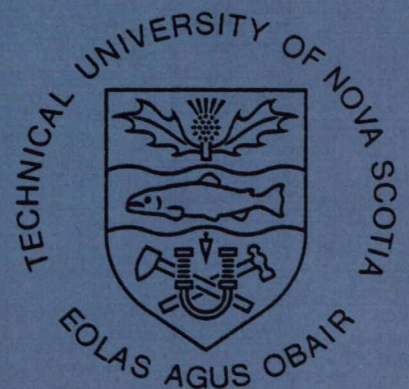


Department of
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Halifax, Nova Scotia

TELECONFERENCING AS A VIABLE
COMMUNICATIONS ALTERNATIVE: AN
ECONOMIC AND STATISTICAL ANALYSIS



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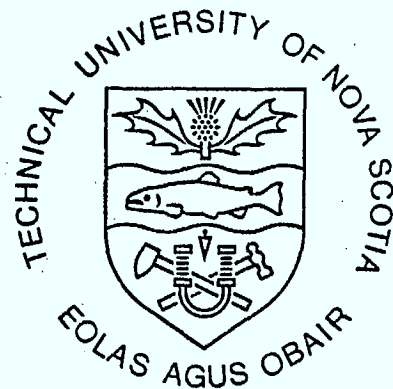
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TELECONFERENCING AS A VIABLE
COMMUNICATIONS ALTERNATIVE: AN
ECONOMIC AND STATISTICAL ANALYSIS

Contract Serial No. OST80-00048.

(DSS File Number 18ST 36100-0-9508)

→ FINAL REPORT

BY

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Abstract

Trends in teleconferencing in Canada are examined, including an inventory of and an assessment of the current Canadian teleconferencing systems and equipment. An Analysis is made of usage patterns and an initial but limited assessment of the economic potential of teleconferencing is provided. Finally a methodology is offered which could be used in assessing the potential for teleconferencing within a given organization.

This research project was directed by the Government Telecommunications Agency, Division of Development and Engineering under the University Research Program of the Department of Communications.

TELECONFERENCING AS A VIABLE COMMUNICATIONS ALTERNATIVE:

AN ECONOMIC AND STATISTICAL ANALYSIS

FINAL REPORT

This report is the final deliverable required, as outlined in Appendix A, of the above contract (DSS File Number 18ST 36100-0-9508). An interim report was delivered in December, 1980 and this final report contains the substance, with some up dating of the interim report.

INTRODUCTION

This contract is based upon a final proposal submitted 4 September, 1980 in which the starting date of the contract was proposed as 1 October, 1980. The contract was issued 22 October, 1980 and work was commenced 1 November, 1980. The bulk of the work accomplished during the first two months (November and December, 1980) was concerned with an examination of the current teleconferencing system, on a national scale, as reflected by the major telephone companies involved. During January and February, 1981, emphasis has been placed on the investigation of user reactions to teleconferencing with the object of determining a methodology for assessing cost benefit ratios.

At the request of the investigators, the Department of Communications contacted the major telephone companies outlining the scope of the study and soliciting the cooperation of the telephone companies in meeting with and assisting the investigators. A sample of the type of letter sent to each of the companies is attached as Appendix A. The cooperation of the telephone companies, with certain exceptions, has been enjoyed by the investigators and it is suggested that a letter of acknowledgement be sent by the department to each company to this effect. Unfortunately, the British Columbia Telephone Company expressed, initially, and through its Teleconferencing Representative, that there was no interest in meeting with the investigators. Subsequently BC Tel expressed a desire to be included in the survey and produced answers to a

written questionnaire which was sent to them in lieu of a personal visit.

The following companies have been visited by either one or both of the investigators:

Newfoundland Telephone Company
Terra Nova Telephone Company
Maritime Telegraph and Telephone Company
New Brunswick Telephone Company
Bell Canada (Quebec Region)
Bell Canada (Ontario Region)
CNCPC Telecommunications
Manitoba Telephone Company
Saskatchewan Telephone Company
Alberta Government Telephones
Edmonton Telephone Company

Additionally interviews were held with the following organisations as the opportunity arose:

Trans Canada Telephone System
Bell Northern Research
Memorial University Medical Centre
Waterloo University Centre for the
Evaluation of Communication -
Information Technologies
University of Regina -
Professor Wm. Berriman

Written data in response to a questionnaire were received from British Columbia Telephone Company.

It will be appreciated that, in spite of the significant cooperation that was received from the telephone companies, some organisations felt that certain information was of a proprietary nature and, consequently, a complete statistical analysis of certain features could not be obtained. However, in most instances, sufficient data were obtained to provide a background for postulating current trends and conditions. Many questions resulted in diverse opinions both between companies and even within companies. Thus some of the conclusions that have been reached are subjective but an attempt has been made to illustrate the spread of opinions and to report the perceived consensus.

In each interview session, representatives from both the technical or engineering side of the organisation and from the sales or marketing side were present. Thus the discussion of the findings in this phase breaks down, very naturally, into two main sections dealing with the technical and the marketing aspects of the operation, respectively. On the whole it is felt that the marketing staff were better informed of the details of the operation than were the technical staff. It was found difficult to obtain the technical details of equipment in some instances and much of this material has subsequently been researched in more depth with equipment manufacturers.

TECHNICAL SECTION

Systems

It is generally agreed by all companies that a national system of audio teleconferencing exists through the "Conference Call" offerings of each individual company. And, while there are variations between companies with respect to bridging philosophy, rates and performance, the total system is compatible across the TCTS although the performance may be less than adequate in some particular instances and for specific connections. Additionally there are certain preset and customer controlled systems in existence - for example the provisions of CNCP and others such as the Memorial University Medical Centre. Many of these preset systems operate on a dedicated four wire basis rather than through the two-wire machine-switched network. There is also evidence that there are some "bootleg systems" running through the machine-switched network and controlled by "foreign attachments" purchased outside the telephone company.

The national system, which is coordinated by TCTS, is, effectively, an operator handled service although some customer operated switchboards (SM-1 and SL-1) offer a limited customer controlled arrangement. The transmission and noise

levels employed within the national system coincide with the levels established by the TCTS for the two-wire, machine-switched network. With the exception of certain voice-switched conference bridges, no special arrangements for automatic level control or noise reduction are reported. Some preset and dedicated systems appear, generally, to have a higher quality and better noise control than the normal conference call system.

The two-wire machine-switched system has been described as a "hostile environment" for audio teleconferencing and it is evident that considerable improvement in both bridging and terminal equipment is required to make a truly national system, based upon the two-wire machine-switched network, acceptable - in the view of many of the representatives. At present it appears that each major customer - such as the Federal Government - is faced with the decision of insisting upon better terminal and bridging equipment or the installation of a custom built and customer controlled dedicated system. The latter would allow high quality audio conferencing only within the organisation concerned and would place communication with the "outside world" only via the Conference Call offerings.

Currently there is no national system of video conferencing. There are facilities on an "on call basis" between Montreal, Ottawa, Toronto and Calgary and Edmonton. These require the use of carrier owned studios and are not considered at this time to be economically viable by the telephone companies concerned. Video conferencing on an "as and when basis" can be provided by most telephone companies and certain outstanding instances of the success of this arrangement have been encountered.

