Party	Multiparty	
1965	12689	2459	6312	-	3918	
1970	26729	4522	12387	-	9820	1
1975	37801	10266	21219	5147	1169	2
31 Mar/77	39496	11383	22560	4444	909	2

Table 2

Typical Local Rate Structure

(a) CNT Rates

Exchange Size Telephones	Business			Residence		
	1 Party	2 Party	PBX	1 Party	2 Party	4 P
1-1000	10.20	6.65	12.50	5.50	4.25	3
1001-5000	11.85	7.25	14.60	6.00	4.65	4

(b) Newfoundland Telephone Co. Rates

1-1000	14.25	9.35	19.50	6.90	5.40	4
1001-5000	15.75	9.95	21.60	7.20	5.70	5

Table 3

Typical Grades of Service

Toll Circuits	1 lost call in 100 (during busy hour)
DDD Circuits	1 lost call in 100 (during busy hour)
Local Service	1 lost call in 33 (during busy hour)

Dial Tone - Not more than 1 1/2% of all originating calls wait longer than 3 seconds for dial tone.

Table 4

Capital Investment

Total in Newfoundland $66,300,000 (estimated)

In last ten years (Millions of Dollars)

Year	Total	Telephone Plant
1966	2.70	1.17
1967	3.12	1.32
1968	3.01	1.38
1969	3.33	1.24
1970	2.70	1.39
1971	2.13	.94
1972	3.54	2.26
1973	5.15	2.37
1974	5.91	2.90
1975	8.03	4.89

NEWFOUNDLAND TELEPHONE CO.

TELEPHONE SERVICE IN NEWFOUNDLAND

The first telephone company formed in Newfoundland was the Anglo-American Telegraph Company in 1885, although there had been individuals using telephones in St. John's in 1878. This company was the forerunner of the Avalon Telephone Company, incorporated in 1919 under the presidency of J.J. Murphy. At that time there were 800 telephones in St. John's served by open wire lines and connected to a non-multiple switchboard. The first long distance line was inaugurated in 1921 between St. John's and Carbonear. It was not until 1937 that a radio telephone circuit was established to link St. John's, Grand Falls, Corner Brook, and the Burin Peninsula. In January 1939 the island was connected world wide when a radio telephone channel was inaugurated between St. John's and Montreal. 1947 saw major expansion when Avalon Telephone took over the Corner Brook franchise from Bowaters and established a new dial exchange. St. John's was converted to dial in 1948, and 1949 saw island wide communications established with Port aux Basques and St. John's linked by voice circuits.

In 1952 Central Newfoundland was added to the company's franchised area when a dial exchange was established in Grand Falls. Between 1954 and 1962 the total company assets increased from $6.7 million to $22.8 million dollars and the number of telephones increased from 27,000 to 53,000. 1962 saw Bell Canada purchase the shares of Avalon Telephone when they held a 99 per cent ownership.

During the next decade the growth in the field of telecommunications throughout the company's territory was particularly significant. Total telephones increased from 60,000 in 1963 to 109,800 in 1973. Particular note should be made of the policy of upgrading of existing facilities (in 1963 47% of all customers had two or multi-party service whereas in 1972 only 4.4% were in this category). The unserved area plan was instituted and in 1974 the last unserved community in the island of Newfoundland (Leading Tickles) was given a modern crossbar-office. In 1970 Direct Distance Dialing was introduced to Newfoundland when the first nine east coast communities were served.

During this period (1962-1972) the total plant investment increased from $24,362,935 to $70,020,022, while local traffic through our facilities nearly doubled and long distance increased by almost three times. Switching centres also increased from 35 in 1962 to 57 in 1971.

In order to more correctly reflect the company's sphere of operations, its name was changed to Newfoundland Telephone Company Limited in 1970 which indicated its growth and expansion to the Avalon, Burin, and Port au Port Peninsulas, Grand Falls, Corner Brook, Stephenville, and the Port aux Basques regions. 1974 saw Newfoundland Telephone Company acquire control of the telecommunication facilities in Labrador previously operated by Bell Canada.

In 1974 the company began construction of a cross-island microwave network which by 1978 will stretch from St. John's to North Sydney, Nova Scotia, and this year also marked the first installation in Newfoundland of an SP-1 electronic switching machine in Corner Brook which provided a more efficient and high quality toll switching centre for all of Newfoundland and made possible the introduction of Direct Distance Dialing to Corner Brook, Stephenville, Grand Falls, and Port aux Basques toll centres.

In Labrador the company initiated a Labrador Improvement Program in 1975 which in two years has seen the completion of microwave facilities from Goose Bay to Nain and by October 1977 will mean that all traffic from L'Anse au Loup to Nain will be via a high quality microwave network also provide television feeds to Cartwright and Goose Bay. The Labrador program also includes the upgrading of local switching facilities and a high quality toll network where only sporadic and poor H.F. systems previously existed. A total of $14 million dollars will have been expended on a construction program budget for Labrador by the end of 1977.

Since 1970 the construction program budget for Newfoundland Telephone has increased from $10.3 million in 1970 to $29.0 million in 1976 - the total for those seven years being $128.6 million. The expenditure of this

money meant, in addition to previously mentioned projects, 100% dial in Newfoundland Telephone territory, expansion of Direct Distance Dialing to all on-island offices, installation of two additional SP-1 electronic offices in St. John's which provided Centrex for the provincial and federal government and improved toll network switching, and the establishment of a Provincial Service Co-ordination Centre which monitors and controls the toll network in order to upgrade and increase the per cent completion of all toll traffic.

In 1976 the company issued common shares which resulted in a reduction of Bell Canada's per cent ownership from 99% to 70%.

Future plans include introduction of DDD to Labrador (Goose Bay, North West River, Wabush, and Churchill) in early 1978. Completion of the trans-island microwave in June 1978 which will introduce Newfoundland to the Trans Canada Telephone Data Route (Highspeed Data Transmission System); also our fourth electronic SP-1 switching machine will be installed for local switching in Mount Pearl in 1978. 1979 will see Grand Falls being served by another SP1 electronic machine to improve both local and toll switching. Newfoundland Telephone has already ordered its first digital switching machine due to be installed in Corner Brook in 1980 for local service.

In our Outside Plant Facilities, Newfoundland Telephone is now utilizing the Digital Multiplex System in areas of high growth which are normally distant from the switching centre in order to save on feeder cable pairs.

NEWFOUNDLAND TELEPHONE COMPANY LTD.

	1963	1972	1976	June 1977
Individual	23,791	73,281	102,121	103,900
Two-Party	11,048	2,838	2,015	1,775
Four-Party	-	345	10	9
Multi-Party	10,107	196	12	11
Other Main*	437	1,047	1,707	1,775
Sub-Total Main	45,383	77,707	105,865	107,470
PBX	6,504	13,332	16,651	16,022
Extensions	8,477	20,690	38,449	38,911
Total Telephones	60,384	109,829	198,534	159,973
% Tels. with Access to DDD	-	55.0	84.7	94.6
Bus/Res Phones	1:2.42	1:2.40	1:2.24	1:2.24
Phones/100 Population	19.2	31.4	42.3	42.4

*Coin, Data, TWX

QUANTITATIVE PERFORMANCE

APPENDIX B

NEWFOUNDLAND TELEPHONE STUDY

QUANTITATIVE PERFORMANCE

Certain measurements have been shown to be important in the determination of the quality and adequacy of telephone service. The results of these measures vary depending on the size, geography and demography of the service area, types of equipment and weather conditions. Thus, no single statistical standard can serve as a strict demarcation between "good" and "poor" service.

Accordingly, it was decided to use a number of indicators of proven value in the telephone industry as a means of gauging the quality of telephone service in Newfoundland. These indicators were already in use by Newfoundland Telephone Company, but had not been introduced by Canadian National Telecommunications. Thus, the first requirement was to identify indicators which could be applied to either company in similar areas; those for which data could be assembled immediately and on a regular basis, and those which would reflect conditions which were visible to the user and were directly related to and concurrent with customer expectations.

PERFORMANCE INDICATORS

The performance indicator is a general term applied to many types of measurement reports which when constructed and interpreted correctly indicate to management the quality and quantity of past performance based on past decision making and provide a basis for future decision making.

It is interesting to note that the "desired level of service", from the point of view of the telephone company does not necessarily correspond to the user's expectations. Studies have been made within the telephone industry, for example, of user tolerances and preferences for different qualities of voice conversations. Telephone users have

different opinions amongst themselves of what is excellent, good, fair or poor and often there can be a considerable overlap in such subjective observations, In view of this an objective measurement system is essential.

Although the selection of measurements as indicators of quality of service has largely consisted of internal judgements by the telephone industry. The indicators reflected are for the most part derived from external sources rather than internal. More precisely, the data in many cases are obtained directly from customer originated calls. The following indicators therefore are those which directly affect customer telephone service.

Description of Selected Indicators

A. Customer Reports per 100 Telephones

A customer report is any notice received that indicates that the person reporting is experiencing difficulty or dissatisfaction with telephone equipment, including improper functioning of equipment or dissatisfaction with appearance, location or physical condition of telephone plant.

B. Held Orders per 100 Main Inward Movement

An order (request for service) is recorded as held if the required outside plant and/or switching facilities are not readily available. The number of held orders expressed as a percentage of main inward movement is a measurement of service availability. It is suitable for comparison over periods of time when the company size is changing. It is also a measure of the extent of unsatisfied demand when considered in relation to the total number of customers receiving service. Regardless of the volume of held orders, emphasis has to be placed on the number of months held from date of application.

C. Held Regrades per 100 Main Inward Movement

A regrade (request for an upgrade in service, e.g. party to individual service) is recorded as held if the required outside plant and/or switching facilities are not readily available. The absolute number of held regrades, at any point in time, is a measure of the extent of unsatisfied demand for service upgrading when considered in relation to the total number of customers receiving service.

D. Speed of Trunk Answer - Long Distance and Directory Assistance

Expressed as a simple percentage, this indicator is a measurement of the long distance and directory assistance calls which are not answered by the operator before ten seconds, in the period from 6 a.m. to 12 midnight of each day.

E. % DDD Completion-

This is a measure of the completion rate of DDD calls initiated anywhere in and terminating anywhere in a territory. It excludes calls to 555-1212, Universal Information, and includes calls not completed because of "don't answer" and "busy telephone" conditions.

F. % Dial Tone Delay

This result measures, on a statistically reliable sample basis, the percent of customers who wait in excess of 3 seconds for dial tone. It therefore measures the accessibility of the network and is a prime indicator of the service being given to the customers. The result is obtained through the use of a mechanical device which places a dial tone demand on the equipment similar to that placed by a customer on a time-consistent busy hour basis.

DISCUSSION OF RESULTS USING CHOSEN INDICATORS

The indicators chosen for the study were deemed to be the most appropriate at the time and those which CNT could apply in sufficient degree to produce meaningful results within the time frame considered. It should be emphasized that, in the telephone industry, the trend is all important. For this reason a given indicator for a given month should not be considered in isolation. The indicators used in this study were agreed to at a meeting between CNT, NTC, and the Province of Newfoundland and DOC in October, 1976.

Presented below are the results of the collection of indicators from the period November, 1976 through October 1977. They are considered in relationship to one another and, in some cases, to current practices in the telephone industry. The data in some instances also indicate differences for different geographical areas of the province.

A. Customer Reports per 100 Telephone (Fig. B1)

In reviewing the figures as provided by CNT and NTC it can be seen that NTC experiences a lower number of reports per 100 telephones on an overall basis. A further analysis shows that the larger urban communities in general exhibit a lower report rate than the more remote communities. Bay Roberts in NTC territory appears to be an exception. However, on further analysis, it was found that there were unusually high winds and rain reported during November and December in that area. At the same time adverse weather conditions were reported to have affected service in the same manner in CNT served areas. It should be pointed out merely as an example, that should the trend continue in the Bay Roberts area, one would consider a more detailed analysis of the indicators. For example, one or two exchanges could be a source of trouble and a measuring plan on a trend basis will pinpoint such offices. This indicator is of course very sensitive to weather conditions and the condition of outside plant.

B. Held Orders Per 100 Inward Movement

Due to limited availability of data, the number of orders per main inward movement could not be calculated. However, the following figures reflect the available data:

	CNT	NTC
December 31/76	1158	356
March 31/77	525	404
June 30/77	810	288

C. Held Regrades per 100 Inward Movement

Due to the limited availability of data, the number of orders per main inward movement could not be calculated. The following figures represent the available data:

	CNT	NTC
December 31/76	653	488
March 31/77	546	507
June 30/77	1200	580

D. Percent Trunk Answer Over 10 Seconds (Fig. B2)

From a user point of view, this constitutes observations concerning delays in reaching the operator. In the case of Gander, it has been observed that there have been no delays over 10 seconds except in isolated cases such as Christmas and New Years. The other CNT toll centre at Clarenville, however, exhibits delays of over 10 seconds in 20 to 30 percent of the calls offered. In NTC toll centres the figure is in the range of 9 to 12 percent. As CNT offices are changed to home on Gander rather than Clarenville, one expects to observe an improvement in

the Clarenville figures unless other circumstances work in opposition. By the same token, one would now expect the service at Gander to be excellent, since new equipment is provided to allow for homing of all offices, resulting in the eventual elimination of Clarenville as a toll centre. Trends represented in figure 2 tend to agree with this hypothesis. However, in the short term a drastic deterioration of answer time at Clarenville might be attributed to staff reductions which took place during early 1977.

E. % DDD Completion (Figs. B3, B4, B5 & B6)

The telephone industry considers an objective of the order of 70% in this area is desirable and obtainable. This is one of the more meaningful indicators of customer satisfaction with long distance service. However, it is still not perfect as it includes lack of completion for such reasons as no answer and busy which are of course not under telephone company control. The figure can also be affected by the type of community served by a given exchange. For instance, a predominantly business environment would normally produce good results since business telephones are usually attended during the period of time when one would expect to be able to complete such a call. On the other hand a residential community usually exhibits a poorer performance. These figures can again be affected by local holidays in the case of businesses, and by vacation periods or weather conditions for example in the case of residential areas. It has been pointed out that NTC has a higher proportion of business telephones than CNT, and hence the CNT results might be expected to be lower than those for NTC. In Canada and the U.S. typical percent completions range between 65-70%. In Newfoundland it is observed that

completions to NTC office are generally in that range except for Goose Bay. The completions to CNT offices and to Goose Bay (NTC) are typically 15-20 percent lower.

F. % Dial Tone Delay

As agreed to at the October, 1976 meeting, this data would be provided simultaneously by NTC and CNT depending on availability of the data from CNT. Thus the first information in this area became available in May, 1977 when CNT had installed the necessary test equipment. Both companies agreed to provide this data, as well as that for the other indicators, until October, 1977.

It should be noted that this is an area where NTC express some doubt as to the validity of the public assessment obtained from the opinion survey. This is not inconsistent with this type of survey. However, as stated, it is the way the subscribers at the time of the survey saw the service. In such instances a quantitative measurement would determine the existing situation.

The May 1977 data shows that less than half of 1% of telephone subscribers waited more than 3 seconds for dial tone in NTC served territory.

The data received from CNT is a more limited sample representing a 115 hour period commencing at 11 a.m. on May 25, 1977. It showed that .01% of all subscribers tested waited more than 3 seconds.