In general it appears that the current Conference Call option, offered by all of the major common carriers, is geared predominantly to an "office-to-office" type conference - with at least more than two subscribers connected via a bridging

circuit. The dedicated and preset systems tend to be employed most frequently in a "room-to-room" scenario — with more than one conferee in each room and only a relatively low number of rooms connected through a bridge. Office-to-Office conferences are often conducted through a normal handset terminal or, more frequently, through some version of a hands-free loudspeaking telephone. In contradistinction, room-to-room conferences are more likely to be implemented through terminal equipment that involves a number of microphones in each room in conjunction with a public address type loudspeaker system. A notable exception to this arrangement is the Northern Telecom "Conference 2000" which provides a microphone and loudspeaker in a single voice-switched module. However, both arrangements are not mutually exclusive and mixtures of the two types of terminals can be interconnected.

Customer Terminals

Some indication of the preparedness of the Canadian public for audio teleconferencing can be assessed from the number of hands free telephone sets now in service in various regions. Unfortunately, certain companies considered this to be proprietary information and were not prepared to report figures to the investigators. However, the currently available numbers are quoted in Appendix C together with estimates of hands free telephones per 1000 of population serviced.

This data includes all types of hands free terminals - including such equipment as the Northern Telecom Conference 2000. Some companies indicate that these are minimum figures as they, naturally, have no records of "foreign" terminals purchased by customers and jacked into the system.

Without data from the Bell Canada system it is difficult to arrive at a definitive number for the total of loudspeaking or hands-free telephones available in the country. However it is significant that the figures per 1000 capita range from a low of 1.3 in a rural region, such as New Brunswick, to a high of 5.5 for an urban centre, such as Edmonton. Without more complete data the best estimate of the total number of subscribers who are geared up for teleconferencing, by virtue of an available hands-free set, is in the order of 100,000 nationally.

Send/Receive Switching

It is generally accepted by most telephone companies that satisfactory audio teleconferencing cannot be achieved without the use of a hands-free type terminal. While the ordinary handset can be and is used for this purpose, long conferences become very tiring and difficult without a hands-free facility. This situation gives rise primarily to the problem of send-receive switching and all the stability problems that arise because of this feature. Some of the options that have been explored by and with the telephone companies are as follows:

- a) **Microphone-Earphone Arrangement:** While this would eliminate all of the problems of local stability and some local echo (barrel effect) it appears that customers are not willing to be "wired in" to their telephone equipment. Certain custom built equipments have been provided; and at least one senior telephone company official uses such a system from his own office.
- b) **Press-to-Speak:** This option has some popularity especially among some provincial government offices. Not only does it eliminate stability problems but also ensures that casual conversation in an office is not broadcast to the remainder of the conference.

- c) Voice-Switching: This is the usual form of loudspeaking telephone set and is typical of most of the currently available equipment. It provides local stability but does not eliminate the barrel effect and it does this at a price paid in terms of attack and release times. Each equipment has a finite attack and release time. These represent the times required to enable the send circuit (attack) at the start of a syllable or phrase and that required to disable the send circuit (release or hang-over) at the end of a word phrase. A compromise must be struck between the onset of clipping of the speech and the probability of lockout. The general consensus is that clipping is far more prevalent than lockout - however, this may be due to the fact that clipping is much easier to detect, from the user point of view, than is lockout. The values of these times appear to vary among equipments between 1 - 5 mSec for attack and 100 - 150 mSec for release. All of these times are, of course, modified by the additional delays that may be encountered in four-wire to two-wire echo-suppressors and vary substantially by the delays encountered in satellite transmissions. Rigid discipline by the members of a teleconference group can do much to eliminate lockout and in fact it is observed that voice switching makes for "good listeners". No company had any statistics on the probability of lockout although it was observed by some that lockout occurred more frequently as the number of stations on a conference call increased. It was also observed that noisy offices tended to switch the circuit on room noise alone thus aggravating the clipping and lockout problem. An ambient noise level of 80dB was quoted as providing a switching override on some equipment.

- d) Voice-Switching plus Hand-Switching: Many voice switched loudspeaking telephones have a Press-to-Mute button which allows conversation within an office to take place without activating the voice switch. This is considered to be a very desirable feature among many users. Additionally, some equipment (notably the Darome Set) provide a press-to-talk button as well as voice-switching. This eliminates false operation of the voice-switch by noise and also makes the speaker very conscious that he is "going on the air" as it requires a positive and voluntary action on his part to open the circuit to voice-switching.
- e) Voice Switching at the Bridge: While none of the officials interviewed claimed to be familiar with the concept of voice-switching at the bridge, it appears that certain commonly used bridges have this facility. More discussion of this point is made below but it should be observed that voice-switching at the bridge combined with similar facilities at the terminal will give rise to additive time constants -- in addition to those imposed by echo suppressors and satellite transmissions -- thus increasing the likelihood of lockout.

Conference Bridges

One of the key elements in an audio teleconferencing system is the conference bridge. This is a device normally, but not always, owned by and installed in the premises of the telephone company. It is thus a "common user" item provided by the telephone company and its employment in a conference call is generally subject to a "front end" charge within the conference call rates. (A further discussion of this point is made in the Marketing Section of this report).

While a variety of bridges are now in current use throughout the TCTS they all have a common feature in that they are operator connected and cannot be accessed by customer dialing. Their main purpose is to provide a common bus circuit to which individual customer lines can be connected while providing some additional amplification within the circuit to make up for the bridging loss occasioned by the paralleling of a number of two-wire circuits.

Appendix "B" shows the numbers and locations of conference bridges throughout the TCTS. These figures do not include bridges which are customer owned or operated or such bridging facilities that are provided in customer operated switchboards such as the SMI and SLI. However, the list does indicate that there are in excess of 500 ports available throughout the country as common user equipment. The utilisation factor of these bridges varies over the range of two to three calls per day in the MTT system of 60 ports to 66 calls per day in the Bell Canada system of a total of 160 ports. The Quebec Region of Bell Canada reports that the single bridge at Montreal is overbooked during business hours and that conferences have to be "cab-ranked" in order of priority.

The routing philosophy varies considerably between telephone companies. The most general principle followed is to employ the bridge nearest to the instigator of the call although there are instances of alternative routing being used to provide the "least cost" to the customers. Amplification of this point will be made under the Marketing Section of this report.

An interesting experiment is being implemented by New Brunswick Telephone Company in the development of a dial-up bridge. This experiment is being carefully monitored by TCTS for possible application to the remainder of the Trans-Canada System. The experimental bridge is, as yet, only being used as an "in-house" device by New Brunswick Telephone and consists essentially of a Northern Telecom bridge with peripheral machine switching to allow dial access.

The variety of bridges employed within the system varies considerably from those that provide minimal loss compensation to more sophisticated systems providing voice operated switching and zero bridging loss. In some instances, voice switching is provided on only one port -- the conference originator or chairman -- while later versions provide voice switching on all ports. More recently available bridges embody such features as high speed scanning of ports to implement voice switching rather than relying on a level comparison for this facility.

While all bridges available to customers within the TCTS are operator controlled, "dial-up" or "meet-me" bridges are currently available in the market. Typical of these are the DAROME Go-Between and the CEAC equipments. These, however, are design primarily for installation on a customer's premises and thus function in an end point bridging mode. The variation in the types and styles of bridges currently in use must be considered as a major factor in the quality of the service offered to the public.

EQUIPMENT

The short-comings and deficiencies in equipment were discussed with both engineering and marketing staffs - the opinions of the latter tend to reflect customer reaction to the present systems and equipment. There is practically total agreement that the most predominant short-coming in equipment is the lack of dial-up facilities to access bridges. This arises from several points of view.

- a) Customers complain of the waiting period involved in getting a manually established conference setup.
- b) Customers are concerned that if the calls are placed by an operator then the operator can "listen in" on conferences and there is a possible breach of security.

- c) Customers compare the cost of operator handled conference calls with the normal DDD rates and complain about the additional charges.

Another common complaint is the frequency of "drop off" brought about by poor signal levels and excessive noise. It will be appreciated that the instructions to users are such that if poor transmission/reception is experienced the customer is to "hang up" and wait for the operator to re-establish the connection. The chairman of the conference and the other conferees are not necessarily aware of this drop off and the conference ceases to be viable under these conditions.

The variation of attenuation between certain loops also causes complaint although some bridges have the facility for the operator to adjust the gain of the device at the outset of the conference and others employ automatic level control.

There is considerable difference of opinion between companies, and even within companies, with respect to the nuisance value of clipping and lockout. It has been observed that the frequency of these phenomena decreases rapidly with the experience of the conferees in the process of teleconferencing -- reinforcing the statement that voice-switching makes for good listeners.

Features which certain telephone companies would like to see built into new equipment include the following:

- a) Correction of the deficiencies outlined above.
- b) Optional press-to-talk facility at the terminal.
- c) Some visual form of speaker identification.
- d) Some form of chairman override.
- e) Elimination of voice-switching at the terminal.
- f) Better engineering of certain trunk circuits.
- g) Some form of encrypting for confidential conferences.

Video - Conferencing

A complete range of possible visual aids to audio conferencing has to be considered. These range through the following:

- a) Audio plus Electronic Blackboard
- b) Audio plus Facsimile
- c) Audio plus Slow-scan Video
- d) Audio plus one way Real Time Video
- e) Audio plus two way Real Time Video

As the majority of a) through d) are generally provided by customer owned or rented equipment no hard statistics appear to be available as to the degree with which these facilities are used. However, there is evidence that all of these are used to a certain extent in teleeducation and telemedicine programs.

One way video and two way audio are available on an "order" basis in most regions. However the costs of these programs vary with the location of the studio used for transmitting the video picture and the availability of video channel band width at that location. There appears to be a significant potential for the use of this mode of conferencing from the marketing and sales point of view.

Similarly, two way video is also available on an "order" basis and both real time video arrangements are subject to varying lead times - depending upon the local circumstances of the sending studio. It is reported that the success of either of these modes depends largely upon the production effort that is mounted prior to the transmission. It is estimated by CNCP that the production costs could be as much as four times the transmission costs.

The only "on call" systems that are available to the public are provided by Bell Canada between Montreal, Ottawa and Toronto. This service is provided through studios owned by and installed in Bell Canada premises and is transmitted

on "guard" video channels which may be withdrawn from video conferencing at any time during the conference. This lack of guaranteed channel time is reflected in the charges for this service. The typical charges for a video conference between Montreal and Toronto are as follows:

Front end charge of \$100 per studio

.plus

\$43 per 15 minutes for transmission

In order to sponsor sales of this service, Bell Canada offers to waive the front end charge for the first video conference ordered by a new customer. Bell Canada report that the system is not paying for itself and that they consider it an experimental investment.

The general consensus obtained from the companies with respect to the future of video conferencing is that a truly national system is unlikely until more video channels are available on a national basis. The time frame which is suggested is about 1985 and after the launch of Anik C. Some representatives suggest that a multi-link two way video network is not technically feasible until some form of digital switching is available in satellite channels.

MARKETING SECTION

Current Situation

The use of Teleconferencing (TC) either audio, audio/video or full video, has not developed to a significant extent in Canada. There are some areas where acceptance is greater than in others, but all telephone companies report revenue from TC as being much less than 1% of total income. Trans Canada Telephone Systems (TCTS) Telephone Statistics 1979 give a total of 79,113,087 long distance calls within Canada. TCTS estimates of total conference calls for 1981 is 50,000, less than 1/20 of 1%. Even though the estimated growth rate is approximately 30% per year, it will quite likely be a long time before TC has any significant effect on revenues. This perhaps accounts for apparent lack of senior management support, in a policy sense, of TC.

It is therefore clear that if TC is potentially valuable as a conservation measure, or as an efficient means of using Canada's vast investment in telecommunications facilities, there will have to be a radical change in the approach taken to date by TCTS and the telephone companies. Since TC revenues are negligible at this time, it is unrealistic to expect telephone company management or TCTS pressure to significantly increase the use of TC. Meaningful influence in this direction will have to come from the following:

(1) User - based on their perception that effective teleconferencing will save them money and get the job done at least as well.

AND

(2) Government - based on the national interest in terms of energy conservation or efficient use of the communications system.

Viewed pragmatically, the current situation suggests that users will have to lead the way. The telephone companies in Canada are generally responsive to demand, and the attitudes expressed by the telco people interviewed, suggest a readiness to

react to any clearly demonstrated need for new facilities and services. It is important to emphasize the difference between response and initiation in this case. The latter seems to be lacking.

The priority challenge, then, is to determine how the user public views the potential for TC and then to ascertain whether and in what form government support or incentives should be offered. The technology for basic audio TC is available generally in the Canadian telephone system, but much work remains to be done by the telephone companies in system improvement, coordination of standardized rate structures and promotion of TC services. Such work would normally be part of the introduction of a new industrial product to the marketplace. It is unlikely however that it will be done at more than a snails pace in the absence of a strong indication that the business community, governments and others need teleconferencing for the reasons stated earlier.

Major Users

There are many categories of occasional users of TC. The telcos were not able to provide hard data but it was strongly suggested that business and government together make up a high percentage of total present and potential use - and that of these, business is the greater. Reference is made to Appendix D which ranks users in accordance with the information given to the investigators. It is, perhaps, worthwhile to report the comments on the telephone company perceptions of the potential for TC:

- (1) TC has not been sold within our company - let alone outside.
- (2) The available network and terminal equipment are capable of providing reasonably effective TC, but several refinements in equipment and training are needed before the product will sell.

- (3) Little of any real "needs research" is being done in Canada. Regular and growing use will be based on the identified and continuing needs.
- (4) Management support is lacking - resources to promote TC are not generally adequate.
- (5) We sense there is good potential, but this has not yet been evaluated by our company.
- (6) It will be necessary for management to issue directives to reduce unnecessary or "marginal" travel, before TC will achieve its potential in most user organizations.

Reasons for not using TC:

The Technical Section of this report goes into some detail on the subject of equipment and the system generally. There are perceived deficiencies which have had perhaps an undue effect on user acceptance. There are also other often expressed hang-ups:

- (1) Public awareness: Business people are more or less familiar with the availability of operator handled conference facilities. However, general acceptance of the convenience of use and benefits of TC is not high. In the case of video conferencing, awareness is regarded as low to non-existent. Also, and rather importantly, awareness on the part of some first-time users has been dulled by a single less - than - successful experience.
- (2) Psychological: Many people still feel uncomfortable with the idea of teleconferencing. Reasons given to the telephone companies include:
 - a fear that TC use might curtail freedom of action e.g. arbitrarily cut out almost all travel to meetings and conferences.