FIG. B1

REPORTS PER 100 STATIONS

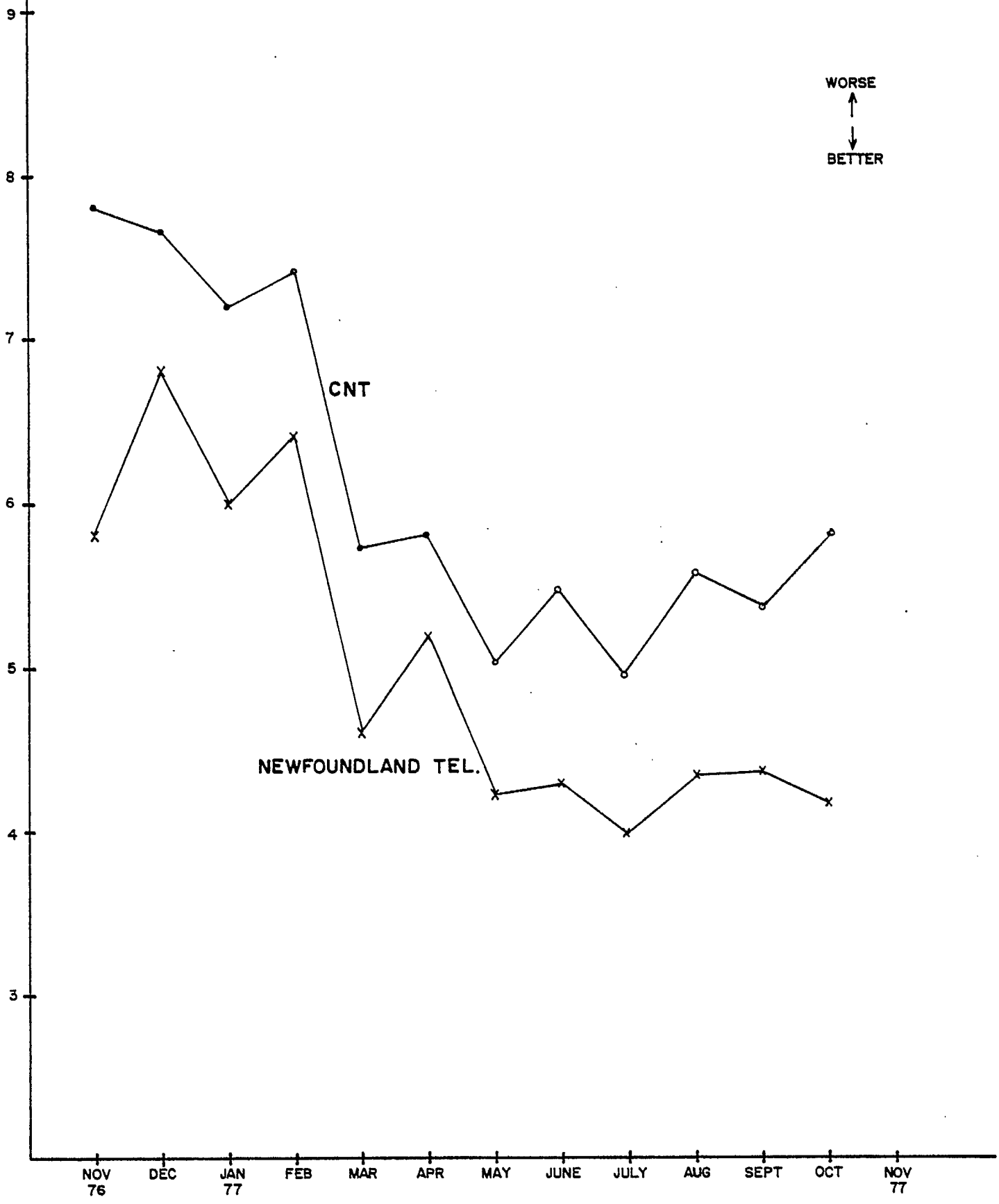


FIG. B2

% TRUNK ANSWER OVER 10 SECONDS

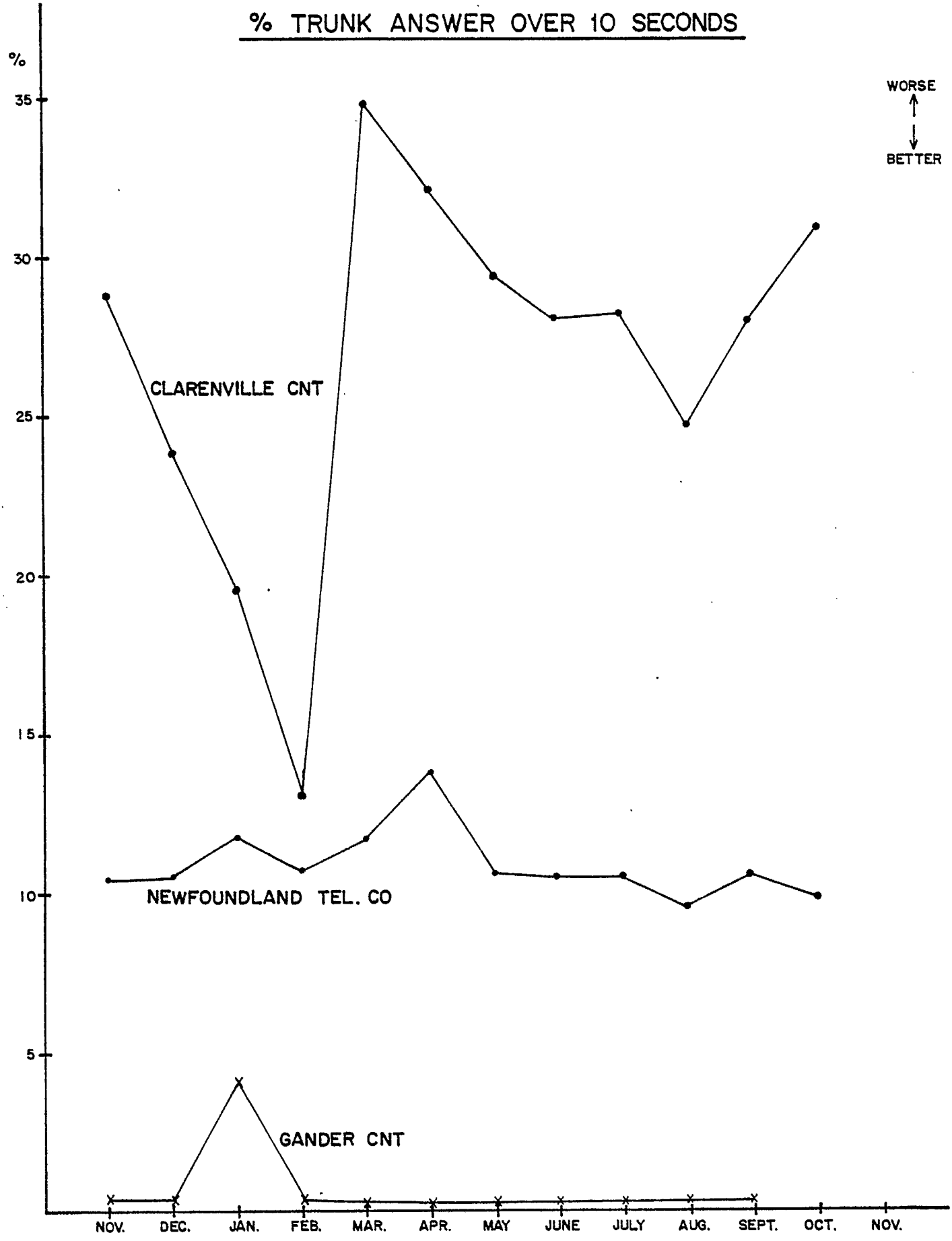


FIG. B3

% DDD COMPLETIONS - ST. JOHN'S

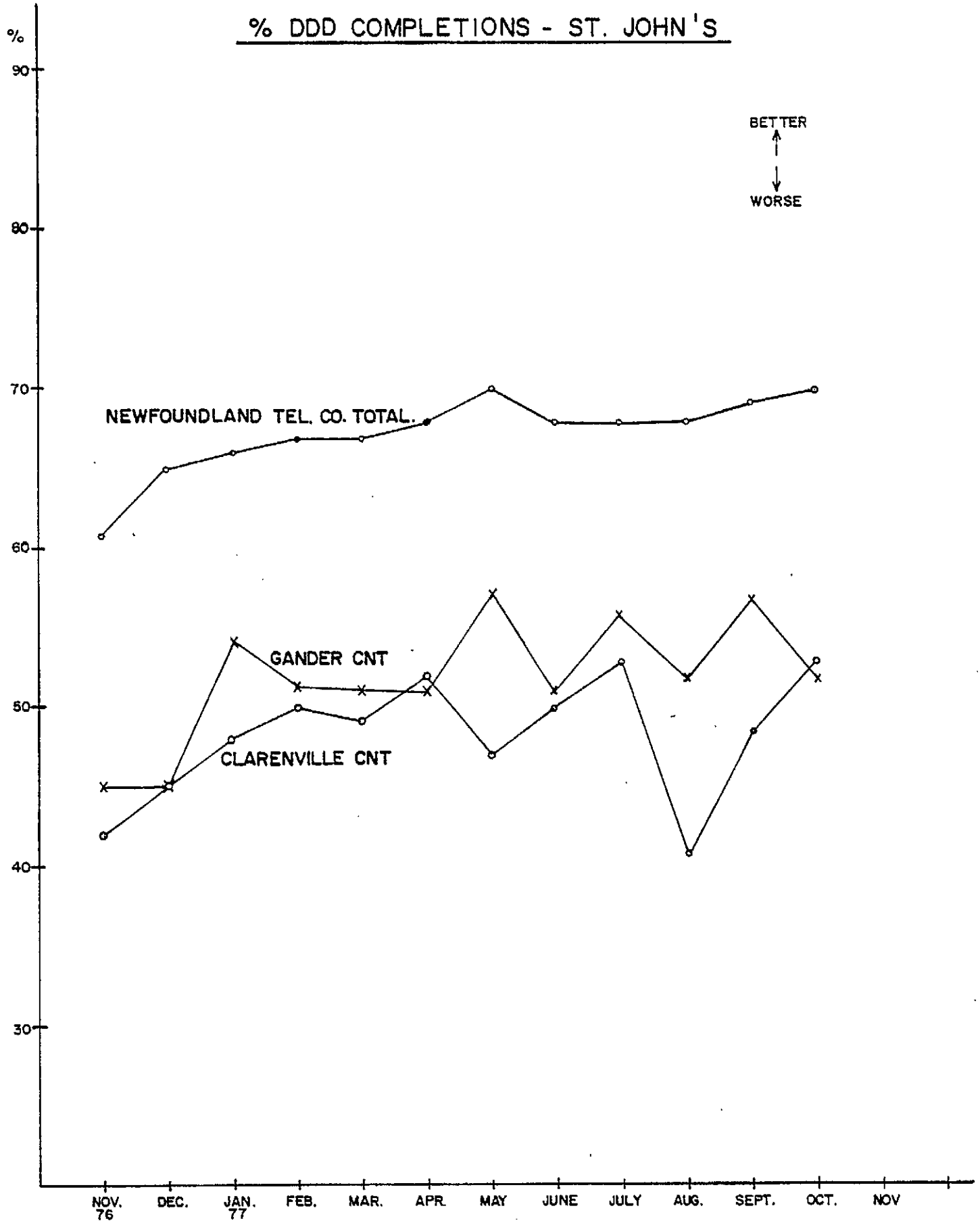
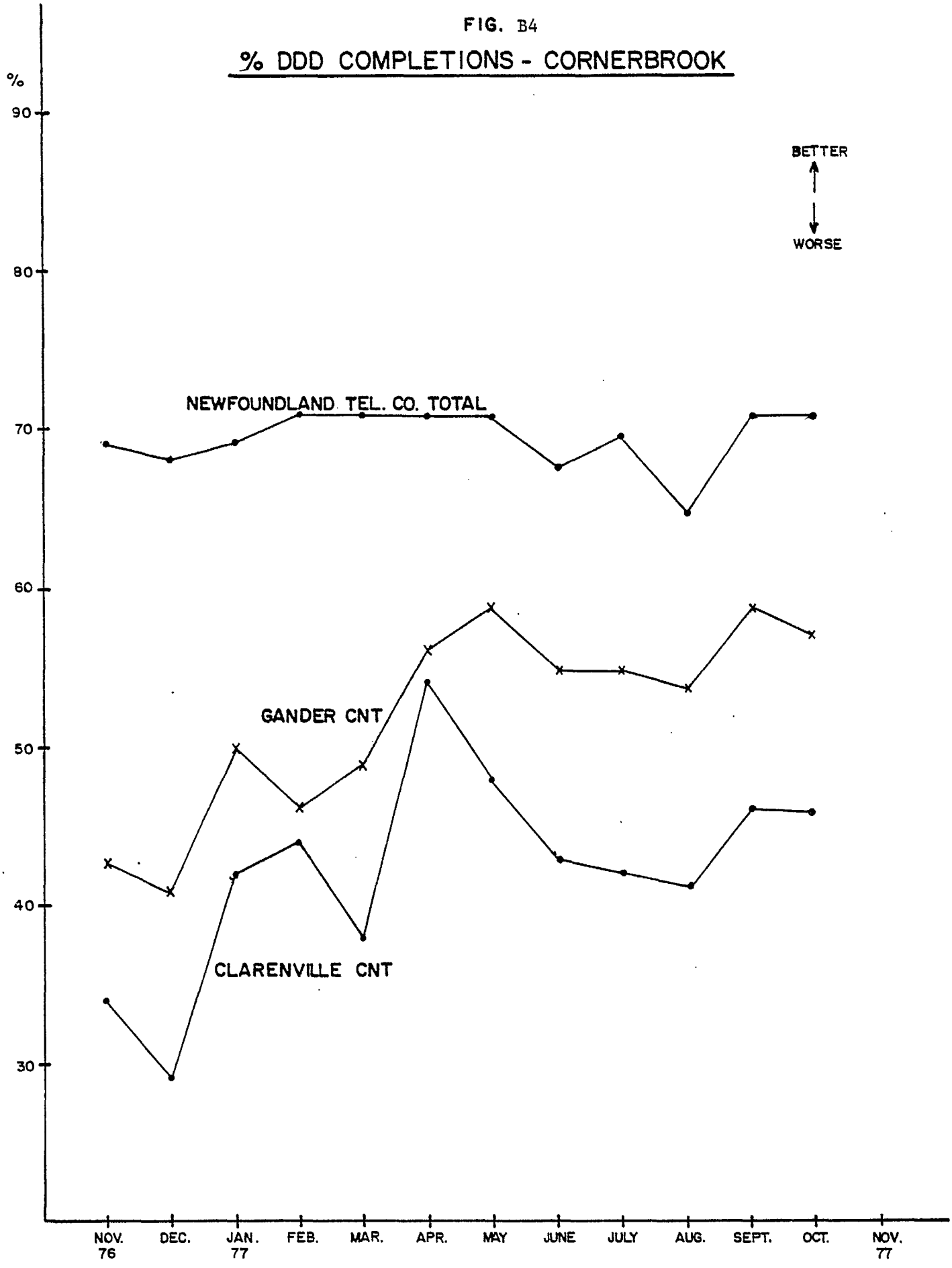