- a perceived loss of side benefits of regular face-to-face meetings, when it is possible to meet informally during breaks, or have bull-sessions after the formal meeting.
- a sense of the need for face-to-face contact, including the ability to judge the reactions of fellow conferees to ones contributions.
- a feeling of stress based on perceived greater difficulty in accessing how "one is performing" in a TC situation.
- a perception of lack of privacy or security of material being covered.
- the difficulty in being recognized or known in situations where all conferees are not acquainted - unless the TC is so carefully structured as to verge on being regimented.
- the reluctance to travel to any location other than the normal one for a meeting of people.

(3) Rates and Routing: Charts A and B are illustrative of the fact that there is little standardization of even the structuring of rates. Chart A shows typical charges for local conference service (i.e. TC taking place among parties in the same exchange). It appears that the Bell system charges for this service are very much the highest in the country - an interesting situation, given that Bell accounts for over 40% of the total long distance calls made within Canada. Chart B suggests a general standardization of rate structure for TC within Canada, but since person-to-person rates vary widely from company to company, there is no overall standardization of charges for TC across the country. There are also limitations on the customers' ability

to reverse charges - with no facility offered for apportioning charges among the conferees.

Attached as Appendix E are the conference call rate structure and policy tariff sections for the TCTS member companies. The format for these, although generally similar, lacks standardization which could easily be achieved, and which would make comparison easy. Generally missing from these documents provided by TCTS, is information on person to person rates - which form an important part of the cost of teleconferencing.

The routing of calls is dealt with in the Technical Section and has essentially to do with the physical location of bridges. In one company system, bridges are placed in a number of centres, making it practical to route calls more efficiently which would tend to result in cost effective charges. In another system, bridges are centrally located meaning longer routing for many calls and a need to consider this factor in establishing rates. In general, routing of TC calls is at the operator's discretion and appears to normally use the best routes available, considering the originators location first.

- (4) Knowledge and Training: All telephone companies and others contacted by the investigators, suggested that the level of knowledge relating to the special disciplines required by teleconferencing is not nearly high enough. To begin with there appears to be a misconception or lack of any real definition of the situations where TC would be appropriate, effective and even superior in results to conventional meeting. Judging from the telephone companies' reactions, we are only coming up to the threshold of interest in the subject. Little research has been done on the subject of identifiable

LOCAL CONFERENCE SERVICE

(connections within the same exchange)

CHARGES FOR EACH LEG IN EXCESS OF ORIGINATION TELEPHONE

	<u>INITIAL PERIOD</u>	<u>CHARGE</u>	<u>EACH ADDITIONAL</u>	
			<u>MINUTE</u>	<u>FIVE MINUTES</u>
MTel	5 minutes	.50		.25
Island Tel	5 minutes	.55		.20
NB Tel	5 minutes	.50		.18
Bell Tel	5 minutes	1.00		.75
Man Tel	1 minute	.05 (each minute - minimum charge)		1.10
Sask Tel	5 minutes	.55		.25
AG Tel (1)				
BC Tel	3 minutes	.41	.14	

- (1) AGTel
1. Rate per minute using Rate Step 1, subject to off - peak discounts
 2. Set up charge
 3. Conference surcharge

CHART A

L.D. TELECONFERENCE - INTER PROVINCE WITHIN CANADA

8:00 a.m. - 6:00 p.m. Monday - Friday

SETUP CHARGE PER LEG

	<u>Initial Period</u> <u>three minutes</u>	<u>Charge</u>	<u>Each add.</u> <u>Minute</u>	<u>Person to Person</u> <u>originator - each party (1)</u>	<u>Reverse</u> <u>Charges</u>
MTT	X	1.85	.18	X	(2) (3)
NBT	X	1.85	.18	X	(2) (4)
Bell	X	1.85	.18	X	(4)
Man Tel	X	1.20		X	(2) (4)
Sask Tel	X	1.85	.18	X	(4)
AGT	X	1.85	.18	X	(4)
BC Tel	X	1.85	.18		(4)

- NOTES: (1) person to person rates may differ (see CHART A for difference in local rates)
(2) not permitted on conference calls within same exchange
(3) not clear whether inter - exchange conference charges reversible
(4) total charges must be billed to one telephone

CHART B

needs which will persist and grow to the extent that resources can be applied to them with acceptable business risk. Casual contacts with people who travel a great deal to meetings of various kinds, have produced consistent reaction: TC is sure to grow significantly; experienced businessmen would like to reduce their travel; much travel is unnecessary; properly arranged and conducted teleconferences are effective, while badly prepared ones are a disaster; privacy and convenience are essential; some visual facility must be available or TC will be very limited.

A real challenge will be to encourage users and potential users, to learn and make part of everyday practise, the special requirements of teleconferencing. These include:

- (1) Careful preparation of meeting plans and agenda;
- (2) Mail-out of agenda and any special instructions well in advance;
- (3) Clear understanding of meeting protocol, chairman responsibility, speaker identification, order of contribution and time limitations.

Particularly important will be the provision of a "hand-holding" service by the telephone company to first-time users as it has been found that failure to teleconference successfully the first time provides sufficient reason not to try again. One telephone company has responded to this need by having a designated expert respond personally to each initial inquiry. The skill of teleconference operators and later of user operators when dial-up is general, will remain critical. The telephone companies believe there will always be a need for "special" operator handled services for those who desire and will pay extra for personalized treatment.

Training programs are not yet extensive. All telephone companies have participated in the TCTS activities and some have noticed a surge of interest related to a special campaign. There seems to be a tendency, which may be proper, to depend on the coordination and positive action of the TCTS. At this time it is evident that individual companies have no standardized approach to customer training. All acknowledge they need more in-house understanding of what TC is and how it can be promoted. This is based on the premise that all telephone company employees have an opportunity to promote their company's services. In summary, training action ranges from none at all with no immediate plans, to seminars at company headquarters and courses conducted on customers premises. One company stated that what is needed now is a positive and aggressive approach based on what is required prior to, during and after a teleconference, to ensure success. What seems likely to be of great benefit is a TCTS planned and coordinated marketing plan aimed at specific market segments and actively supported by each telephone company. Careful attention should be given to rates and uniformity of standards within the system.

Potential Use and Market Needs

Based on the information made available to the investigators, significant users will continue to rank as shown on Appendix D.

Business is clearly way ahead in current and expected use, one company placing it as high as 80% of the total use of TC. The potential for government use, both Federal and Provincial appears to be high, whereas the picture is much less defined for other categories. It does seem likely, based on reactions received from users, that there will be significantly increased use of audio and perhaps limited video TC by educational institutions in areas where there are large geographical distances to cover.

As indicated in the Technical Section, emphasis will be on audio teleconferencing. The two or three existing video systems now being tried out in Canada have not created any general enthusiasm. Furthermore, the technology needs improving and opinions are that it will be three to five years before digital switching and satellite facilities will permit the possibility of dedicated channels at affordable customer charges. At present charges are not realistic in terms of providing an investment return.

It is likely then that concentration will be on audio and audio with display add-ons. A very high percentage of situations appropriate for TC will be served by technology now available, particularly when it becomes generally possible to dial a conference from the initiators' office.

One telephone company provided an interesting opinion on "the direction" product development should take and what is needed immediately for successful marketing. This is shown in Appendix F.

It is worth repeating that most telephone companies gave the investigators the impression that little real selling has taken place to date. In one or two cases it did not even seem to be recognized by the company representatives, that selling should be an important part of providing a service. Others obviously had long wondered when a serious sales campaign would be planned and initiated.

Agreement was almost complete on the growing need for the following service attributes:

- Customer dial-up; ddd rates;
- Meet me capability;
- Hands-free terminal set;
- Audio augmented by display capability.

Some telephone company representatives felt that other features are needed:

- Speaker identification;
- Chairman control;
- Manual switching at microphone.

The most controversial feature seemed to be chairman control. Some felt it to be essential; others that it would be dangerous to the success of the meeting if not very carefully used, i.e. chairman override could prove offensive to conferees.

User Survey

In order to provide a factual basis for the formulation of a methodology to evaluate the potential for TC travel trade-off, the investigators conducted a trial survey of a variety of Canadian companies. It should be emphasised that this "mini survey" was not intended as a means of gathering statistical data, but rather as a sampling of the ability and willingness of companies to respond to relevant questions. Forty companies, associations and universities were invited to respond to the questionnaire Appendix G. Nineteen organizations responded and with the exception of two, all had meaningful comments in relation to the questions. The two exceptions stated a complete lack of experience with TC, a rather interesting situation since both are large companies having many plant and office locations. The seventeen useful respondents comprised the following types of organizations:

- (1) Large manufacturers - many locations (national)
- (2) Small manufacturers - few locations (regional)
- (3) A large distribution company - many dealers (national)
- (4) An industry association - few employees (national)
- (5) A large pulp and paper company - (part of a multinational)
- (6) Branch plants of two large European manufacturers (multinational)

- (7) A Canadian subsidiary of a (multinational) drug company
- (8) A large Canadian resource company (multinational)
- (9) Canadian investment company (national - U.S. holdings)

These companies had a range of employees of 23 to over 20,000. Eight ranged from 700 - 5000 employees averaging 2000.

Responses to Survey (Numbers in parenthesis correspond to questionnaire numbers)

- * Travel as a percentage of sales ranged from .01 - 5.5; the largest company gave .01% - the smallest 5.5%. (6)
- * Long distance expenses as a percentage of sales ranged from .025 - 2.0; the largest company in this case was a substantive user of long distance. (10).
- * TC as a percentage of LD ranged from 0 - 10 percent. Several claimed no use of TC at all. Only six companies quoted a percentage: 0.4, 0.5, 2.0, 6.0 and 10.0. (11)
- * Eight regarded quality as good;
Five regarded quality as indifferent;
Four had no opinion (19)
- * Five regarded operator handled calls as good;
Six regarded operator handled calls as indifferent;
Six did not comment. (19)
- * The responses on speaker identification, chairman control, lock out and clipping were inconclusive. (19)

- * There was a medium to high rating of TC as a way to remain in ones office; availability of staff back up when in ones office rated very high. (20)
- * The safety factor of not having to travel was not rated as important, but the time saved by not having travel was rated very highly. (20)
- * The ability through travel to have direct contact and also to have informal sessions, e.g. dinner after a formal meeting, were given a high priority by most respondents. (21)
- * Capability to display material during meetings was, somewhat suprisingly, rated medium at best. (21)
- * Visual impressions received during face to face meetings received an average rating. (21)
- * Concern about confidentiality during TC was rated a low-average. (21)
- * Overall the user attitude toward the potential of TC was very positive; Of the fifteen who expressed opinions: (24)
 - four were very positive
 - eight were positive
 - one was very negative
 - two were negative.

Critical Factors

While the number of questionnaires processed does not warrant any detailed statistical analysis of the replies there is a most positive indication of a correlation between the size of the organisation, in terms of number of employees, and the percentage of total sales, or total operating budget, and the costs of travel and long distance telephone costs incurred. There is clearly an inverse relationship between the percentage of budget spent on travel (T) and the number of employees in the organisation (N). A similar relationship holds for the percentage of total budget spent on long distance telephone calls (C) and the number of employees. While there are outstanding anomalies the general laws can be stated as:

$$T = \frac{X.}{N^p.} \quad \text{and} \quad C = \frac{Y.}{N^q.}$$

The inference from this trend is that the smaller the company or organisation the greater will be the savings effected in terms of overall profit by substituting long distance telephone for travel. A further guideline that appears is the ratio of spending with respect to travel and long distance telephone charges. This ratio naturally appears to be inversely related to the size of the organisation and can be written approximately as:

$$\frac{T}{C} = \frac{X/Y.}{N^{(p-q)}}$$

Where X/Y is in the order of 50 and (p-q) is approximately 1/2. It will be realised that these equations are based upon a relatively small number of samples and that there are major exceptions to this rule. However, the trends which are observed above do provide a quick indication of the benefit that any given company may expect by reducing travel in favour of long distance charges. Organisations which lie above the general T/C line are clearly prime targets for the marketing efforts of the telephone companies, whereas those that lie well below the T/C line may represent a "hard sell".

METHODOLOGY

In this section an attempt is made to outline the main principles and procedures that should be adopted in assessing the likely cost/benefit figure of introducing teleconferencing into a given organisation. From the previous discussion, it is evident that the size of the organisation, in terms of employees, may be a critical factor; and it is unlikely that very large manufacturing companies will show a visible improvement in percentage profit by adopting, or increasing the amount of, teleconferencing within their structures.

Additionally, the current ratio of travel costs (T) to long distance costs (C) is important in assessing the likelihood of convincing an organisation to adopt teleconferencing as a major alternative to travel. Any organisation which has a T/C ratio well above the "Normal" line is likely to show a significant savings by encouraging teleconferencing and the smaller companies which are above this line will most likely show a significant improvement in percentage annual profit by so doing. Consequently, before embarking on a major assessment of cost/benefit ratios some preliminary steps are required. These and the subsequent actions are indicated in Chart C.

The detailed sequence of events and decisions are given below.

- a) On entering the examination of the organisation, review the size of the company in terms of employees. If the company is "small" (less than 1000) proceed to the next phase. If the company is "large" (greater than 1000) review the total travel expenditure as a percentage of annual sales or budget. If this percentage is "large" (above 0.5%) the company is likely candidate and if "low" (less than 0.5%) it is not a likely candidate and may well be eliminated from further study.

- b) Calculate the ratio of travel costs to long distance costs (T/C) and locate on the line $T/C = \frac{50}{\sqrt{N}}$. If the company lies well above this line proceed to step (C). If below this line review the possible savings by a reversal of this position in terms of actual dollars and as a percentage of annual profit. If this saving is significant proceed to step (C) and if insignificant reconsider for further study.
- c) This and subsequent steps become increasingly costly in terms of both time and money. However, the next step is to interview top management at least at the vice-president level. This interview will determine the breakdown of the organisation into sub-units and eliminate certain sub-units that are not likely to produce significant travel savings. For example senior management may reject the possibility of a marketing department attempting to reduce, significantly, travel or may indicate that the travel costs of a production department are not worth further examination.
- d) Having eliminated unlikely departments the next step is to interview departmental managers and to establish agreed criteria with them. Their criteria, which will be used subsequently to analyse potential savings, are fundamental to the methodology. They will be based upon questions similar to those asked in sections 8, 9, 18, 19, 20 and 21 of the trial questionnaire. Effectively, both financial and psychological balance sheets must be established for judging the need for a given journey in lieu of teleconferencing.
- e) A second interview with top management should ensure that the criteria established above are, indeed, in line with the general policy of the organisation. It will serve to eliminate, if necessary, departments in which the criteria will obviously result in an insignificant amount of "Saved" travel.