FIG. B4

% DDD COMPLETIONS - CORNERBROOK



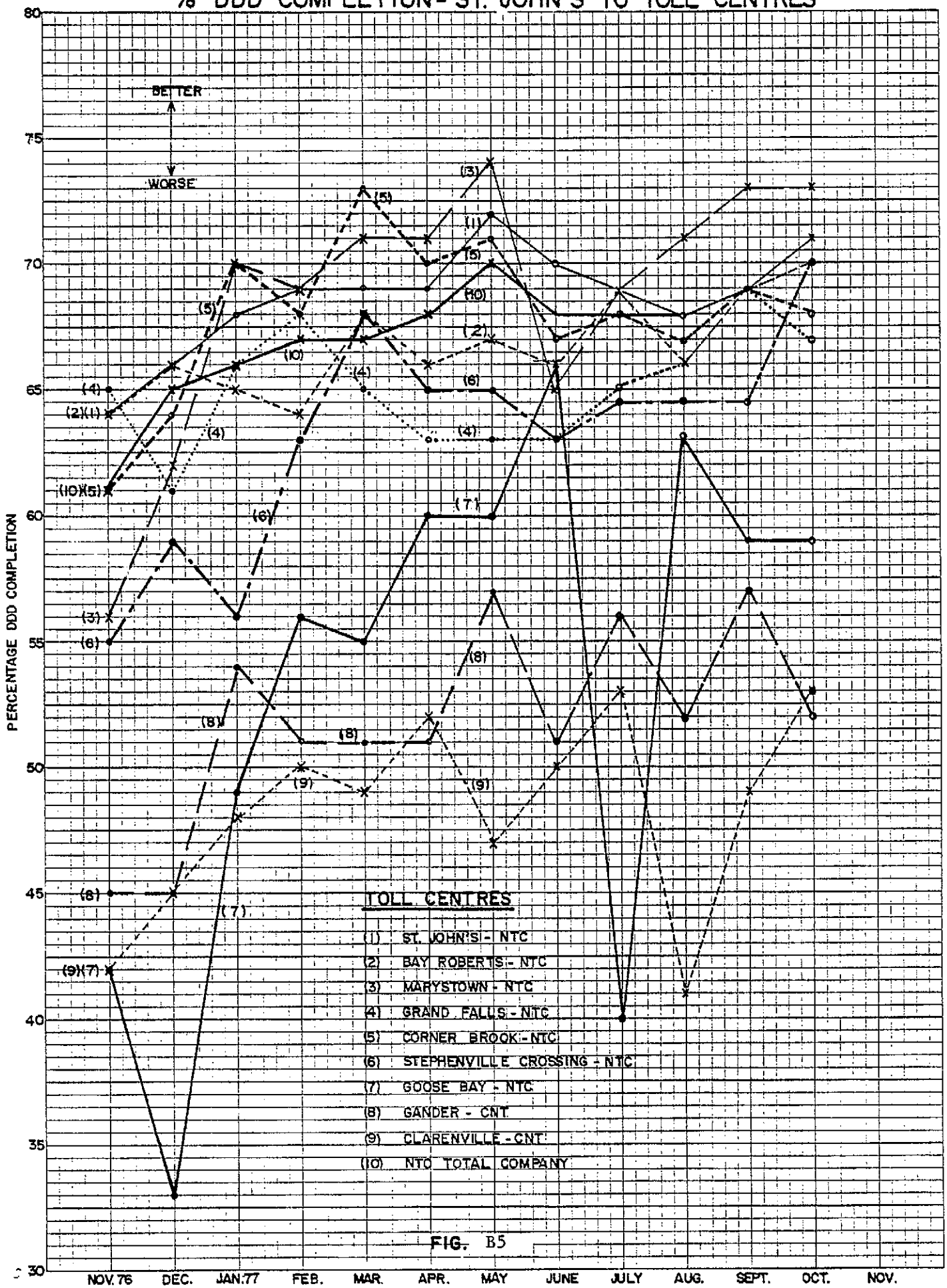


FIG. B5

A MEASUREMENT OF THE COMPLETION OF DDD CALLS THAT ORIGINATE AND COMPLETE IN NEWFOUNDLAND AND LABRADOR

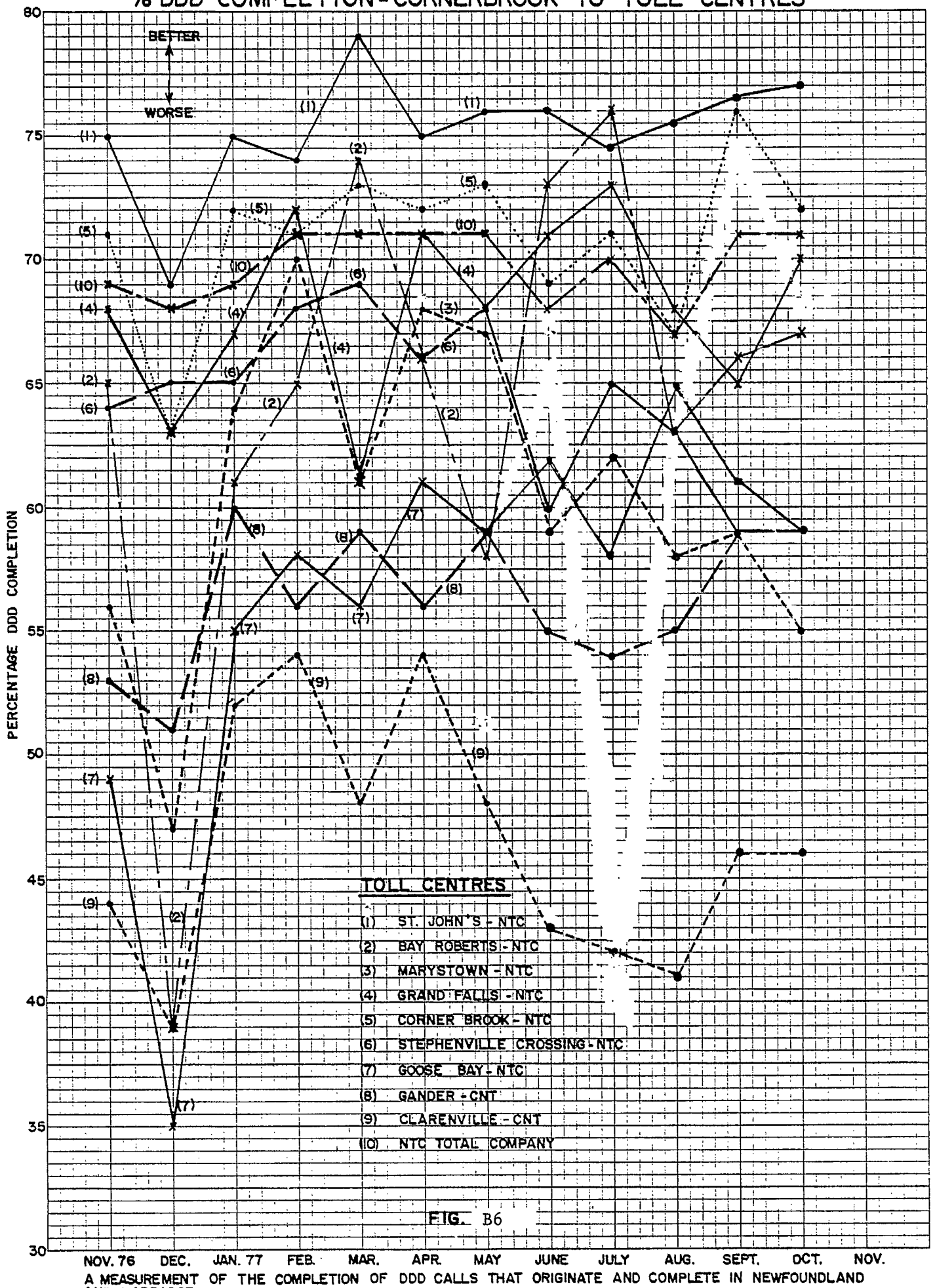


FIG. B6

A MEASUREMENT OF THE COMPLETION OF DDD CALLS THAT ORIGINATE AND COMPLETE IN NEWFOUNDLAND AND LABRADOR

A SUBSCRIBER OPINION SURVEY

OF NON-URBAN TELEPHONE SERVICE

IN NEWFOUNDLAND

APPENDIX C

TABLE OF CONTENTS

LIST OF TABLES

List of Figures

INTRODUCTION

The survey of non-urban telephone subscribers was conducted in Newfoundland (Island and Labrador) in mid-1976. In total, 1248 householders (representing almost 1% of the households in the province) replied to a survey questionnaire composed of five questions designed to reveal subscriber's opinions and impressions of various aspects of their telephone service. These aspects were basically: how often was service interrupted and how long did it take to be restored; and how often did the subscriber experience transmission problems, delay for dial tone, or long distance difficulties. In addition, the reasons given by householders for not having telephone service were recorded.

Although the survey was not conducted in a rigorously statistically correct manner, the responses yielded much useful information. Division of the survey results into subscribers served by the two major telephone companies operating in Newfoundland enables comparisons to be drawn between subscriber's opinions of the kind of service they receive. Also, by grouping results into geographic areas, variations in service throughout the province can be recognized. Finally, although this becomes a more uncertain exercise because of the smallness of the samples involved, individual exchanges, where the service provided is significantly below average, can be identified.

It must be noted that the subscriber opinion survey is not intended to evoke any firm conclusions. It is intended to be complementary study to the examination of the objective performance data as presented in other parts of this report.

2.0 NON-URBAN TELEPHONE SUBSCRIBER SURVEY

2.1 Survey Method

The survey was conducted during the period May to August 1976 by three teams, each consisting of one or two students who were simultaneously conducting a TV coverage survey for the Department of Communications in conjunction with the CRTC. Since the primary objective of the survey was to collect data on TV reception in the areas of the province outside of the larger population centres, the teams received a two week training period instructing them how to approach and gain entry to households and, once inside, how to identify various kinds of reception problems. The requirement to include telephone service was identified just prior to the commencement of the survey, which unfortunately did not allow sufficient time to provide special training or instructions to the teams concerning this aspect of the survey.

Each team was provided with a pre-arranged route of communities to be visited and instructed to select perhaps three homes in each, at random, one on entering, one in the centre, and one on leaving. The sample size and composition was essentially left to the teams, and was not based on a probability sampling plan.

After obtaining the necessary TV data at each household, the telephone questionnaire (see Section 2.4) was completed. Since the survey sheets were, to a very large degree, completed clearly and comprehensively, it is apparent that the results of the survey did not suffer from a lack of precise instructions provided to the teams.

2.2 Survey Scope

The survey included all inhabited areas of the island part of the province, as well as a small number of communities along the Labrador coast. Table 1 shows how these communities are distributed in the areas served by CNT and NTC, as well as indicating how many serving central offices were included for each company.

TABLE 1

Number of Surveyed Communities and Central Offices

Serving Company	No. of Communities Surveyed	Central Offices Included in Survey	Central Offices Excluded	Total
CNT	183	105	22	127
NTC Island	127	53	10	63
Labrador	9	7	15	22
Total	319	165	47	212

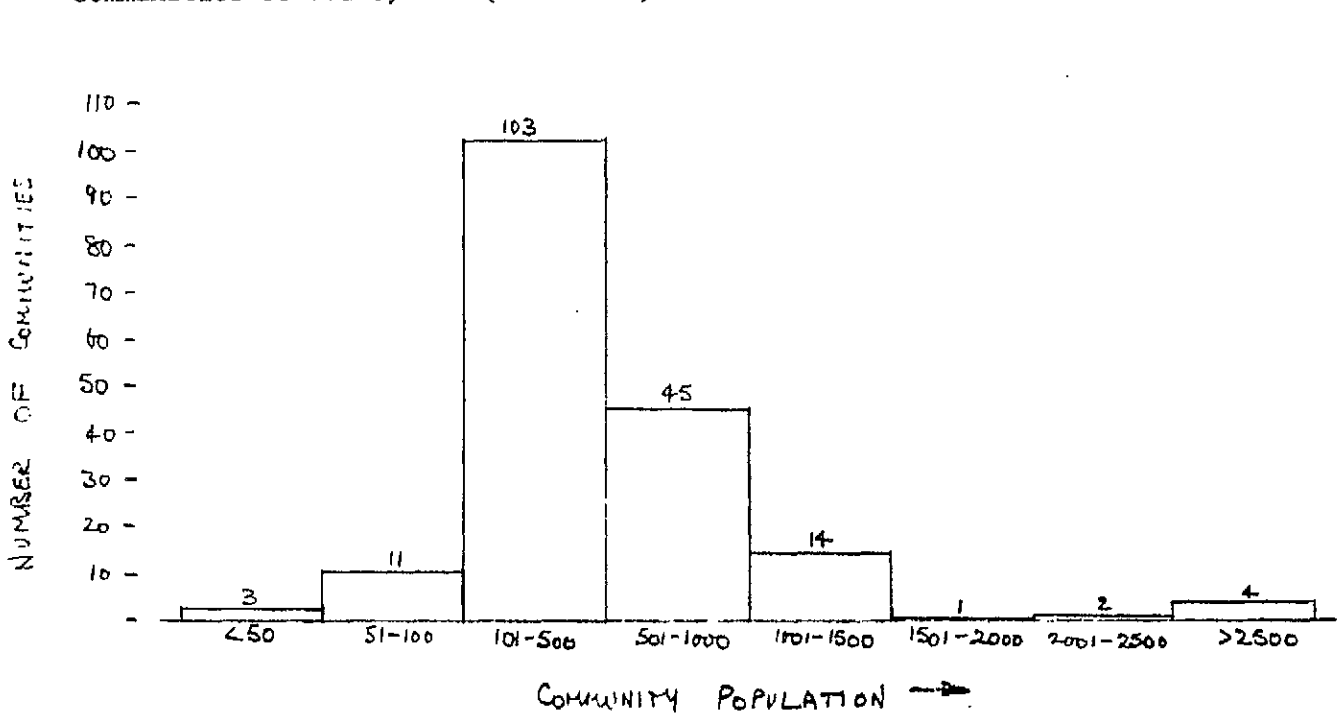
The communities and central offices included in the survey are listed in Annexes 1 and 2 for CNT and 3 and 4 for NTC. Generally speaking, the excluded exchanges are located in, or in the immediate vicinity of, the larger towns (St. Johns, Gander, Grand Falls etc.), or are small exchanges located in areas where there is a large number of small communities and hence telephone exchanges, such as in Notre Dame Bay, Fogo Island or Burin Peninsula. Apart from Labrador, which for reasons discussed later will be treated separately, an even geographic coverage of smaller and non-urban communities was obtained by the survey.

Table 2 shows how the surveyed communities are distributed by size. For either company, the preponderance of communities lies in the 100 to 1,000 inhabitants range. The sample in NTC territory included a much greater proportion of communities with over 2500 inhabitants, reflecting the fact that this company generally provides service in the more heavily populated portions of the island.

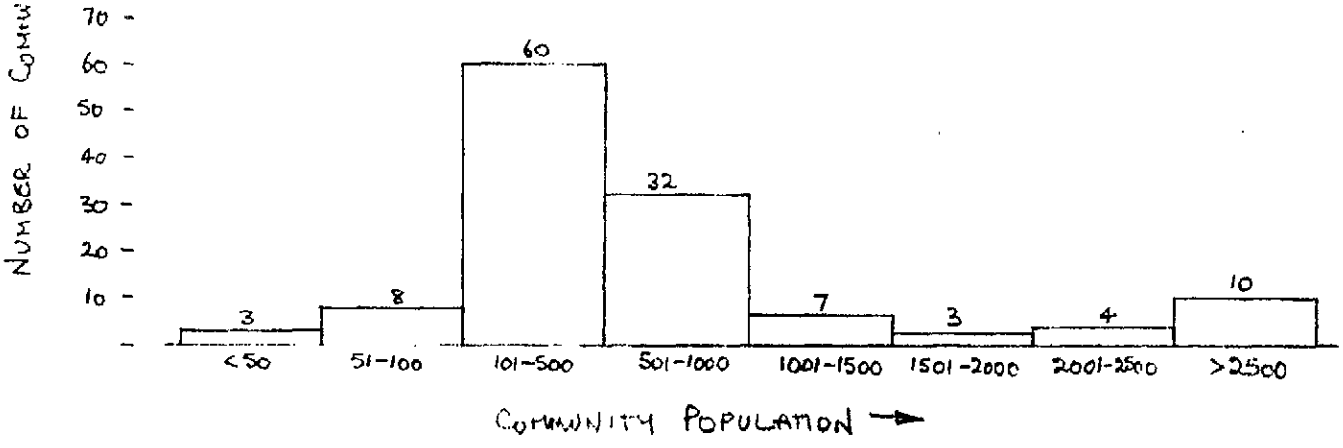
TABLE 2

Surveyed Communities by Size

Communities Served by CNT (183 total)



Communities (Island) Served by NTC (127 total)



2.3 Sample Size

In all, the survey teams visited 1248 households, broken down as follows:

Serving Company	Respondents with Telephones	Respondents without Telephones	Total
CNT	699	46	745
NTC (Island)	482	27	479
(Labrador)	24	--	24
Totals	1175	73	1248

Therefore, the survey encompassed almost 1% of approximately 130,000 households in the province. By summing the individual exchange subscribers and community populations (the figures shown are 1971 census data) from Annexes 1 to 4, we can get an approximation of the population from which the survey sample was drawn. This is shown in Table 3 for each operating company. The sample sizes, as a percentage of subscribers, are the more meaningful figures in this table. In fact, since the survey was conducted on the basis of households, sample sizes as a percentage of residential subscribers would give even better estimates.

Although the sample sizes are considerably different for CNT and NTC subscribers, this need not have an adverse effect on the accuracy of the results, since the absolute sample size is the important parameter here. With the sample sizes obtained in the survey we would expect the results to be correct within 4 percentage points at the 5 percent level of significance. (This means that if the survey was conducted again many times, we would expect to obtain the same answers to within 4 percent 19 out of 20 times).

TABLE 3

Sample Sizes

Serving Company	Respondents		Total Subscribers Served by Included Exchanges*	Total Population of Surveyed Communities	Subscriber Sample (%)	Population Sample (%)
	With Phones	Total				
CNT	699	745	31,000	105,000	2.3	0.7
NTC	476	503	45,600	101,000	1.0	0.5

* As of mid-1976 CNT and NTC had approximately 38,000 and 105,000 total subscribers respectively.

2.4 Survey Questionnaire

A sample completed questionnaire is shown on page 9. Typically, the category "another reply" was rarely used. Therefore, replies to Questions 2, 4, 5 and 6 fall into the categories (in order of increasing frequency).

never
sometimes (or few)
often

Hence, replies to these questions can be quantified on a three point scale, which is perhaps as fine a graduation as can be reasonably identified in a survey of this type, without specifying with greater accuracy the meaning of the terms used.

Question 1 represents no difficulty of interpretation, although some households reported both "yes" and "no", presumably as an indication that they had a non-functioning set.

Answers to Question 2 required an additional level of judgement, since organization of those replies in cases where the respondent specified a figure for out-of-service frequency must be performed. Zero was interpreted as "never" out of service; up to four times was treated as "a few" ("sometimes"), whereas 5 or more times was treated as "often" (the highest number encountered was 12, or roughly once per month). A small percentage of replies did indicate that the telephone was rarely (if ever) in service. However, these replies were treated as "often", in order to minimize any tendencies towards exaggeration on the part of the respondents.

Newfoundland Non-Urban Telephone Questions

Name of Community Baie Verte Date June 14/76

1. Do you have a telephone?
   - [x] Yes
   - [ ] No

   If the answer is NO, attempt to determine why not.

   If the answer is YES, proceed with the following questions.

2. How often during the past year has your telephone been out of service?
   - [1] times (insert number)
   - [ ] a few times
   - [ ] often
   - [ ] another reply _____

3. How long did it take to have it repaired?
   - [ ] days (insert number)
   - [x] another reply less than one day

4. How often do you have trouble hearing the other person?
   - [x] never
   - [ ] often
   - [ ] sometimes
   - [ ] another reply _____

5. How often do you have to wait for dial tone for more than a few seconds?
   - [ ] never
   - [ ] often
   - [x] sometimes
   - [ ] another reply _____

6. How often do you have trouble reaching the long distance operator?
   - [ ] never
   - [ ] often
   - [x] sometimes
   - [ ] another reply _____

Question 3, relating to how long it took to repair service outages, was quantified by dividing the replies into groups representing less than 2 days, 3 to 4 days, 5 to 6 days, or longer than 6 days. These categories fit the data well and were considered to represent a range of repair service spanning the spectrum from reasonable to unreasonable.

Question 4 was intended to provide data on the frequency with which transmission problems were encountered.

Similarly, questions 5 and 6 were intended to indicate general service availability for making local and long distance calls respectively. Some subscribers reported never using long distance service or never using the long distance operators (presumably because DDD is available to them). These cases were interpreted as "never having trouble reaching the long distance operator", which perhaps tends to give a better impression of service than would otherwise be the case. This was considered a more practical and accurate approach, rather than trying to exclude replies to question 6 from certain categories of subscriber.

Questions, interpretations of meanings and measurement scales are summarized on the next page.

Question	Interpretation	Scale (good → bad)
1. Do you have a telephone?	Self evident.	Yes No
2. How often in the past year has the telephone been out of service?	Out of service frequency.	Never Sometimes Often
3. How long did it take to have it repaired?	Repair time (days)	<2, 3 or 4, 5 or 6, >6
4. How often do you have trouble hearing the other person?	Transmission problems.	Never Sometimes Often
5. How often do you have trouble reaching the long distance operator?	Long distance problems	Never Sometimes Often

Using these categories and interpretations, no problems were experienced in usefully using or interpreting all of the data contained on the survey forms.

3.0 SURVEY RESULTS

3.1 Data Analysis

The responses from individual survey questionnaires were tabulated on a master record, one for each community surveyed. These communities were matched with the serving central office and divided into CNT territory. Summing the results for each exchange then gave an indication of the service provided by the exchange and its operating company. Finally, to provide a more comprehensive picture of service quality, exchanges were grouped into regions (discussed further below) so that service in different areas of the province could be compared.

As has been pointed out previously, the survey was conducted on the basis that inclusion or exclusion of individual households depended upon the personal judgement of the survey team members. Such judgement samples may yield good estimates from the data obtained, but with this type of sampling technique the investigator has no objective method for evaluating the adequacy of the sample. In other words, we do not have a reliable measure of the precision of the estimating technique. One piece of evidence available to indicate that the results are accurate to a reasonable degree is that the percentage of households without telephones in the survey is in fairly close agreement with the Statistics Canada figure (6% vs 9%), which is derived from a statistically more rigorous survey of provincial households. With this proviso, the results are presented below for each company and comparisons are made on the assumption that the survey sample was in fact a random selection of Newfoundland households. In order to compare results for different companies, regions or exchanges, the well known statistical technique of expressing results as a percentage of the sampling population and calculating the confidence interval was employed.

Note that the raw data presented in Tables 6 and 8 is not always mutually consistent; this is because not all respondents replied to all questions. However, better than 95% response was generally obtained (with 99% response for most questions). The percentage figures shown in Tables 7 and 9 are computed as a percentage of the respondents replying to that question.