- f) Armed with the appropriate and agreed criteria the next step - which is both time consuming and expensive - is to peruse in detail the records of previous travel in each of the candidate departments. Here, an agreed section of travel records may be perused - either a section of a complete year such as a month or a quarter or a random selection of a total year's travel. However, if the complete records for a year are not perused it will be necessary to extrapolate the selected results over the whole year. The output of this phase will be a number of travel vouchers representing "unnecessary" journeys for further costing.
- g) Each voucher selected in f) must then be analysed and the following records extracted:
- (i) Total cost of travel including all fares, taxis, hotels, restaurants, tips, etc.
 - (ii) The cost of the travellers time in terms of the hours away from his/her work place and NOT spent in conference.

Additionally the cost of the meeting in terms of teleconferencing must be computed in terms of the prevailing rates on the basis of either:

- (iii) One leg of the conference call if the organisation was a single participant in the conference,

OR

- (iv) The total cost of the conference call if the organisation was chairing and hosting the conference.

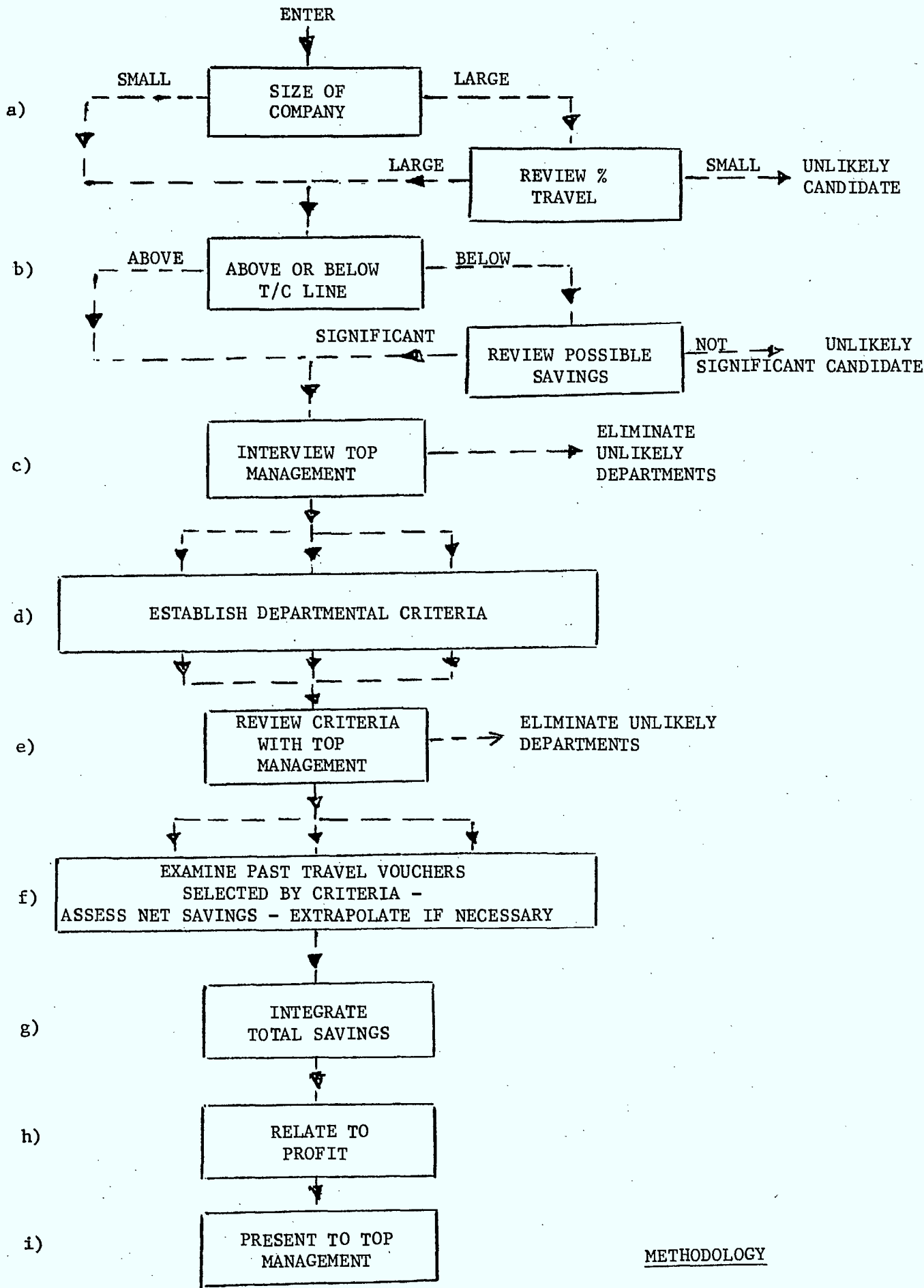
The sum of (i) and (ii) less either (iii) or (iv) results in the total savings achieved by substituting teleconferencing for travel for that particular event.

It should be noted that, in estimating cost of a teleconference, the time spent in a teleconference meeting is generally 50 to 70 percent of the time required for a "round the table" conference.

- h) The total savings indicated in (g) above are then summed and, if necessary, extrapolated into an annual figure.
- i) These total savings are then related to the annual profit of the organisation.
- j) The final results are presented to top management with recommendations for new guidelines with respect to travel and teleconferencing.

It is suggested that this procedure will provide an efficient method of assessing the probable savings within a company or organisation. It tends to eliminate organisations and departments within organisations that are not likely candidates, before the laborious and time consuming detailed analysis. One of the most critical steps in the process is the establishment of the financial and psychological criteria and these must be agreed to by both departmental and top management.

Finally, the new travel/teleconference guidelines must be written to show clearly that management is positive about teleconferencing and must seal off the obvious "loop holes" that would be found by travel conscious employees.



METHODOLOGY
 CHART C

CONCLUSION

From the foregoing it can be concluded that a national system of audio teleconferencing exists in Canada. It exhibits the following salient features:

- a) Apart from certain dedicated systems and a small number of customer operated bridges the system is operator handled by the telephone companies.
- b) While the growth rate has been significant over the last five years, audio teleconferencing represents only a vestigial fraction of telephone company business.
- c) With certain exceptions, telephone companies have not pressed the sale of teleconferencing and this is reflected in routing patterns and rate structures.
- d) The total system is capable of handling a marked increase in operator handled teleconference traffic without large expenditures on additional infra-structures.

It would appear that a major increase in the public use of the audio teleconferencing depends mainly upon the following factors:

- a) A clearly demonstrated need put forward by the private and public sectors.
- b) Realization of a truly dial-up system
- c) Rationalisation of routing and rate structures
- d) A greater public awareness through sales promotion and customer training.

To a lesser extent the following factors apply:

- a) Improvements in terminal equipment
- b) Improvements in bridging arrangements
- c) Provision of speaker identification

Apart from the limited video conferencing systems offered between Montreal - Toronto - Ottawa and Calgary - Edmonton no "on call" or national system of two way, real time, video conferencing exists. However, most regions can offer a pre-ordered and specially arranged video conference - the lead time and cost varying with the locations involved. A major increase in the demand for video-conferencing depends upon:

- a) Improved technology
- b) Better customer awareness of the value of investment in production in contradistinction to transmission.
- c) Better customer awareness of the value of quasi-video methods such as slow-scan, facsimile, electronic blackboard etc.