3.2 Regional Divisions

As mentioned previously, the results for each company were broken down into fairly manageable pieces by summing the results for exchanges in a given geographical area. This is easily done for NTC because of the five distinct areas of the province in which the company operates, each of which is provided with its own toll centre (or centres). The statistics of these areas are described in Table 4 below:

TABLE 4

NTC Surveyed Regions

Region	Number of Exchanges Included in Survey	Excluded	Total	No. of Communities Surveyed	Toll Centres
Avalon Peninsula	26	6	32	65	St. John's Bay Roberts
Burin Peninsula	4	2	6	10	Marystown
Grand Falls Area	5	1	6	8	Grand Falls
South West Corner	18	1	19	44	Corner Brook, Stephenville Crossing
Sub Total	53	10	63	127	
Labrador	7	15	22	9	Goose Bay
Total	60	25	85	136	

Table 5 shows a full listing of NTC exchanges, toll centres and the regions chosen for analysis purposes.

TABLE 5

NTC Exchanges by Region and Toll Centre

Region	Avalon Peninsula		Burin Penin.	Grand Falls	South West Corner		Labrador
Toll Centre	St. John's	Bay Roberts	Marystown	Grand Falls	Corner Brook	Stephenville	Goose Bay
	St. John's	Bay Roberts*	Burin*	Grand Falls	Benoits Cove*	Codroy*	Black Tickle
	Mt. Pearl	Branch*	Garnish*	Bishops Falls*	Corner Br.*	Degras*	Cartwright
	Portugal Co.*	Brigus*	Grand Bank*	Botwood*	Curling	Isle Aux Morts*	Charlettown
	Torbay	Carbonear*	Lamaline*	Cottrells Co.*	Deer Lake*	Jeffrey's*	Churchill Falls
	Bell Island*	Chapel Arm*	Marystown	Leading Tickle*	Lark Hr.*	Lourdes*	Davis Inlet
	Cape Broyle*	Freshwater*	St. Lawrence	Pt. Leamington*	McIvers*	Port Aux Basques*	Forteau*
	Fermeuse*	Harbour Main*			Pasadena*	Port Aux Port*	Fox Harbour*
	Long Hr.*	Hts. Content*			Summerside*	Rose Blanche*	Goose Bay
	Pouch Cove	Hts. Delight*				St. Georges*	Hopedale
	Trepassey*	Long Pond				Stephenville*	L'Anse au Clair*
	Witless Bay*	Lower Isl. Co.*				Stephenville Crossing*	L'Anse au Loup*
		Mt. Carmel*					Makkovik
		New Chelsea*					Mary's Hr.*
		New Harbour*					Mud Lake
		Old Perlican*					Nain
		St. Bride's*					N.W. River
		St. Mary's*					Port Hope Simpsor
		Upp. Isl. Co.*					Postville
		Western Bay*					Rigolet
		Whitbourne*					Wabush
							W.St. Modeste*
							Red Bay*

* Exchanges included in survey.

The selection of areas for CNT poses more of a problem because its serving area comprises the remainder of the island with no distinct pockets. This is further complicated by the fact that exchanges home on its two toll centres (Gander and Clarenville) in a more or less random fashion (see toll map, Fig. 1). Rather than trying to divide the company results into toll centres therefore, division on a geographic basis has been considered a more reasonable approach to take, where the geographic regions are chosen so that they encompass a more or less homogeneous area. Since CNT serves mainly the coastal areas of the island, the regions are essentially linear and have been chosen as follows (see CNT exchange map, Fig. 2):

i) South Coast from Burgeo to Rushoon,

ii) East Coast from Little Harbour East to Lumsden,

iii) North Central Coast from Musgrave Harbour to Seal cove (W.B.), and

iv) Northern Peninsula from Westport to Trout River.

The statistics of these regions are shown in Table 6 below:

TABLE 6

CNT Surveyed Regions

Region	Number of Exchanges Included in Survey	Excluded	Total	Number of Communities Surveyed
South Coast	15	5	20	26
East Coast	26	8	34	57
North Central Coast	27	0	27	49
Northern Peninsula	37	9	46	51
Total	105	22	127	183

With these divisions, it is worth noting that all exchanges in the Northern Peninsula and North Central Coast regions are served from the Gander toll centre, whereas in the South and East Coast regions the exchanges are divided approximately equally between Gander and Clarenville.

FIGURE 1

UNI Toll Centering Map

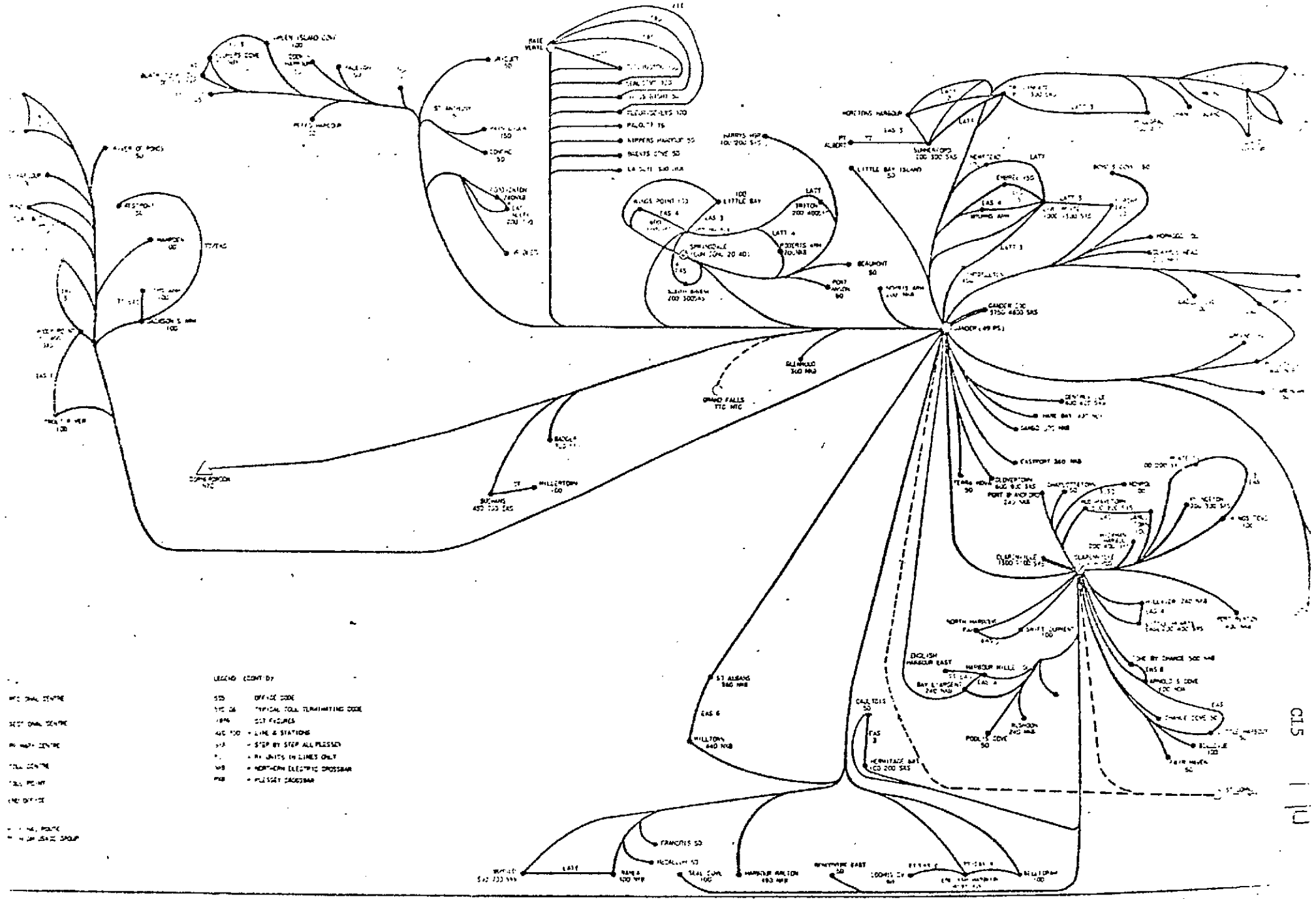
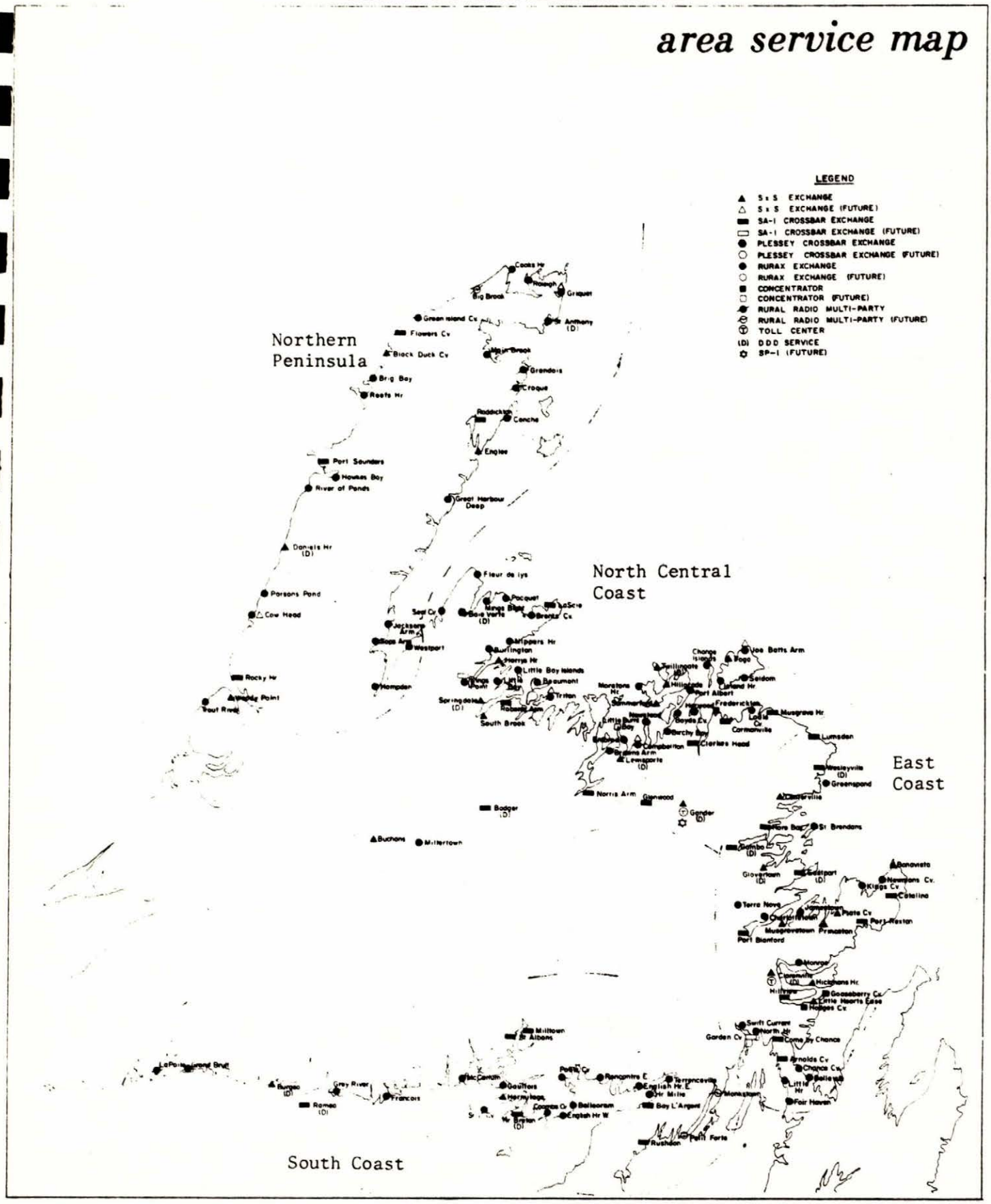


FIG. 2

Canadian National Telecommunications



3.3 CNT Results

Tables 7 and 8 show the raw data and percentage results for each of the regions discussed previously. Although the Fairhaven exchange had just been opened prior to the survey, the responses obtained to the questionnaire related more to the kind of service the subscribers had been getting previously from the Bellevue exchange. The results for Fairhaven have therefore been included with those of the Bellevue exchange.

The results for out-of-service frequency are fairly consistent for all the regions, with approximately 26% of subscribers having uninterrupted service, 43% "sometimes" and 32% "often" having service outages. Repair times, however, differ quite markedly, with the highest percentage of repairs taking less than 2 days on the East and North Central Coasts, 3 or 4 days on the South Coast and over 6 days on the Northern Peninsula.

The majority of subscribers on the South and East Coasts did not report any transmission problems, whereas the majority on the Northern Peninsula and the North Central Coast "sometimes" experienced problems. A very similar picture emerges for dial tone delay. The results in all regions are weighted towards "sometimes" experiencing troubles with making long distance calls (the majority of exchanges in the CNT area are non-DDD).

It is possible to identify, within the limits of the small amount of data being examined in each case, exchanges which exhibit service significantly worse than average (Joe Batt's Arm on the North Central Coast, Centreville on the East Coast, for instance); however, such exchanges are fairly uniformly distributed among the regions, with the exception of the Northern Peninsula where evidently service outages are more frequent and repair times are longer than normal. In fact, a ranking of service by region would probably be as follows:

1. East Coast
2. North Central Coast
3. South Coast
4. Northern Peninsula

TABLE 7

CNT: Summary of Results by Region

Region	Respondents			Out of Service Frequency			Time to Repair				Transmission Problems			Dial Tone Delay			Long Distance Problems		
	With Telephones	Without Telephones	Total	Never	Sometimes	Often	1-2	3-4	5-6	>6	N	S	O	N	S	O	N	S	O
S. Coast	87	5	92	22	48	17	24	27	5	9	50	28	9	50	21	16	25	41	21
E. Coast	224	11	235	54	102	66	115	36	5	12	127	77	19	145	62	16	70	119	35
N. Peninsula	166	16	182	34	57	75	30	23	11	60	28	83	53	62	70	32	57	72	35
N. Central Coast	222	14	236	68	89	65	88	49	2	13	68	122	31	108	86	27	51	127	44
Total	699	46	745	178	296	223	257	135	23	94	273	310	112	365	239	91	203	359	135

TABLE 8

CNT: Summary of Results by Region

Percentages

Region	Respondents		Out of Service Frequency			Time to Repair				Transmission Problems			Dial Tone Delay			Long Distance Problems		
	With Telephones	Without Telephones	Never	Sometimes	Often	1-2	3-4	5-6	> 6	Never	Sometimes	Often	Never	Sometimes	Often	Never	Sometimes	Often
S. Coast	94.6	5.4	25.3	55.2	19.5	36.9	41.5	7.7	13.8	57.5	32.2	10.3	57.5	24.1	18.4	28.7	47.2	24.1
E. Coast	95.3	4.7	24.3	45.9	29.8	68.4	21.4	3.0	7.2	60.0	34.5	8.5	65.0	27.8	7.2	31.3	53.1	15.6
N. Peninsula	90.1	9.9	20.5	34.3	45.2	24.2	18.5	18.9	48.4	17.1	50.6	32.3	37.8	42.7	19.5	34.8	43.9	21.3
N. Central Coast	95.8	4.2	30.6	40.1	29.3	60.7	29.0	1.4	8.9	30.8	55.2	14.0	48.9	38.9	12.2	23.0	57.2	19.8
Total	93.8	6.2	25.5	42.5	32.0	50.5	26.5	4.5	18.5	39.3	44.6	16.1	52.5	34.4	13.1	29.1	51.5	19.4

To see if there was any noticeable variation in long distance service provided by Gander or Clarenville, the results for Question 6 ("long distance difficulties") were analysed separately for exchanges connected to these two toll centres. These results are shown in Table 9 which indicates that there is no statistical difference between the service provided by these centres.

3.4 NTC Results

Tables 10 and 11 show the raw data and percentage results for each of the NTC regions discussed previously. The results for Labrador will be discussed separately. Table 11 shows that the results for out-of-service frequency are fairly consistent across all regions, being slightly better in the Grand Falls area and the Avalon Peninsula. In all cases, subscribers reported repair times of less than 2 days, again the best service being reported in the Grand Falls area. The picture for transmission problems is slightly different, however, with Avalon and Burin Peninsulas "never" experiencing difficulties, whereas the Grand Falls and South West Corner regions are weighted towards "sometimes" experiencing difficulties.

The results for dial tone delay again show small range, weighted towards "never" experiencing excessive delays in all cases; the second most populous category in all cases was "sometimes". Service in the Avalon and Burin Peninsulas is currently superior in this regard. A majority of respondents in all areas reported "never" experiencing long distance difficulties. Here, however, the situation is reversed in that the Grand Falls and S.W. Corner areas are superior to the Avalon and Burin Peninsulas.

It is difficult to identify exchanges significantly below par; only one outstanding example exists; that is, Freshwater on the Avalon Peninsula. In fact, this exchange significantly influenced the results for this region, since it provided almost 50% of the respondents in the "often" out-of-service category.

TABLE 9

CNT: Long Distance Service by Toll Centre

Region	No. of Exchanges in Survey Connected to:		Long Distance Problems					
			Gander			Clarenville		
	Gander	Clarenville	Never	Sometimes	Often	Never	Sometimes	Often
Northern Penin.	27		57	72	35			
North Central Coast	37		51	127	44			
East Coast	11	15	36	46	15	34	73	20
South Coast	8	7	16	21	6	9	20	15
Totals	83	22	160	266	100	43	93	35

Percentages and Confidence Limits

Toll Centre	Long Distance Problems		
	Never	Sometimes	Often
Gander	30 ± 4	51 ± 4	19 ± 3
Clarenville	25 ± 7	54 ± 8	21 ± 6

TABLE 10

NTC: Summary of Results by Region

Region	Respondents			Out of Service Frequency			Time to Repair (days)				Transmission Problems			Dial Tone Delay			Long Distance Problems		
	With Phones	Without Phones	Total	Never	Sometimes	Often	1-2	3-4	4-5	>6	Never	Sometimes	Often	Never	Sometimes	Often	Never	Sometimes	Often
Avalon	203	9	212	100	83	20	62	18	5	12	115	61	26	164	28	11	100	57	45
Burin	37	-	37	16	20	1	14	4	-	3	21	10	6	21	11	4	17	13	7
Grand Falls Area	40	1	41	20	13	7	15	4	-	-	17	19	3	21	17	2	22	14	4
S.W. Corner	172	17	189	65	84	21	56	21	3	19	37	98	37	71	69	31	101	45	25
Sub Total	452	27	479	201	200	49	147	47	8	34	190	188	72	277	125	48	240	129	81
Labrador	24	-	24	2	2	19	2	5	-	10	2	11	6	3	8	8	8	4	7
Total	476	27	503	203	202	68	149	52	8	44	192	199	78	280	133	56	248	133	88

TABLE 11

NTC: Summary of Results by Region

Percentages

Region	Respondents		Out of Service Frequency			Time to Repair				Transmission Problems			Dial Tone Delay			Long Distance Problems		
	With Telephones	Without Telephones	Never	Sometimes	Often	1-2	3-4	4-5	>6	Never	Sometimes	Often	Never	Sometimes	Often	Never	Sometimes	Often
Avalon Penin.	95.8	4.2	49.3	40.9	9.8	63.9	18.6	5.1	12.4	56.9	30.2	12.9	80.8	13.8	5.4	49.5	28.2	22.3
Burin Penin.	100.0	0	43.2	54.1	2.7	66.7	19.0	-	14.3	56.8	27.0	16.2	58.3	30.6	11.1	45.9	35.2	18.9
Grand Falls Area	97.6	2.4	50.0	32.5	17.5	78.9	21.1	-	-	43.6	48.7	7.7	52.5	42.5	5.0	55.0	35.0	10.0
S.W. Corner	91.0	9.0	38.2	49.4	12.4	56.6	21.2	3.0	19.2	21.5	57.0	21.5	41.5	40.4	18.1	59.1	26.3	14.6
Sub Total	94.4	5.6	44.7	44.4	10.9	62.3	19.9	3.4	14.4	42.2	41.8	16.0	61.6	27.7	10.7	53.3	28.7	18.0
Labrador	100.0	0	8.7	8.7	82.6	11.8	29.4	-	58.8	10.5	57.9	31.6	15.8	42.1	42.1	42.1	21.1	36.8
Total	94.6	5.4	42.9	42.7	14.4	58.8	20.6	3.2	17.4	40.8	42.4	16.6	59.7	28.3	11.9	52.9	28.3	18.8

A ranking of service by region is as follows:

1. Grand Falls Area
2. Avalon Peninsula
3. Burin Peninsula
4. South West Corner.

There is a marked spread in the survey results from the Avalon Peninsula to the Southwest Corner region.

3.4.1 Labrador

Only a small section of the Labrador coast across the Strait of Belle Isle was included in the survey. The results for this region are far less definitive because of the small sample and the lower percentage of complete questionnaires (typically only 80% response was obtained to each questionnaire). Also, a number of respondents seemed to be users of community phones rather than individual subscribers. However, the results do show a markedly different grade of service from that enjoyed by NTC subscribers on the island.

3.5 Subscribers without Telephones

5.6% of surveyed households in NTC territory and 6.2% in CNT territory did not have telephones. While the survey was intended to identify subscribers opinions regarding their present telephone service, it is interesting to analyse the reasons householders gave for <u>not</u> taking service. These reasons generally fell into one of 5 categories, which are shown in Tables 12 and 13 for NTC and CNT respectively.

TABLE 12

Respondents without Telephones in NTC Territory

Reasons for not Taking Service	Number in Region				Total	Percentage
	Avalon	Grand Falls	Burin	S.W. Corner		
Awaiting installation	0			3	3	11
Not required	4	1		6	11	41
Unobtainable*	1			3	4	15
Too expensive	3			1	4	15
No reason given	1			4	5	18
Total	9	1	0	17	27	100

TABLE 13

Respondents Without Telephones in CNT Territory

Reasons for not Taking Service	Number in Region				Total	Percentage
	S. Coast	E. Coast	N. Central	N. Penin.		
Awaiting installation	3	1	5	4	13	28
Not required	1	4	1	3	9	20
Unobtainable*	1	0	3	1	5	10
Too expensive		3	4	2	9	20
No reason given		3	1	6	10	22
Total	5	11	14	16	46	100

* also includes replies indicating that service was not available at the level of service required.

While the small sample precludes any strong conclusions, it is interesting to note that these tables seem to confirm the general impressions previously obtained; that is, the least satisfactory service was provided in the SW. Corner and Northern Peninsula areas of the respective operating companies.

Comparing the two companies shows a greater percentage of respondents waiting for phone service in CNT territory, whereas the "unobtainable" and "too expensive" categories are approximately equal for the two companies.

4. COMPARISONS AND DISCUSSION

Table 14 shows the survey results for the two samples of subscribers drawn from the populations served by CNT and NTC. This table also shows the 95% confidence limits for each statistic, computed in the usual way based on the assumption that the two samples meet the criteria for statistical randomness. The confidence limits (together with the standard normal deviation) help to determinè whether the differences in results for the two groups are significant or whether the two groups are really just samples drawn from the same population. The pairs of figures circled in this table are those categories for which (at the 5% level of significance) there is no discernable difference in the data, i.e. the data is not accurate enough to discriminate between one company or another.

Interpretation of Table 14 is purely a matter of personal emphasis. Two possible criteria for interpreting the data are suggested by the following statements:

1) "The company providing the best service is the one with the highest percentage of subscribers 'never', experiencing problems",

2) "The company providing the best service is the one with the smallest percentage of subscribers 'often' experiencing problems".

In Table 14 we have underlined the figures representing the highest percentage in the 'never' column (or 1-2 day repair time) and the lowest percentage in the 'often' category. Based on the first criterion discussed above, NTC service would appear to be the best overall; but based on the second criterion there is no significant difference between the two companies. In other words, the results are not conclusive until suitable judgement criteria are selected.

TABLE 14

Aggregrate Results (Percentages for CNT and NTC Non-Urban Subscribers

	Without Phones	Out of Service Frequency			Time to Repair (days)				Transmission Problems			Dial Tone Delay			Long Distance Problems		
		Never	Sometimes	Often	1-2	3-4	5-6	>6	Never	Sometimes	Often	Never	Sometimes	Often	Never	Sometimes	Often
CNT	6.2	26±3	42±4	32±4	50±4	27±4	5±2	19±4	39±4	45±4	16±3	53±4	34±4	13±3	29±3	52±4	19±3
NTC	5.6	45±5	44±5	11±3	62±6	20±5	3±2	14±4	42±5	42±5	16±3	62±5	28±4	11±3	53±5	29±4	18±3

It is suggested that higher emphasis might be put on 'out of service frequency' and 'time to repair' since these are more easily measured than the other parameters investigated, and continuity of service should be of prime importance. Ranking of service by region (Table 15) using the two criteria discussed above is somewhat more conclusive. Although the order for some regions is completely reversed in the two columns in Table 15, it would appear that Northern Peninsula is bottom. Avalon Peninsula, Grand Falls and East Coast are near the top, whereas South Coast is near the bottom. The remaining regions are in between.

TABLE 15

Ranking by Region

Ranking by largest % of respondents 'never' experiencing problems	Ranking by smallest % of respondents 'often' experiencing problems
1. Avalon Peninsula	1. Grand Falls
2. Frand Falls area	2. East Coast
3. Burin Peninsula	3. Avalon Peninsula
4. East Coast	4. Burin Peninsula
5. South West Corner	5. North Central Coast
6. South Coast	6. South West Corner
7. North Central Coast	7. South Coast
8. Northern Peninsula	8. Northern Peninsula

There is little point in pursuing comparisons further at this time for the reasons discussed previously concerning the design of the survey and the statistical validity of the results. To make quantitative comparisons requires weighting factors to be applied to categories such as "never", "sometimes" and "often", which is itself a judgemental process. The true value of a survey such as this should lie in enabling comparisons to be made by repeating the procedure after a suitable time interval. In this way, any major improvements or deterioration in service can be identified.

It is worth noting in conclusion that the survey does not prove or disprove whether Newfoundland has good or bad telephone service. This again would require judgemental decisions to devise suitable yardsticks against which service may be measured. It has identified, however, (under certain assumptions) regional and company service differences. In all likelihood this variability is already well known and has been simply confirmed by the survey findings. Whether a survey of subscriber's opinions produces an accurate quantification of service levels is a question that can only be answered through correlation with telephone company operating data. Certainly the survey sample represented a perceptive group of subscribers, since their comments provided a graphic commentary on the service difficulties caused by Newfoundland's rugged terrain and frequently harsh weather conditions.

Newfoundland Telephone Subscriber Opinion Survey
Canadian National Telecommunications
Survey Data by Exchange

Exchange Name	Map Reference	Total Number of Main Stations	No. of Surveyed Communities	Total Population of Surveyed Communities	Number of Respondents With Phones	Without Phones	Total
Arnolds Cove	J9	500	2	1598	9	-	9
Badger	F6	298	1	1187	3	1	4
Baie Verte	F4	637	1	2397	7	1	8
Bay L'Argent	H9	319	3	1195	8	-	8
Belleoram	G9	128	1	530	5	-	5
Bellevue	J9	103	3	623	10	-	10
Birchy Bay	H6	160	1	580	5	-	5
Black Duck Cove	E2	115	3	479	6	1	7
Bonavista	K7	1340	2	4766	13	2	15
Boyds Cove	I5	77	1	210	3	-	3
Brents Cove	G4	106	2	159	5	-	5
Brig Bay	E2	152	3	401	3	3	6
Browns Arm	H6	128	1	304	3	-	3
Buchans	E7	629	1	460	9	-	9
Burgeo	D9	561	1	2226	4	-	4
Burlington	F5	177	2	837	6	1	7
Campbelltown	H6	219	1	730	5	-	5
Carmanville	I5	308	2	1213	6	-	6
Catalina	K7	789	3	2431	18	1	19
Centreville	J6	377	2	897	8	-	8
Chance Cove	J9	87	1	446	1	-	1
Charlottetown	J7	80	1	309	4	-	4
Clarenville	J8	1570	3	1074	11	-	11
Clarkes's Head	I6	350	2	448	6	-	6
Come by Chance	J9	257	3	1217	13	-	13
Conche	G2	81	1	505	4	-	4

ANNEX I

Exchange Name	Map Reference	Total Number of Main Stations	No. of Surveyed Communities	Total Population of Surveyed Communities	Number of Respondents With Phones	Without Phones	Total
Cook's Harbour	G1	299	2	431	6	-	6
Coombs Cove	G10	70	1	138	3	-	3
Cowhead	D4	208	2	848	6	-	6
Daniel's Harbour	D4	157	2	580	6	1	7
Eastport	J7	533	2	802	6	-	6
Embree	H6	248	2	1073	7	1	8
Englee	F3	217	1	1050	7	-	7
English Harbour E.	H9	58	2	511	5	-	5
English Harbour W.	G10	141	2	461	6	-	6
Fleur de Lys	F4	149	2	1006	5	1	6
Flowers Cove	E1	422	2	597	7	1	8
Fogo	I5	278	1	1155	5	-	5
Francois	E9	54	1	220	3	-	3
Gambo	I7	623	2	1366	9	-	9
Gaultois	G9	122	1	509	5	-	5
Glovertown	I7	692	2	2259	11	1	12
Green Island Cove	F1	111	1	118	2	1	3
Griquet	G1	247	3	1069	11	-	11
Hampden	E5	155	1	739	3	-	3
Harbour Deep	F3	71	1	329	3	-	3
Harbour Mille	H9	140	1	342	4	-	4
Hare Bay	I5	477	2	2324	9	2	11
Harry's Harbour	F5	110	1	491	3	1	4
Hawke's Bay	E3	107	1	462	4	-	4
Hermitage	G9	189	1	520	6	-	6
Hickman's Harbour	J8	272	3	668	10	1	11
Hillgrade	I5	317	2	346	6	-	6
Hillview	J8	306	5	900	15	-	15
Horwood	I5	151	1	878	4	-	4
Jacksons Arm	E4	91	1	491	[illegible]	-	[illegible]

Exchange Name	Map Reference	Total Number of Main Stations	No. of Surveyed Communities	Total Pop. of Surveyed Communities	Number of Respondents With Phones	Without Phones	Total
Joe Batts Arm	I5	332	2	1292	10	-	10
Kings Cove	K7	164	1	271	3	1	4
La Scie	G4	364	3	1495	12	1	13
Lewisporte	H6	1185	1	3175	12	-	12
Little Bay Islands	G5	115	2	689	12	-	12
Little Harbour E.	J9	60	1	182	4	-	4
Little Hearts Ease	J8	334	3	950	10	-	10
Lumsden	J6	197	2	849	7	-	7
Main Brook	F2	109	1	590	4	1	5
McCallum	F9	46	1	276	2	1	3
Millertown	F7	121	2	616	7	-	7
Milltown	G9	517	4	1942	20	1	21
Mings Bight	F4	75	1	378	5	-	5
Monroe	J8	142	1	120	1	1	2
Moretons Harbour	H5	210	1	270	4	-	4
Musgrave Harbour	J5	371	1	1232	5	-	5
Musgravetown	J8	702	4	2334	20	-	20
Newman's Cove	K7	127	1	235	3	-	3
Nippers Harbour	G5	71	1	275	4	-	4
Norris Arm	H6	315	1	1191	4	-	4
Pacquet	G4	143	2	717	7	2	9
Parsons Pond	D4	107	2	553	7	-	7
Pool's Cove	G9	66	1	237	3	-	3
Port Albert	I5	35	1	133	2	-	2
Port Blandford	I8	218	1	779	6	-	6
Port Saunders	E3	388	3	1591	13	-	13
Princeton	J8	248	3	702	10	1	11
Raleigh	G1	124	1	292	3	1	4
Ramea	D9	361	1	173	-	3	3
Reef's Harbour	E2	137	3	622	6	1	7

Exchange Name	Map Reference	Total Number of Main Stations	No. of Surveyed Communities	Total Population of Surveyed Communities	Number of Respondents With Phones	Without Phones	Total
River of Ponds	D3	49	1	258	3	-	3
Roberts Arm	G5	338	2	1539	8	1	9
Rocky Harbour	C5	522	3	2266	10	2	12
Roddickton	F2	314	1	1239	7	1	8
Rushoon	H10	299	5	1473	13	-	13
St. Anthony	G1	964	3	2953	16	2	18
Seal Cove, W.B.	F4	156	1	706	5	-	5
Seldom	I5	174	1	442	4	1	5
Sops Arm	E5	151	1	382	4	-	4
Southbrook	D6	152	1	802	9	-	9
Springdale	F5	992	1	3224	9	-	9
Summerford	H5	423	1	839	6	-	6
Terra Nova	I7	37	1	107	3	-	3
Triton	G5	263	1	1002	3	1	4
Trout River	C5	134	1	689	6	-	6
Twillingate	H5	1059	1	1437	6	-	6
Wesleyville	J6	801	3	2643	10	1	11
Westport	F5	95	2	489	8	-	8
Woody Point	C5	289	3	688	7	1	8

Newfoundland Non-Urban Telephone Subscriber Opinion Survey

Canadian National Telecommunications

Survey Data by Community

Community	Map Reference	Population	No. Surveyed	Exchange
Adeytown	B3	31	2	Hillview
Anchor Point	E2	275	3	Black Duck Cove
Arnolds Cove	J9	919	5	Arnolds Cove
Aspey Brook	J8	69	2	Clarenville
Badger	F6	1,187	4	Badger
Badger's Quay	J6	904	4	Wesleyville
Baine Harbour	H10	194	2	Rushoon
Baie Verte	F4	2,397	8	Baie Verte
Barr'd Harbour	E2	288	1	Reefs Harbour
Bay L'Argent	H9	453	3	Bay L'Argent
Belburns	D3	165	2	Daniel's Harbour
Belleoram	G9	530	5	Belleoram
Bellevue	J9	293	3	Bellevue
Birchy Bay	H6	580	5	Birchy Bay
Black Duck Cove	E2	150	2	Black Duck Cove
Bloomfield	J8	597	6	Musgravetown
Boat Harbour	H10	208	3	Rushoon
Boat Harbour	F1	106	2	Cooks Harbour
Bonnavista	K7	4,215	10	Bonnavista

ANNEX II

Community	Map Reference	Population	No. Surveyed	Exchange
Boyds Cove	I5	210	3	Boyds Cove
Brig Bay	E2	174	2	Brig Bay
Britannia	J8	133	3	Hickmans Harbour
Brookfield	J6	597	1	Wesleyville
Buchans	E7	460	9	Buchans
Buchans Junction	F7	300	4	Millertown
Bunyans Cove	A2	494	4	Musgravetown
Burgeo	D9	2,226	4	Burgeo
Burlington	F5	363	4	Burlington
Campbelltown	H6	730	5	Campbelltown
Caplin Cove	K8	164	2	Little Hearts Ease
Carmanville	I5	839	4	Carmanville
Castors River S.	E2	234	4	Reefs Harbour
Catalina	K7	1,131	8	Catalina
Chance Cove	J9	446	1	Chance Cove
Charleston	J8	148	3	Princeton
Charlottetown	J7	309	4	Charlottetown
Clarkes Head	I6	359	4	Clarkes Head
Coachmans Cove	F4	334	4	Fleur de Lys
Cobbs Arm	I5	162	3	Hillgrade
Come By Chance	J9	364	3	Come By Chance
Conche	G2	505	4	Conche
Conne River	G9	486	5	Milltown
Cooks Harbour	G1	325	4	Cooks Harbour
Coombs Cove	G10	138	3	Coombs Cove