It should be noted, however, that a major improvement in audio teleconferencing may delay a corresponding increase in video conferencing.

In both audio and video TC the investigators sense the need to adopt a more aggressive sales approach similar to the process employed in introducing a new industrial or commercial product to the market.

RECOMMENDATIONS

The following recommendations are offered with respect to further research in this general area.

- a) A broader survey of the percentage of total sales spent in travel (T) and long distance telephone costs (C) with respect to the size of organisations. This and the derived T/C ratio could well be broken down by categories of organisations and companies.
- b) A survey of the T, C and T/C ratios of several Federal Government Departments.
- c) A similar survey of a Provincial Government plus the analysis of probable cost savings.
- d) Examination of a broad band, four wire, system for the Federal Government (Ottawa → Regions → Districts) and between Federal and Provincial Governments (Ottawa → Provincial Capitals).

Government of Canada
Department of Communications
300 Slater Street
Ottawa, Ontario
K1A 0C8

Gouvernement du Canada
Ministère des Communications

Your file Votre référence

Our file Notre référence 7640-9

APPENDIX A

October 24, 1980

Mr. W.S. Robertson
President, Maritime Telephone
and Telegraph Co., Ltd.
P.O. Box 880
Halifax, Nova Scotia
B3J 2W3

Dear Mr. Robertson:

I am writing to enlist your co-operation in providing information for a study entitled "Teleconferencing As a Viable Communications Alternative: An Economic and Statistical Analysis". This study which has been commissioned by the Government Telecommunications Agency, will be funded under the University Research Program of the Department of Communications and will be conducted by Dr. G.W. Holbrook of the Technical University of Nova Scotia, assisted by Mr. W.T. Windeler of Windeler Consultants, Ltd.

The study will examine current trends in teleconferencing (both audio and video) with particular reference to the Canadian scene. The study will include an inventory of, and an assessment of, current Canadian teleconferencing systems and equipment, an analysis of usage patterns and an assessment of the economic potential of the process of teleconferencing.

The research will provide an assessment of the current situation in terms of usage and equipment and examine the methodology required to establish statistical analysis of travel trade off and other cost-benefit analyses of teleconferencing, both audio and video, to determine its viability as a communications alternative.

The results of this study will be useful to the Government Telecommunications Agency in assessing our existing shared voice teleconference service and in planning for the enhancement and expansion of teleconference services within the federal government. Because of the fundamental role played by the telecommunications carriers in teleconferencing, I believe the carriers, including yourselves, will also find the results of the study useful for their purposes.


.../2

The final report of this study will be available to the public. Therefore, if you feel that any of the information which you would agree to provide to the researchers should remain confidential, your wishes in this matter should be communicated to the researchers and will be respected.

In the near future, the researchers will be contacting you to make arrangements for interviews with your technical and marketing staff involved in teleconferencing. In particular, they would like to meet with your Chief Engineer.

Your assistance to the researchers will be greatly appreciated.

Yours truly,



G.G. Henter
Director General,
Government Telecommunications

cc: Dr. G.W. Holbrook

APPENDIX B

<u>COMPANY OR REGION</u>	<u>LOCATION OF BRIDGES</u>	<u>TOTAL PORTS</u>
Newfoundland Telephone Company	1 x 20 St. Johns	20
Terra Nova	2 x 6 Gander	12
Maritime Tel & Tel	1 x 30 Halifax	60
	1 x 30 Kentville	
New Brunswick Tel.	1 x 12	
	1 x 10	
	3 x 7 } Scattered	
	1 x 6 } through	62
	1 x 5 } Province	
	2 x 4	
Bell Canada (Quebec)	1 x 58 Montreal	58
Bell Canada (Ontario)	10 x 6 Toronto	
	5 x 6 Ottawa	102
	1 x 6 London	
	1 x 6 Thunder Bay	
Manitoba Tel	6 x 5 Winnipeg	30
Saskatchewan Tel	5 x 6 Saskatoon	
	5 x 6 Regina	60
Alberta Government Tel	8 x 6 Edmonton	
	6 x 6 Calgary	84
B.C. Tel	Proprietary Information	-
	Total (less B.C. Tel)	<u>485</u>

APPENDIX C

HANDS FREE TERMINALS

<u>COMPANY</u>	<u>TOTAL</u>	<u>TERMINALS PER 1000 POP.</u>	<u>COMMENTS</u>
Newfoundland Tel. Terra Nova	605	1.2	
MTT	1400	1.5	
NB Tel	900	1.3	
Bell Canada			Considered proprietar information
CNCP	N/A		
Manitoba Tel	3500	5.0	
Saskatchewan Tel	-	-	Considered proprietar information
GT Alberta	-	-	Considered proprietar information
Edmonton Tel	3500	5.5	
B.C. Tel			Considered proprietar information

APPENDIX D

RANKING OF USERS OF TC

1. Business
2. Government (Federal and Provincial)
3. Universities
4. Service industry (Banks etc.)
5. Residential

A P P E N D I X E

Item LOCAL CONFERENCE SERVICE

1060. GENERAL

- (a) Local conference service is the furnishing, where and to the extent that existing facilities permit, of connections between three or more main telephones or system service stations within the same Local Service Area on one connection at the same time, all such telephones being so interconnected that each may communicate with all the others.
- (b) One class of service only is offered whether the call is to a specified person or specified station. The Company, upon request undertakes to arrange for the establishment of a conference connection at a specified time.
- (c) Reversal of charges on conference calls is not permitted.

1070. RATES AND CHARGES

For each main telephone or System Service line in excess of the originating telephone the rates are as follows:

First 5 minutes or fraction thereof.....\$.50
Each additional 5 minute or fraction thereof....\$.25

Item INTEREXCHANGE CONFERENCE SERVICE

1160. GENERAL

- (a) Interexchange conference service is the furnishing, where and to the extent that existing facilities permit, of connections between three or more main telephones or System Service stations or combinations thereof in two or more Local Service Areas on one connection at the same time, all such telephones being so interconnected that each may communicate with all the others.
- (b) Interexchange conference service may be sold for one occasion, or it may be furnished on a contract basis covering a series of conferences over a period of one month or more.

1170. RATES

- (a) The rates for interexchange conference service shall consist of:
- (1) The Person-to-Person rate according to time of day between the two most distant points in the conference group.
- (2) A charge for each main telephone in excess of two connected in the conference. This charge shall be:

Where the Person-to-Person Rate between the Two Points Farthest Apart is:	The Rate for Each Additional Main Station:
---	---

<u>Over</u>	<u>Up to and Including</u>	
\$ -	\$.90	\$.75
.90	1.10	.90
1.10	1.25	1.05
1.25	1.40	1.20
1.40	1.55	1.35
1.55	1.85	1.50
1.85	2.15	1.80
2.15	2.45	2.10
2.45	2.75	2.40
2.75	3.00	2.70
3.00	-	2.95

The intitial 1 minute charge is the sum of (1) and (2).

Item INTEREXCHANGE CONFERENCE SERVICE (Cont'd)

1170. RATES (Cont'd)

- (b) Overtime shall be calculated as 40% of the initial rate for each additional minute.
- (c) When special facilities are furnished additional charges may be made.