Community	Map Reference	Population	No. Surveyed	Exchange
Cow Head	D4	501	4	Cow Head
Daniels Harbour	D4	415	5	Daniels Harbour
Deadmans Bay	J6	219	2	Lumsden
Deep Bight	J8	169	3	Hillview
Dover	I5	839	4	Hare Bay
Eastport	J7	438	3	Eastport
Eddies Cove East	F1	118	3	Green Island Cove
Eddies Cove West	F1	93	2	Port Saunders
Elliston	K7	551	5	Bonnavista
Embree	H6	814	5	Embree
Englee	F3	1,050	7	Englee
Englisn Harbour East	H9	217	3	English Harbour E.
English Harbour West	G10	393	4	English Harbour W.
Fairhaven	J9	142	3	Bellevue
Flat Bay	B8	357	4	St. Georges
Fleur de Lys	F4	672	2	Fleur de Lys
Flowers Cove	E1	372	4	Flowers
Fogo	I5	1,155	5	Fogo
Francois	E9	220	3	Francois
Frederickton	I5	374	3	Carmanville
Gambo	I7	491	4	Gambo
Gaultois	G9	509	5	Gaultois
Glenburnie	D5	159	3	Woody Point
Glovertown	I7	1,915	8	Glovertown
Goobies	J9	137	3	Come By Chance

Community	Map Reference	Population	No. Surveyed	Exchange
Goose Cove	G1	349	5	St. Anthony
Grand le Pierre	H9	294	2	English Harbour E.
Griquet	G1	858	4	Griquet
Hampden	E5	739	3	Hampden
Harbour Deep	F3	329	3	Harbour Deep
Harbour Mille	H9	342	4	Harbour Mille
Happy Adventure	J7	364	3	Eastport
Hare Bay	I5	1,485	7	Hare Bay
Hawkes Bay	E3	462	4	Hawkes Bay
Head Bay d'Espoir	G9	517	5	Milltown
Hermitage	G9	520	6	Hermitage
Hickmans Harbour	J8	414	5	Hickmans Harbour
Hillgrade	I5	184	3	Hillgrade
Hillview	J8	281	4	Hillview
Hodges Cove	J8	391	4	Little Hearts Ease
Horwood	I5	878	4	Horwood
Jacksons Arm	E4	491	4	Jacksons Arm
Jacksons Cove	F5	491	4	Harrys Harbour
Joe Batts Arm	I5	886	6	Joe Batts Arm
Kings Cove	K7	271	4	Kings Cove
Lady Cove	J8	121	3	Hickman Harbour
La Poile	C9	173	3	Ramea
La Scie	G4	1,255	6	La Scie
Laurenceton	H6	304	3	Browns Arm
Lethbridge	J8	657	5	Musgravetown

Community	Map Reference	Population	No. Surveyed	Exchange
Lewisporte	H6	3,175	12	Lewisporte
Little Bay East	H9	184	2	Bay L'Argent
Little Bay Islands	G5	503	9	Little Bay Islands
Little Catalina	K7	722	6	Catalina
Little Harbour East	J9	182	4	Little Harbour E.
Little Hearts Ease	J8	395	4	Little Hearts Ease
Lumsden	J6	630	5	Lumsden
Main Brook	F2	590	5	Main Brook
McCallum	F9	216	3	McCallum
Middle Arm	F5	474	3	Burlington
Middle Brook	I7	875	5	Gambo
Millertown	F7	316	4	Millertown
Milltown	G9	716	8	Milltown
Milton	J8	290	3	Clarenville
Mings Bight	F4	378	5	Mings Bight
Monroe	J8	120	2	Monroe
Moreton's Harbour	H5	270	4	Moreton's Harbour
Morrisville	G9	223	3	Milltown
Mose Ambrose	G10	68	2	English Harbour W.
Musgrave Harbour	J5	1,232	5	Musgrave Harbour
Musgravetown	J8	586	5	Musgravetown
New Ferrole	E2	95	2	Brig Bay
Newman's Cove	K7	235	3	Newman's Cove
Nippers Harbour	G5	275	4	Nippers Harbour
Norris Arm	H6	1,191	4	Norris Arm

Community	Map Reference	Population	No. Surveyed	Exchange
Norris Point	D5	986	3	Rocky Harbour
Northwest Brook	J8	302	4	Hillview
Pacquet	G4	429	4	Pacquet
Parkers Cove	H10	405	2	Rushoon
Parsons Pond	D4	491	5	Parsons Pond
Pilleys Island	G5	495	3	Roberts Arm
Plum Point	E2	132	2	Brig Bay
Pools Cove	G9	237	3	Pools Cove
Port Albert	I5	133	2	Port Albert
Port aux Choix	D3	861	4	Port Saunders
Port Blandford	I8	779	6	Port Blandford
Port Saunders	E3	637	7	Port Saunders
Port Union	K7	578	5	Catalina
Portland Creek	D4	62	2	Parsons Pond
Princeton	J8	180	3	Princeton
Purbecks Cove	F5	73	3	Westport
Queens Cove	J8	117	2	Hillview
Quirpon	G1	211	3	Griquet
Raleigh	G1	292	4	Raleigh
Red Harbour	G10	160	3	Rushoon
Reefs Harbour	E2	100	2	Reefs Harbour
River of Ponds	D3	258	3	River of Ponds
Roberts Arm	G5	1,044	6	Roberts Arm
Rocky Harbour	C5	982	6	Rocky Harbour
Roddickton	F2	1,239	8	Roddickton

Community	Map Reference	Population	No. Surveyed	Exchange
Rouger Cove	I6	89	2	Clarkes Head
Round Harbour	G5	60	3	Brents Cove
Rushoon	H10	506	3	Rushoon
St. Anthony	G1	2,593	10	St. Anthony
St. Barbe	E2	54	2	Black Duck Cove
St. Bernards	H9	558	3	Bay L'Argent
St. Lunaire	G1	858	4	Griquet
St. Juliens	G2	11	3	St. Anthony
St. Patricks	F5	186	3	Little Bay Islands
St. Pauls	D4	347	2	Cow Head
Sallys Cove	C5	298	3	Rocky Harbour
Sandy Cove	F1	225	4	Flowers Cove
Seal Cove, W.B.	F4	706	5	Seal Cove
Seldom	I5	442	5	Seldom
Shoal Harbour	J8	715	6	Clarenville
Shoe Cove	G4	240	4	La Scie
Snooks Arm	G5	99	2	Brents Cove
Sops Arm	E5	382	4	Sops Arm
South Brook	D6	802	9	South Brook
Southern Harbour	J9	679	4	Arnolds Cove
Springdale	F5	3,224	9	Springdale
Stanhope	H6	259	3	Embree
Summerford	H5	839	6	Summerford
Summerville	J7	374	5	Princeton
Sunnyside	J9	716	7	Come By Chance

Community	Map Reference	Population	No. Surveyed	Exchange
Terra Nova	I7	107	3	Terra Nova
Thornlea	J9	188	4	Bellevue
Tilt Cove	G4	1,255	3	La Scie
Tilting	J5	406	4	Joe Batts Arm
Traytown	J7	344	4	Glovertown
Trinity, B.B.	J6	577	4	Centreville
Triton	G5	1,002	4	Triton
Trout River	C5	689	6	Trout River
Twillingate	H5	1,437	6	Twillingate
Wareham	J6	451	4	Centreville
Wesleyville	J6	1,142	6	Wesleyville
Westport	F5	416	5	Westport
Wiltondale	D5	29	2	Woody Point
Woodstock	G4	288	5	Pacquet
Woody Point	C5	500	3	Woody Point

Newfoundland Non-Urban Telephone Subscriber Opinion Survey

Newfoundland Telephone Co.

Survey Data by Exchange

Exchange Name	Map Reference	Total No. of Main Stations	Surveyed Communities		Number of Respondents		
			Number	Total Pop.	With Phones	Without Phones	Total
Bay Roberts	K9	2908	2	5466	9	0	9
Bell Island	K9	1086	1	5421	6	3	9
Benoits Cove	C6	425	2	1465	10	1	11
Bishops Falls	G6	1084	1	4133	7	0	7
Botwood	G6	1430	3	5250	16	0	16
Branch	J11	122	1	516	3	0	3
Brigus	K9	647	1	212	2	0	2
Burin	H11	1108	3	3279	11	0	11
Cape Broyle	K10	474	1	677	4	1	5
Carbonear	K9	3235	4	3869	15	1	16
Chapel Arm	J9	390	2	1656	6	0	6
Codroy	I5	510	7	1520	18	1	19
Corner Brook	C6	6586	2	404	6	0	6
Cottrells Cove	H5	101	2	513	7	1	8
Deer Lake	D6	1652	5	5875	24	2	26
Degras	A7	317	2	887	8	0	8
Fermeuse	K11	347	2	590	7	0	7
Forteau (Lab.)	E7	114	1	312	2	0	2
Fox Harbour (Lab.)	J10	47	1	214	5	0	5
Freshwater	J10	2195	7	6075	24	0	24

ANNEX III

Exchange Name	Map Reference	Total No. of Main Stations	Surveyed Communities		Number of Respondents		
			Number	Total Pop.	With Phones	Without Phones	Total
Garnish	G10	300	3	1001	8	0	8
Grand Bank	G10	1748	2	5640	12	0	12
Harbour Main	K10	1164	1	652	5	0	5
Hearts Content	K9	521	3	1701	9	1	10
Hearts Delight	J9	391	2	1017	4	0	4
Isle-Aux-Morts	B9	529	1	1158	4	0	4
Jeffrey's	B8	485	5	1148	18	1	19
Lamaline	G11	309	2	951	6	0	6
L'Ance au Clair (Lab.)	E7	61	1	233	3	0	3
L'Ance au Loup	E7	117	2	538	5	0	5
Lark Harbour	C6	226	1	590	4	1	5
Leading Tickles	G5	141	1	405	6	0	6
Long Harbour	J10	161	1	713	4	0	4
Lourdes	B7	430	3	2007	15	2	17
Lower Island Cove	J8	410	2	460	5	0	5
Mary's Harbour (Lab.)	E6	672	1	134	2	0	2
McIvers	C6	284	2	1453	12	2	14
Mount Carmel	K10	428	8	2047	21	1	22
New Chelsea	K8	355	3	926	8	0	8
New Harbour	D5	799	4	2691	15	0	15
Old Perlican	K8	514	4	1017	11	0	11
Pasadena	D6	654	2	1042	9	0	9
Point Leamington	G6	224	1	940	4	0	4
Port Aux Basques	A9	1854	3	6306	15	0	15
Port au Port	B7	462	1	71	1	1	2

Exchange Name	Map Reference	Total No. of Main Stations	Surveyed Communities		Number of Respondents		
			Number	Total Pop.	With Phones	Without Phones	Total
Portugal Cove	L9	1199	1	1411	8	0	8
Red Bay (Lab.)	E6	61	1	296	3	0	3
Rose Blanche	B9	324	1	703	3	0	3
St. Brides	I11	178	4	938	10	0	10
St. Georges	B7	520	2	2439	6	3	9
St. Marys	J11	484	4	1981	9	1	10
Stephenville	B7	3149	2	1464	7	0	7
Stephenville Crossing	C7	564	2	2275	7	2	9
Summerside	C6	586	1	363	5	1	6
Trepassey	K11	445	1	1443	3	0	3
Upper Island Cove	K9	535	1	1819	4	0	4
Western Bay	K9	366	2	577	3	1	4
West St. Modeste (Lab.)	E6	85	2	480	4	0	4
Witless Bay	L10	638	1	95	2	0	2
Whitbourne	J10	512	2	1546	6	0	6

Newfoundland Non-Urban Telephone Subscriber Opinion Survey

Surveyed Communities Served by

Newfoundland Telephone Company

Community Name	Map Reference	Population	Number of Respondents	Serving Exchange
Abraham's Cove	B7	71	2	Port Aux Port
Admiral's Beach	L10	402	3	Mount Carmel
Angel's Cove	I11	46	2	St. Bride's
Aquaforte	K11	186	3	Fermeuse
Bay de Verde	K8	826	3	Old Perlican
Bay Roberts	K9	3702	3	Bay Roberts
Bell Island	K9	5421	9	Bell Island
Benoit's Cove	C6	1187	7	Benoit's Cove
Bishop's Falls	G6	4133	7	Bishop's Falls
Black Duck	C7	146	2	Stephenville Crossing
Blaketown	J10	399	3	New Harbour
Botwood	G6	4115	8	Botwood
Branch	J11	516	3	Branch
Brownsdale	K8	189	2	New Chelsea
Burin	H11	2586	5	Burin
Cape Broyle	K10	677	5	Cape Broyle
Cape St. Charles (Lab.)	E6	90	3	L'Ance au Loup
Cape St. George	A7	338	4	Degras
Cape Ray	A9	302	4	Port Aux Basques
Carbonear	K9	4732	6	Carbonear

ANNEX IV

Community Name	Map Reference	Population	Number of Respondents	Serving Exchange
Cavendish	J9	286	1	Hearts Delight
Chapel Arm	J9	659	2	Chapel Arm
Coal Brook	B9	144	2	Codroy
Codroy	I5	321	4	Codroy
Colinet	J10	264	3	Mount Carmel
Cormack	D6	561	5	Deer Lake
Cottrell's Cove	H5	383	4	Cottrell's Cove
Cox's Cove	C6	797	7	McIver's Cove
Cuslett	I11	124	2	St. Brides
Deer Lake	D6	4421	10	Deer Lake
Degras	A7	549	4	Degras
Dildo	J9	878	5	New Harbour
Doyles	A9	286	3	Codroy
Dunville	J10	1742	4	Freshwater
Flat Bay	B8	357	4	St. Georges
Fermeuse	K11	404	4	Fermeuse
Forteau (Lab.)	E7	312	2	Forteau
Fortune	G10	2164	5	Grand Bank
Fortune Harbour	H5	130	4	Cottrell's Cove
Fox Harbour (Lab.)	E6	214	5	Fox Harbour
Fox Harbour	J10	685	3	Freshwater
Frenchman's Cove	C6	278	4	Benoit's Cove
Frenchman's Cove	G10	275	3	Garnish
Gallants	C7	81	1	Stephenville
Garnish	G10	618	3	Garnish
Gaskiers	J11	620	3	St. Mary's
Gillans	C6	363	6	Summerside
Grand Bank	G10	3476	7	Grand Bank

Community Name	Map Reference	Population	Number of Respondents	Serving Exchange
Grand Bay West	A9	62	1	Port Aux Basques
Grand Beach	G10	108	2	Garnish
Grate's Cove	K8	328	3	Old Perlican
Greater Barasway	J10	47	2	Freshwater
Green's Harbour	J9	710	4	New Harbour
Hart's Harbour	K8	522	4	New Chelsea
Harbour Grace	K9	2771	3	Carbonear
Harbour Main	K10	652	5	Harbour Main
Hearts Content	K9	599	3	Hearts Content
Hearts Delight	J9	731	3	Hearts Delight
Heatherton	B8	329	4	Jeffrey's
Highlands	B8	186	4	Jeffrey's
Howley	E6	409	4	Deer Lake
Isle Aux Morts	B9	1158	4	Isle Aux Morts
Jerseyside	J10	1061	3	Freshwater
Kingston	K9	147	2	Western Bay
Kippens	B7	1383	6	Stephenville
Lamaline	G11	553	3	Lamaline
L'Anse au Clair (Lab.)	E7	233	3	L'Anse au Clair
L'Anse au Loup (Lab.)	E7	448	2	L'Anse au Loup
Lark Harbour	C6	590	5	Lark Harbour
Leading Tickles	G5	405	6	Leading Tickles
Lochleven	B8	67	3	Jeffrey's
Long Harbour	J10	713	4	Long Harbour
Lord's Cove	G11	398	3	Lamaline
Lourdes	B7	959	7	Lourdes

Community Name	Map Reference	Population	Number of Respondents	Serving Exchange
Lower Island Cove	J8	406	3	Lower Island Cove
Lunes Cove (Lewins Cove)	H10	397	3	Burin
Mainland	A7	402	3	Lourdes
Mal Bay	J11	78	2	St. Marys
Markland	J10	311	2	Whitbourne
(St.) Mary's Harbour (Lab.)	E6	134	2	Mary's Harbour
McIvers	C6	656	7	McIvers Cove
Mitchell's Brook	J10	158	3	Mount Carmel
Mobile	L10	95	2	Witless Bay
Mortier	H10	296	3	Burin
Mount Carmel	K10	434	3	Mount Carmel
New Bridge	K10	63	2	Mount Carmel
New Chelsea	K8	215	2	New Chelsea
New Harbour	D5	704	3	New Harbour
New Perlican	K9	308	2	Hearts Content
Nicholsville	D6	236	4	Deer Lake
Norman's Cove	J9	997	4	Chapel Arm
North Harbour	J10	153	2	Mount Carmel
Northern Bay	K9	254	2	Lower Island Cove
O'Donnell's	J10	268	3	Mount Carmel
Old Perlican	K8	597	3	Old Perlican
O'Reagan's	A9	164	2	Codroy
Pasadena	D6	964	7	Pasadena
Patrick's Cove	I10	120	3	St. Brides
Peterview	H6	953	4	Botwood
Petries	C6	116	3	Corner Brook

Community Name	Map Reference	Population	Number of Respondents	Serving Exchange
Pinware (Lab.)	E6	186	2	West St. Modeste
Placentia	J10	2211	6	Freshwater
Point of Bay	H6	182	4	Botwood
Point Leamington	G6	940	4	Point Leamington
Point Verde	J10	309	4	Freshwater
Port Aux Basques	A9	5942	10	Port Aux Basques
Port au Port (west)	B7	646	7	Lourdes
Port de Grave	K9	212	2	Brigus
Portugal Cove	L9	1411	8	Portugal Cove
Pynn's Brook	D6	78	2	Pasadena
Red Bay (Lab.)	E6	296	3	Red Bay
Red Head Cove	K8	234	2	Old Perlican
Reidville	D6	248	3	Deer Lake
Riverhead	K9	445	5	Carbonear
Robinson's	B8	296	4	Jeffrey's
Rose Blanche	B9	703	3	Rose Blanche
St. Bride's	I11	598	3	St. Bride's
St. David's	B8	270	4	Jeffrey's
St. Georges	B7	2082	5	St. Georges
St. Joseph's	K10	305	3	Mount Carmel
St. Mary's	J11	445	2	St. Mary's
St. Vincent's	J11	838	3	St. Mary's
Salmon Cove	K9	653	2	Carbonear
Searston	A9	158	3	Codroy
Ship Cove	J10	20	2	Freshwater
South Branch	B9	339	3	Codroy

Community Name	Map Reference	Population	Number of Respondents	Serving Exchange
Spaniard's Bay	K9	1764	6	Bay Roberts
Steady Brook	D6	288	3	Corner Brook
Stephenville Crossing	C7	2129	7	Stephenville Crossing
Tompkins	A9	108	2	Codroy
Trepassey	K11	1443	3	Trepassey
Upper Island Cove	K9	1819	4	Upper Island Cove
West St. Modeste (Lab.)	E6	294	2	West St. Modeste
Western Bay	K9	430	2	Western Bay
Whitbourne	J10	1235	4	Whitbourne
Winterton	K8	794	5	Hearts Content

Excluded Central Offices

CNT (22)

Beaumont
Change Islands
Gander
Glenwood
Greenspond
Harbour Breton
Island Harbour
Jamestown
Kings Point
ladle Cove
Little Bay
Newstead
North Harbour
Plate Cove
Recontree E.
St. Albans
St. Brendans
Seal Cove F.B.
Swift Current
Terrenceville
Port Rexton
Fairhaven

NTC (25)

Allandale (S.J.)
Anderson (S.J.)
Mount Pearl
Torbay
Pouch Cove
Long Pond
Marystown
St. Lawrence
Grand Falls
Curling

Labrador:
Black Tickle
Cartwright
Charlestown
Churchill Falls
Davis Inlet
Goose Bay
Hopedale
Makkovik
Mud Lake
Nain
N.W. River
Port Hope Simpson
Postville
Rigolet
Wabush

FIELD VISITS

APPENDIX D

FIELD VISITS

Field visits were made by representatives of the Federal Department of Communications and the Newfoundland Department of Transportation and Communications to all parts of the province to inspect at first-hand the telephone facilities in place. At each community visited the residents were informally contacted regarding their opinions of the kind of service they were receiving, and the ease or difficulties associated with providing telephone service in each area were noted. These visits provided good background information for evaluating the results of the subscriber opinion survey and the regional service indicators provided by the telephone companies. They were carried out with the full and free cooperation of the telephone companies involved.

1.1 Avalon Peninsula - 12-13 October, 1976

This field visit consisted of a round trip from St. John's to Clarenville calling in at the communities of Long Pond, Whitbourne, Long Harbour, Arnold's Cove and Little Harbour. These communities vary greatly in size and growth rate, but since they are all located within a few miles of the Trans-Canada Highway, access is relatively easy and problems with providing telephone service are generally minor. Long Pond is served by a 20-year old step by step switching machine. The community is a high growth dormitory for St. John's and the Newfoundland Telephone Company experiences problems in meeting the demands for new service. In contrast, Arnold's Cove is served by a new crossbar machine but is faced with declining demand for service since the closure of the Come-by-Chance oil refinery.

Whitbourne and Long Harbour are both stable rural communities served by unattended crossbar offices. The facilities provided seem to be well maintained and entirely adequate for the community needs. This equally applies for Little Harbour, although this is a much smaller community served by an older vintage, 4-digit, Rurax switching machine.

The Clarenville office is slowly phasing out its toll operations as these will all be centralized in Gander. A wide variety of different vintages and types of equipment were observed in this office, reflecting CNT's policy of purchasing by competitive tender, supported by specifications, rather than standardizing on one manufacturer's line.

1.2 Northern Peninsula and Southern Labrador - January 17-19, 1977

This field visit proceeded north from Woody Point visiting seven communities on the west side of the Northern Peninsula. In Southern Labrador five communities were visited as far north as Port Hope Simpson before returning south on the east side of the Northern Peninsula where seven more communities were visited.

Both Canadian National Telecommunications (CNT) and the Newfoundland Telephone Company (NTC) appear to be providing a reasonable basic telephone service to the Northern Peninsula and Southern Labrador. There are areas, however, where improvements can be effected which would probably reduce considerably customer complaints regarding service. Where CNT has provided radio systems or buried cable, service has improved and customer complaints have been reduced. On the western side of the Northern Peninsula, where cable plant is

extremely exposed to the elements, all local distribution facilities (in the towns) and some inter-community cable are aerial. This leads to frequent cable breakage, especially during winter storms. Such cable plant is also subject to salt water spray for much of the year with resultant corrosion problems.

The obvious solution is that as much cable as possible should be buried. This is the approach taken by NTC on the Southern Labrador Coast. However, both in Southern Labrador and on the Northern Peninsula the problem is complicated by a rocky soil and the difficulty of providing new installations during the winter when the ground is frozen. Notwithstanding these problems, buried cable appears to be advisable where possible, both for the local distribution and inter-community communications (or alternatively to carry inter-community on radio). One exception to burying local distribution cables is at Red Bay, Labrador, where the rocky soil prevents effective burying.

Long distance communications on the CNT mainline microwave system on the Northern Peninsula appear to be excellent. Operator answer times on the new SP-1 toll machine in Gander are very short (less than a few seconds). Everyone on the Northern Peninsula who was asked about this service seemed very pleased, especially in comparison to the very bad situation which existed prior to installation of the SP-1 in September, 1976.

Telephone service in Southern Labrador (to Port Hope Simpson) generally seemed to be somewhat inferior to that provided by CNT on the Northern Peninsula. This appears to relate to the vintage of exchange equipment and the difficulty in maintaining equipment because of travel problems. An improved

microwave system has been installed to serve several of the southern communities, Mary's Harbour and Charlottetown, since the completion of the field trip.

1.3 Trinity, Bonavista and Notre Dame Bays - 3-4 March, 1977

The area visited (west side of Trinity Bay, Bonavista Bay and the east side of Notre Dame Bay, including Fogo and New World Island) is provided with telephone service by CNT. In total, 16 communities were visited, stretching from Little Hearts Ease to Twillingate. There appeared to be many areas where improvements are required to provide residents with good quality telephone service. People most frequently complained of too many parties sharing one telephone line, service interruptions, equipment shortages and long repair intervals.

CNT uses a large amount of open wire carrier throughout this area, although transmission problems were not frequently noted. However, this type of plant would likely contribute to the high incidence of equipment failures. CNT has not standardized on any particular type of manufacturer of radio or switching equipment, generally buying such equipment on public tender. The types of equipment in service in this area range from Canadian to English to Japanese manufacture and vary in vintage from the most recent to very old. CNT extensively use their own personnel to install radio and switching systems. Although CNT has recently increased the number of maintenance and repair personnel in this area, each is still responsible for a large geographical area and a substantial amount of telephone plant.

1.4 South Coast - 8-9 March, 1977

Helicopter transportation was used to visit 17 communities between Monkstown and La Poile, a round trip distance of over 1,100 miles. In each community, the local CNT facilities were inspected and discussions took place with the local residents concerning the quality of telephone services that they are currently receiving.

About 30 small communities are scattered along this bare and rugged coast. Road connections are non-existent in most instances, transportation primarily being by means of the weekly CN ferry service. Good communications are, therefore, vital for timely ordering of supplies, emergency situations, or just for reducing the sense of isolation.

The telephone service is reasonably good considering the isolation of the area and the sparse population. However, there are some specific areas where service is inferior to that provided to most other locations along the coast. Inter-community communications is not as serious a problem in this area as in other parts of the province where CNT provide telephone service. Long distance communications are usually over radio systems which are less susceptible to weather conditions than are open wire carrier systems. Party telephone lines, equipment failures and long repair intervals appear to be considered as the most serious problems with the telephone service.

To compound the difficulty of providing service to scattered inaccessible communities subjected to frequent bad weather conditions, there is always the problem of retaining skilled servicemen in an area generally devoid of urban amenities, where they are required to spend long periods away from home. All of these factors lead to the situation where equipment can be out of service for extended periods.

1.5 South West Coast - 21 March, 1977

Telephone service along the South West Coast (Deer Lake to Petites) is provided by the Newfoundland Telephone Company. Overall, the quality of telephone service is reasonably good. However, there are areas where upgrading is required. Most common to the area are problems associated with cross-talk and operator services. Cross-talk is more common and pronounced in some ares than in others. It is believed that in some areas such problems have existed for several years. Operator service as provided from the Stephenville Crossing and Corner Brook toll centres is less than good. The high incidence of a large number of rings without answer, rings followed by "silence", reorder tones and busy tones clearly indicates a problem. Isolated problems are those associated with fraudulent use of the telephone, and severe weather conditions.

Weather conditions along the coast, in the Codroy to Rose Blanche area in particular, lead to many problems associated with corrosion from salt water spray and high wind conditions. The terrain in this area complicates a solution to the problem as it is generally very rocky and exposed. All locations in this service area are readily accessible to the Telephone Company maintenance repair personnel, with the exception of Petites and some radio sites during severe weather conditions during the winter months. Direct Distance Dialing (DDD) is available to all subscribers in the service area. Multi- and two-party service has all but been eliminated except where specifically requested by the subscriber.

1.6 White Bay - Notre Dame Bay - 22 March, 1977

In total, seven communities were visited by helicopter, stretching from Jackson's Arm to Roberts Arm. Telephone service is provided by Canadian National Telecommunications in White Bay and most of Notre Dame Bay. In this area most of the residents were generally pleased with the service provided. As in most other areas which are served by CNT, the major problems experienced by the subscribers were in acquiring private telephone service and equipment failures or shortages. CNT still have a large number of open wire carrier systems in service in this area of the Province.

1.7 North Labrador Coast - 30 March, 1977

This visit was made to 10 coastal communities from Cartwright in the south to Davis Inlet in the north. Telephone service in Labrador is provided by the NTC with the exception of Labrador City which is served by the Labrador Telephone Company. The area visited is for the most part provided with good quality telephone service. Most communities in the area are provided with high quality toll circuits using the new microwave system between Nain and Goose Bay. Other communities will be added to the system during 1977. A new microwave system is being built by NTC for service in 1977-'78 between L'Anse au Loup and Goose Bay, which will improve the service provided to other communities in the area. Local telephone service in most communities is provided by NJ92 PBX switching machines which have a very limited capacity and which are no longer being manufactured. The isolation of most communities along the Labrador Coast sometimes leads to long equipment repair intervals.

1.8 Labrador City and Wabush - 6-7 June, 1977

Wabush and Labrador City are adjacent towns in a wilderness area about 240 miles north of Sept-Iles, Quebec, to which they are joined by the Quebec, North Shore and Labrador Railway, which provides (apart from regular air services) their only contact with the more settled areas of Canada. A road joining the two towns continues on for about 10 miles to Fermont across the border in Quebec.

Labrador City is by far the larger town (population 12,000 vs 4,000 Wabush); both exist because of the iron mines at Wabush Lake and Carol Lake which were opened around 1959. As company towns that have experienced rapid growth, they both have a temporary appearance with a large number of row houses, mobile homes and dormitory buildings. This situation is apparently changing as more people buy their own homes and the children born locally grow up, creating a more stable community.

Telephone service in Wabush is provided by Newfoundland Telephone Company. The original NE SXS office was installed in 1962. A 600-line extension has just been added, bringing the capacity up to 2,000 lines. The building floor area was doubled at the same time. The office serves approximately 2,275 phones with all single party service. A new industrial park is being planned and over 300 new homes are under construction.

The Company also maintains a troposcatter radio site at Emeril about 32 miles east of Wabush. This radio link, which is the main trunk system to the Island (via Sona Lake to Goose Bay and then across the Strait of Bell Isle),

was part of a defence radio system that was put in before the town was established in 1959. It will be superseded by a microwave system, which is presently under construction to Goose Bay and expected to reach Wabush by about 1982-'83. A fire at the Goose Bay site has forced all traffic to be re-routed south to a repeater site at Canotiche, then via Sept-Iles to join the TCTS at Rimouski. The troposcatter system is reported to be very reliable (one complete outage in the last three years). The biggest customer complaint seems to be lack of DDD (which is scheduled for early 1978). EAS is provided to Labrador City and Fermont.

Labrador Telephone Company provides service in Labrador City and to the adjacent mining operation. Together with the Ungava Telephone Company (which provides service in Schefferville, Quebec), it is now incorporated into the Commercial Communications Services division of the Iron Ore Company of Canada. Prior to this reorganization, it had formed part of the Quebec, North Shore and Labrador Railway which had tended to hamper its growth because the railway had always taken priority for funds and resources. The new arrangement has meant better planning and more capital funds, with the result that a recent expansion to the office (to 4,200 terminal capacity) has taken the company from being two years behind to one year ahead of demand. The office currently serves approximately 3,900 main stations (one- and two-party only).

Toll traffic goes over the QNS & LR microwave network to Sept-Iles and Rimouski. This system was upgraded in 1973 with Lenkurt equipment prior to this company being awarded

a contract to bring in the CBC TV service. About 50 trunks of various types are in use at the present time.

Labrador City and Wabush are essentially well defined urban areas which present no great problems to providing modern local telephone service. Both of the telephone companies involved in this area appeared to be efficient, well managed operations, which have made commendable efforts in recent years to keep up with the very high rate of growth occurring. Labrador Telephone Company operates the more modern toll facility, a situation which will continue until Newfoundland Telephone Company brings its microwave route all the way through to Wabush.

SUMMARY OF CNT LINES AND STATIONS BY EXCHANGE

APPENDIX E

CANADIAN NATIONAL TELECOMMUNICATIONS

B. LOCAL SERVICE

B. 1. Summary of LINES and STATIONS Newfoundland telephone exchanges as of March 31, 1976.

LOCATION	TYPE	Installed LINES	Installed TERM.	Working LINES	Working MAIN STNS.	EXTNS.	LINES/MAIN STATIONS ONE PTY.	TWO PTY.	FOUR PTY.	MULTI PTY.	PAY STNS.	CNT
Arnolds Cove	XBAR	600		334	500	254	162	163/326	2/5	2/2	4	1
Badger	XBAR	300		203	298	19	89	103/167	1/3	-	5/7	5/32
Baie Verte	SXS	600	900	600	637	287	488	87/100	11/35	-	9	5
Bay L'Argent	XBAR	240		144	319	42	36	62/122	38/144	4/13	2	2
Belleoram	RX	50		50	128	15	14	5/9	22/84	4/16	1	4
Beaumont	RX	50		42	103	7	7	11/18	24/73	-	-	-
Bellevue	RX	100		80	116	3	41	26/50	10/19	2/5	-	1
Birchy Bay	RX	100		96	160	14	17	71/125	7/17	-	-	1
Black Duck Cove	SXS	100	200	64	115	7	13	37/73	10/25	1/1	1	2
Bonavista	SXS	1100	1800	960	1340	190	428	506/853	16/49	-	5	5
Boyds Cove	RX	50		45	77	-	10	33/65	-	-	-	2
Brents Cove	RX	50		50	106	3	9	32/62	7/30	1/4	-	1
Brig Bay	RX	125		79	152	33	14	48/94	14/40	-	1/2	2
Browns Arm	RX	100		52	128	18	3	30/58	13/41	4/24	-	2
Buchans	MAX	450	700	447	629	116	250	183/334	3/7	3/9	5	3/24
Burgeo	SXS	400	700	317	561	87	106	155/278	43/160	1/5	8	4
Burlington	PX	100		88	177	6	29	34/61	19/69	4/16	-	2
Campbellton	RX	150		127	219	25	39	74/132	2/7	9/38	1	2
Carmanville	SXS	300	600	201	308	31	34	137/172	17/66	6/28	2	5/6
Catalina	XBAR	750		540	789	96	233	271/477	4/13	28/62	4	-
Centreville	SXS	300	600	204	377	32	56	126/249	14/56	2/8	3	3/5
Chance Cove	RX	50		45	87	6	14	24/48	6/24	-	-	1
Change Islands	RX	100		96	146	20	19	72/117	3/8	-	-	2
Charlottetown	RX	50		49	30	6	16	27/51	3/6	1/5	1	1
Clarkes Head	XBAR	230		126	350	12	15	50/99	43/170	19/47	-	8/19
Clarenville	SXS	1300	2100	1147	1570	519	719	394/786	7/38	-	12	15
Come By Chance	XBAR	500		153	257	37	70	56/110	18/63	3/8	5	1
Conche	RX	50		50	81	5	14	34/65	-	-	-	2
Cooks Harbour	RX	50		50	98	2	6	32/59	9/26	1/5	-	2
Coombs Cove	RX	50		34	70	2	5	19/30	9/34	-	-	1
Cowhead	RX	100		96	208	20	20	34/64	40/122	-	1	1
Daniels Harbour	SXS	200	400	98	157	30	57	20/38	17/53	2/7	1	1

B. 1. (Continued)

LOCATION	TYPE	Installed LINES	TERM.	Working LINES	MAIN STNS.	EXTNS.	LINES/STATIONS ONE PTY.	TWO PTY.	FOUR PTY.	MULTI PTY.	PAY STNS.	CNT
Eastport	XBAR	360		295	533	30	66	206/407	2/7	7/31	2/3	12/19
Embree	RX	150		102	248	14	7	51/88	32/112	10/39	-	2
Englee	RX	100		128	217	19	27	96/180	3/7	-	-	2/3
English Harbour East	RX	50		37	58	2	10	26/47	-	-	-	1
English Harbour West	RX	100		80	141	25	19	58/114	2/7	-	-	1
Fleur de Lys	RX	100		85	149	2	22	46/76	13/39	2/10	-	2
Flowers Cove	XBAR	300		221	422	13	57	98/191	48/144	2/5	1	15/24
Fogo	SXS	200	400	162	278	65	43	115/225	-	1/7	3/3	-
Francois	RX	50		45	54	2	33	11/20	-	-	-	1
Gambo	XBAR	500		376	623	70	129	240/477	1/3	-	4/4	2/10
Gander	MAX	3700	4200	2874	3406	1119	2264	509/1015	7/25	2/10	37	55
Gaultois	RX	50		45	122	10	14	11/22	8/25	11/55	-	1/6
Glenwood	XBAR	300		215	327	22	99	103/204	-	2/5	2	9/17
Glovertown	XBAR	600		483	692	110	248	216/409	1/1	4/18	11	3/5
Green Island Cove	RX	50		50	111	12	5	31/61	12/43	-	-	2
Greenspond	RX	100		39	103	1	9	10/18	14/51	5/24	-	1
Griquet	RX	150		117	247	10	12	76/143	20/70	6/19	-	3
Hampden	RX	100		88	155	11	14	65/118	8/21	-	-	1/2
Harbour Brenton	XBAR	480		321	494	94	109	193/365	3/4	-	5	11
Harbour Deep	RX	50		39	71	8	5	34/66				
Harbour Mille	RX	100		88	140	11	27	56/106	4/6	-	-	1
Hare Bay	XBAR	400		279	477	33	77	191/376	3/11	-	-	8/13
Harry's Harbour	SXS	100	200	52	110	9	8	26/50	16/41	1/2	-	1/9
Hawkes Bay	RX	100		75	107	12	36	32/63	5/6	-	1	1
Hermitage	SXS	100	200	93	189	19	22	48/95	17/66	1/1	1	4
Hichmans Harbour	SXS	200	400	135	272	34	35	76/147	12/42	11/47	-	1
Hillgrade	SXS	200	400	122	317	24	15	57/111	44/168	5/22	-	1
Hillview	XBAR	240		139	306	23	29	72/144	22/55	14/76	1	1
Horwood	RX	100		69	151	7	13	40/78	13/51	2/8	-	1
Jacksons Arm	RX	100		52	91	8	11	40/79	-	-	-	1
Island Harbour	RX	50		45	84	3	6	35/68	4/10	-	-	-
Jamestown	RX	50		50	90	5	5	42/78	2/6	-	-	1
Joe Batts Arm	RX	150		140	332	29	11	93/184	29/106	5/29	2	-
Kings Cove	RX	100		82	164	15	28	39/76	14/59	-	-	1
Kings Point	RX	100		100	201	13	9	54/103	35/85	1/2	-	2

B. 1. (Continued)

LOCATION	TYPE	Installed LINES	Installed TERM.	Working LINES	Working MAIN STNS.	Working EXTNS.	LINES/STATIONS ONE PTY.	LINES/STATIONS TWO PTY.	LINES/STATIONS FOUR PTY.	LINES/STATIONS MULTI. PTY.	LINES/STATIONS PAY STNS.	LINES/STATIONS CNT
Ladle Cove	RX	100		68	138	18	8	51/101	7/26	1/2	-	1
La Scie	XBAR	300		208	364	35	66	124/244	13/49	-	3	2
Lewisporte	MAX	1000		859	1185	388	454	347/642	3/3	7/38	6	42
Little Bay	RX	100		57	110	9	14	19/33	22/61	-	-	2
Little Bay Islands	RX	50		49	115	22	14	8/15	25/84	-	-	2
Little Harbour East	RX	50		39	60	1	15	23/44	-	-	-	1
Little Hearts Ease	SXS	200	400	162	334	21	28	111/221	16/62	6/22	-	1
Lumsden	XBAR	240		103	197	12	44	40/78	11/41	7/33	-	1
Main Brook	RX	50		49	109	9	8	22/44	13/51	-	-	6
McCallum	RX	50		45	46	1	42	2/3	-	-	-	1
Millertown	RX	100		82	121	6	37	29/39	11/39	-	1/2	4
Milltown	XBAR	440		283	517	79	93	163/326	15/55	7/38	3	2
Mings Bight	RX	50		46	75	1	13	31/60	-	-	-	2
Monroe	RX	100		72	142	5	11	42/83	18/47	-	-	1
Moreton's Harbour	RX	100		91	210	12	10	53/104	25/82	2/13	-	1
Musgrave Harbour	XBAR	320		190	371	21	39	124/246	17/65	1/1	-	9/20
Musgravetown	SXS	500	800	341	702	64	81	192/381	49/188	15/48	2	2
Newmans Cove	RX	100		87	127	5	28	59/99	-	-	-	-
Newstead	RX	100		79	140	12	15	61/119	1/4	-	-	2
Nippers Harbour	RX	50		49	71	2	16	30/52	-	-	-	3
Norris Arm	XBAR	200		148	315	32	26	65/116	25/91	18/57	1	13/24
North Harbour	RX	100		74	118	9	27	43/85	3/5	-	-	1
Pacquet	RX	75		69	143	4	7	49/97	10/36	-	-	3
Parsons Pond	RX	100		64	107	18	16	43/80	5/11	-	-	-
Plate Cove	sxs	100	200	80	136	7	20	56/108	3/7	-	-	1
Pools Cove	RX	50		43	66	4	7	28/48	6/9	-	-	2
Port Albert	RX	50		35	35	2	33	-	-	-	-	2
Port Blandford	XBAR	240		129	218	18	34	89/176	4/6	-	1	1
Port Rexton	XBAR	400		310	565	48	85	173/305	44/152	5/20	3	-
Port Saunders	XBAR	300		235	388	43	84	129/239	20/63	-	-	2
Princeton	SXS	200	300	146	248	19	22	106/188	15/35	-	1	2
Raleigh	RX	50		69	124	1	7	58/111	2/4	-	-	2
Ramea	XBAR	300		183	361	44	36	130/259	1/3	7/43	1	13/19
Reefs Harbour	RX	100		78	137	1	19	57/113	1/4	-	-	1
Rencontre East	RX	50		47	56	1	35	11/20	-	-	-	1
River of Ponds	RX	50		33	49	2	8	24/40	-	-	-	1
Roberts Arm	XBAR	200		193	338	21	43	80/122	59/138	-	1	10/34
Rocky Harbour	XBAR	600		328	522	60	112	205/393	4/6	1/5	3	3

B. 1. (Continued)

LOCATION	TYPE	Installed LINES	Installed TER'L.	Working LINES	Working MAIN STNS.	EXTNS.	LINES/STATIONS ONE PTY.	LINES/STATIONS TWO PTY.	LINES/STATIONS FOUR PTY.	LINES/STATIONS MULTI PTY.	PAY STNS.	CNT
Roddickton	XBAR	240		199	314	48	35	104/201	6/24	-	1	3
Rushoon	XBAR	240		145	299	18	25	92/182	27/91	-	-	1
St. Anthony	P-XBAR	800	1400	633	964	282	281	305/569	20/59	5/33	9	13
St. Albans	XBAR	380		252	467	29	44	188/370	4/12	5/30	5	6
St. Brendans	RX	50		45	96	5	7	28/54	5/18	4/16	-	1
Seal Cove, F.B.	RX	100		62	129	3	13	37/73	3/29	3/13	1	-
Seal Cove, W.B.	RX	100		93	156	5	29	64/117	3/8	-	-	2
Seldom	RX	100		94	174	18	18	67/130	7/24	-	-	2
Sops Arm	RX	100		82	151	8	13	54/105	14/32	-	-	1
Southbrook	SXS	100	200	92	152	19	20	65/107	5/17	-	1	1/7
Springdale	SXS	800	1100	750	992	264	434	298/509	1/4	-	11/13	6/32
Summerford	RX	200		199	423	37	35	107/195	41/132	13/58	2	1
Swift Current	RX	100		72	156	13	21	27/53	22/80	-	1	1
Terra Nova	RX	50		26	37	2	12	12/23	-	-	1	1
Terrenceville	RX	100		79	148	15	22	45/89	10/35	-	1	1
Triton	RX	150		130	263	18	22	71/121	34/113	1/5	-	2
Trout River	RX	50		67	134	6	5	54/106	6/21	-	-	2
Twillingate	SXS	800	1300	676	1059	147	166	494/877	-	-	8	3
Westport	RX	50		50	95	6	5	33/61	11/23	-	-	1
Wesleyville	XBAR	700		466	801	82	138	231/460	32/123	-	7	8/18
Woody Point	SXS	250	400	190	289	55	89	92/182	3/6	1/4	1	4/7
TOTAL		30900		23625	38183	5975	9747	11397/21314	1533/5051	289/1192	216/223	443/65

Note: RX - Rurax (Plessey)
SXS - Step by Step (Plessey)
XBAR - SA1 Crossbar (Northern Electric)
PXBAR - Crossbar (Plessey)

LABRADOR TELEPHONE COMPANY

STATISTICS - MAY 1977

APPENDIX F

THE LABRADOR TELEPHONE COMPANY

STATISTICS FOR THE MONTH OF MAY 1977

1. Customer Reports /100 Stations 6.85

STATISTICS AS OF MAY 30, 1977

2. Held Orders and Held Regrades 1

3. Held Orders and Regrades/100 Inward Movement 0.42

4. Percent Dial Tone Delay - Less than 3% in peak period (actual not available on monthly basis)

5. TELEPHONE STATISTICS

Individual	
B-1	885
R-1	2,874
Two-Party	
B-2	1
R-2	124
Extensions	
B-extensions	864
R-extensions	1,539
Public Telephones	29
	6,316

NTC EXCHANGE BY REGION AND TOLL CENTRE

APPENDIX G

Toll → Centre	St. John's	Bay Roberts	Marystown	Grand Falls	Corner Brook	Stephenville Crossing	Goose Bay
	St. John's	Bay Roberts	Burin	Grand Falls	Benoits Cove	Codroy	Black Tickle
	Mt. Pearl	Branch	Garnish	Bishops Falls	Corner Br.	Degras	Cartwright
	Portugal Co.	Brigus	Grand Bank	Botwood	Curling	Isle Aux Morts	Charlettown
	Torbay	Carbonear	Lamaline	Cottrells Co.	Deer Lake	Jeffrey's	Churchill Falls
	Bell Island	Chapel Arm	Marystown	Leading Tickle	Lark Hr.	Lourdes	Davis Inlet
	Cape Broyle	Freshwater	St. Lawrence	Point Leamington	McIvers	Port Aux Basques	Forteau
	Fermuse	Harbour Main			Pasadena	Port Aux Port	Fox Harbour
	Long Pond	Hts. Content			Summerside	Rose Blanche	Goose Bay
	Pouch Cove	Hts. Delight				St. Georges	Hopedale
	Trepassey	Long Hr.				Stephenville	Lanse Au Clair
	Witless Bay	Lower Isl. Co.				Stephenville-Crossing	Lanse Au Loup
		Mt. Carmel					Makkovik
		New Chelsea					Mary's Hr.
		New Harbour					Mud Lake
		Old Perlican					Nain
		St. Brides					N.W. River
		St. Mary's					Port Hope Simpso
		Upp. Isl. Co.					Postville
		Western Bay					Rigolet
		Witbourne					Wabush
							W.St. Modeste
							Red Bay

APPENDIX 7

NTC Exchanges by Region and Toll Centre

SUMMARY OF NTC LINES AND TERMINALS

APPENDIX H

SUMMARY OF N.T.C. LINES & TERMINALS

BY EXCHANGE

AS OF OCTOBER 31, 1976

EXCHANGE NAME	LINE CAPACITY	TERMINAL CAPACITY	WORKING			BUS TELS.	RES TELS.	INDIV. LINES	2 PARTY LINES	COIN STATIONS
			MAIN LINES	EXT.	TOT.					
St. John's										
Allandale	31626	29440	22410	19347	42257	21115	19733	21860	180	613
Anderson	9,500	9,660	9129	4395	13524	2807	10425	9101	98	-
Mt. Pearl	11342	11172	9818	4442	14260	2486	11492	9680	63	73
Portugal Cove	1,528	1,520	1199	370	1569	91	1478	1185	7	6
Torbay	1,496	1,560	1068	276	1344	79	1265	1048	12	5
Bay Roberts	3,650	3,659	2908	783	3691	755	2934	2628	169	32
Bell Island	1,260	1,196	1086	159	1245	208	1031	982	88	15
Branch	210	870	122	17	139	21	118	121	-	1
Brigus	767	736	647	82	729	82	647	612	19	9
Cape Broyle	457	903	474	58	532	72	456	460	2	12
Carbonear	3,655	3,680	3235	1119	4354	1030	3276	3025	117	50
Chaple Arm	457	903	390	34	424	52	372	388	-	2
Fermeuse	357	870	347	40	387	50	337	343	-	4
Freshwater	2,500	2,572	2195	638	2833	666	2167	2091	50	41
Hr. Main	1,441	1,472	1164	282	1446	217	1229	1111	28	22
Hts. Content	551	902	521	78	599	59	540	489	22	5
Hts. Delight	457	903	391	31	422	37	385	386	-	5
Long Hr.	212	904	167	208	375	220	145	164	-	3
Long Pond	4,435	4,402	3053	761	3814	415	3399	2651	248	26
Lower Isl. Co.	479	460	410	25	435	27	408	389	15	6
Mt. Carmel	457	903	428	76	504	54	450	405	10	6
New Chelsea	376	360	355	39	394	30	360	347	3	1
New Harbour	833	899	799	73	872	108	762	781	11	7
Old Perlican	739	900	514	80	594	84	510	503	4	6
Pouch Cv.	667	644	512	118	630	41	587	510	-	2
St. Brides	269	904	178	19	197	34	163	177	-	1
St. Mary's	551	902	484	69	553	65	488	463	9	7

TH

SUMMARY OF N.T.C. LINES & TERMINALS

BY EXCHANGE

AS OF OCTOBER 31, 1976

EXCHANGE NAME	LINE CAPACITY	TERMINAL CAPACITY	WORKING			BUS TELS.	RES TELS.	INDIV. LINES	2 PARTY LINES	COIN STATIONS
			MAIN LINES	EXT.	TOT.					
Trepassey	551	902	445	114	559	117	442	433	-	12
Upper Isl. Cv.	644	900	535	72	607	35	570	534	-	1
Western Bay	457	896	366	29	395	32	363	356	9	3
Witbourne	551	902	512	131	643	170	470	484	13	12
Witless Bay	1,296	1,070	638	122	760	101	659	625	1	12
Burin	1,792	1,630	1108	282	1390	296	1091	1056	14	21
Garnish	363	903	300	27	327	23	304	291	7	3
Gd. Bank	2,307	2,760	1748	523	2271	490	1767	1716	10	22
Lamaline	363	898	309	15	324	35	289	300	5	1
Marystown	2,329	2,484	1564	623	2187	674	1513	1509	10	43
St. Lawrence	833	899	740	235	975	268	701	707	14	13
Gd. Falls	5,000	4,976	4476	2988	7464	2497	4851	4340	64	49
Bishop Falls	1,338	1,380	1084	310	1394	272	1106	1063	16	5
Botwood	1,653	1,564	1430	352	1782	360	1422	1385	20	14
Cottrells Cv.	137	905	101	12	113	15	98	101	-	-
Lead. Tkls.	174	904	141	8	149	13	136	141	-	-
Pt. Leamington	288	285	224	35	259	38	221	220	2	2
Benoits Cv.	570	552	425	47	472	49	423	422	-	3
Corner Brk.	7,325	7,268	6586	4996	11582	4730	6619	6435	40	103
Curling	1,710	1,748	1634	404	2038	221	1817	1615	12	4
Deer Lake	1,728	1,748	1652	542	2194	523	1657	1566	41	20
Lark Hr.	290	906	226	17	243	14	229	225	-	1
McIvers	287	903	284	11	295	13	282	282	-	2
Pasadena	1,055	1,012	654	157	811	89	722	640	5	9
Summerside	647	903	586	74	660	37	623	553	17	3
Codroy	551	902	510	94	604	101	501	497	4	7
Degras	457	903	317	74	391	37	354	304	6	1
Isle Aux Morte	575	552	529	126	655	72	583	519	4	5

H2

SUMMARY OF N.T.C. LINES & TERMINALS

BY EXCHANGE

AS OF OCTOBER 31, 1976

EXCHANGE NAME	LINE CAPACITY	TERMINAL CAPACITY	WORKING			BUS TELS.	RES TELS.	INDIV. LINES	2 PARTY LINES	COIN STATIONS
			MAIN LINES	EXT.	TOT.					
Jeffrey's	551	902	485	62	547	63	484	478	1	6
Lourdes	665	644	430	60	490	45	445	422	5	-
Pt. Aux Basque	2,112	2,116	1854	844	2698	706	1968	1776	34	26
Port Au Port	665	644	462	94	556	68	488	427	25	3
Rose Blanche	362	903	324	54	378	19	359	322	-	2
St. Georges	580	552	520	118	638	110	528	493	13	14
S'Ville	3,680	3,680	3149	1868	5017	1674	3276	3060	7	79
S'ville Xing	775	828	564	155	719	148	571	530	9	11
Black Tkle.	78	78	31	3	34	12	22	31	-	-
Cartwright	190	190	124	19	143	36	107	124	-	-
Charltn.	76	76	40	5	45	12	33	40	-	-
Churchill Fall	777	615	341	508	849	380	449	331	-	10
Davis Inlet	78	78	12	2	14	5	9	12	-	-
Forteau	140	140	114	22	136	30	106	114	-	-
Fox Hr.	78	78	47	3	50	4	46	47	-	-
Goose Bay	3,390	3,323	2672	1797	4469	1434	2973	2564	48	67
Hopedale	78	78	38	11	49	16	33	38	-	-
L'Anse Au Cl.	78	78	61	13	74	15	57	61	-	-
L'Anse Au Lo.	190	184	117	23	140	27	113	112	2	-
Makkovik	78	78	60	19	79	14	65	60	-	-
Mary's Hr.	78	78	72	5	77	10	67	72	-	-
Mud Lake	78	78	17	1	18	2	16	17	-	-
Nain	140	140	91	23	114	27	87	91	-	-
N.W. River	192	184	176	53	229	87	140	174	-	2
Pt. Hope Sim.	78	78	65	2	67	11	56	65	-	-
Postville	78	78	40	5	45	7	38	40	-	-
Red Bay	78	78	61	5	66	10	56	61	-	-
Rigolet	76	76	49	6	55	11	44	49	-	-
Wabush	1,357	1,182	1111	994	2105	621	1470	1092	-	19
W.St. Modeste	140	140	85	7	92	14	78	64	20	-
TOTAL	132459	142328	106340	53320	159660	47845	109154	102996	1632	1570