Item OUT-OF-PROVINCE INTEREXCHANGE CONFERENCE SERVICE

1410. GENERAL

Out-of-Province Interexchange Conference Service for service originating within Nova Scotia is the furnishing, to the extent that facilities permit, of connections between three or more main telephone System Service stations or combinations thereof when one of those telephones is located within Canada but outside the province of Nova Scotia.

1420. RATES

The rates for Out-of-Province Interexchange Conference Service shall consist of the total of:

- (a) The Person to Person rate between the originator's location and the location of each telephone taking part in the call, and
- (b) A conference service charge for each telephone taking part in the call consisting of \$1.85 for the initial 3 minute period and 18 cents for each additional minute.

Item LOCAL CONFERENCE SERVICE

910. GENERAL

- (a) Local Conference service is the furnishing, where and to the extent that existing facilities permit, of connections between three or more main telephones or system service stations within the same Local Service Area, at the same time, so that each may communicate with all the others.
- (b) One class of service only is offered whether the call is to a specified person or specified telephone. The Company, upon request, undertakes to arrange for the establishment of a conference connection at a specified time.
- (c) Reversal of charges on conference calls is not permitted.

920. RATES AND CHARGES

For each main telephone or System Service line in excess of the originating telephone the rates are as follows:

First 5 minutes or fraction thereof.....\$.55
Each additional 5 minute or fraction thereof. .20

Item

LOCAL CONFERENCE SERVICE1080. GENERAL

- 1 . Local conference service is the furnishing, where and to the extent that existing facilities permit, of connections between three or more main telephones or private (automatic) branch exchanges or Business Communications Service or combinations thereof within the same local service area on one connection at the same time, all such telephones or private (automatic) branch exchanges being so interconnected that each may communicate with all the others. #
- 2 One class of service only is offered whether the call is to a specified person or specified telephone. The Company, upon request, undertakes to arrange for the establishment of a conference connection at a specified time. #
- 3 Reversal of charges on conference calls is not permitted.

1090. RATES AND CHARGES

The rates are \$.50 for the first 5 minutes or fraction thereof and \$.18 for each additional 5 minutes or fraction thereof, for each main telephone or private (automatic) branch exchange trunk line in excess of the originating telephone.

SUSPENSION OF SERVICE1100. GENERAL

Suspension of service is a temporary discontinuance, at a customer's request, of outgoing and normal incoming service without termination of the service contract.

1110. SERVICE AND EQUIPMENT

- 1 Suspension is available in connection with all customer services except service station service.
- 2 Suspension of any service involves all equipment associated with that service. When a customer has two or more primary services of the same class on the same premises, suspension may be in respect of any or all of such services.

Item

MESSAGE TOLL CONFERENCE SERVICE1440. GENERAL

Message toll conference service is the furnishing, where and to the extent that existing facilities permit, of connections between three to six (more by special arrangement when possible) main telephones or trunk lines or combinations thereof on one connection at the same time. All such telephones or trunk lines may be so interconnected that each may communicate with all the others, or arrangements may be made whereby one telephone is the transmitting telephone and all others receiving telephones.

1450. CLASSES OF SERVICE

Person-to-person service only is offered whether the call is to specified persons or specified telephones.

1460. MESSAGE TOLL CONFERENCE RATES

Person-to-person rates apply to conference calls in accordance with the message toll conference rates established from time to time by the Trans-Canada Telephone System.

1470. TIMING OF MESSAGES

- 1 Chargeable time begins when connection is established between all the persons on the conference, and ends when the connection is terminated by the originating station.
- 2 When, at the originating customer's request, a telephone or telephones are added to or subtracted from those included in a conference call on which conversation is in progress, this is considered as terminating the call and initiating a new call on the basis of the revised group of telephones.

1480. REVERSAL OF CHARGES

- 1 Charges for conference calls may be reversed provided that:
 - (a) The total charge is billed to one called main telephone or private (automatic) branch exchange system.
 - (b) The originating telephone and the telephone to which the charge is to be billed are located in a country with which arrangements for reversal of charges are in effect.

LOCAL CONFERENCE SERVICE

SERVICE DE CONFÉRENCE LOCAL

Item

Article

1040. GENERAL

1040. GÉNÉRALITÉS

1. Local conference service provides for interconnection of any combination of three or more of the following in one exchange, or in two or more exchanges each of which has extended-area service with all the others: main telephones, or P.B.X. extension lines to be reached directly by the Company's operator, or trunk lines. The service is furnished subject to the availability of suitable facilities.

1. Le service de conférence local permet de relier entre eux trois ou plus des services suivants situés dans la même circonscription, ou dans plusieurs circonscriptions dont chacune peut communiquer avec toutes les autres par le service régional: PBX, téléphones principaux, lignes supplémentaires pouvant être jointes directement par le téléphoniste de la compagnie, ou lignes principales de standard. Le service est fourni à condition que l'on dispose des installations appropriées.

2. One class of service only is offered whether the call is to a specified person or a specified telephone. The Company, on request, arranges for the establishment of a conference connection at a specified time.

2. Que l'appel soit destiné à une personne ou à un poste en particulier, il existe une seule classe de service. La compagnie fait établir sur demande, à l'heure indiquée, le raccordement nécessaire au service de conférence.

3. Charges for conference calls may be reversed or billed to a third number provided that the total charge is billed to one main telephone or P.B.X. system in Canada or the United States.

3. On peut faire virer les frais des conférences téléphoniques ou faire facturer celles-ci à un 3^e numéro, à condition que les frais globaux soient imputés à un numéro de téléphone principal ou de système PBX au Canada ou aux Etats-Unis.

1050. RATES

1050. TARIFS

1. The following rates apply to each main telephone, each P.B.X. extension line reached directly by the Company's operator, and each trunk line on the connection other than that from which the conference call originates:

1. Les tarifs suivants s'appliquent à chaque téléphone principal, à chaque ligne supplémentaire de PBX qui peut être jointe directement par le téléphoniste de la compagnie et à chaque ligne principale de standard qui sont raccordées pour la conférence, sauf au service d'où provient l'appel de conférence :

First 5 minutes or fraction	Les 5 premières minutes ou fraction de cette période	\$1.00
Each additional 5 minutes or remaining fraction	Chaque période de 5 minutes additionnelles ou fraction restante	\$.75

See page 4 for explanation of symbols / Voir liste des symboles page 4.

Issued/Publication 1980 08 13

Effective date/Entrée en vigueur 1980 08 17

Approved in CRTC Telecom. Decision 80-14
August 12, 1980.

Approuvé dans la Décision Télécom. CRTC 80-14,
datée du 12 août 1980.

MESSAGE TOLL CONFERENCE SERVICE

Item

3340. GENERAL

1. Message toll conference service provides for the interconnection of three or more of the following in any combination, subject to the availability of suitable facilities: main telephones, or P.B.X. extension lines reached directly by the Company's operator, or P.B.X. systems. All such telephones may be so interconnected that each may communicate with all the others, or arrangements may be made whereby one is the transmitting telephone and all others receiving telephones.

3350. RATES AND SERVICE ARRANGEMENTS

1. A call may be placed for specified persons or specified telephones, the rate being on a person-to-person basis in either case.

3360. RESERVED FOR FUTURE USE

3370. TIMING OF MESSAGES

1. Chargeable time begins when communication is established between all parties on the conference, and ends when the connection is terminated at the originating telephone.

2. When one or more telephones or trunk lines are added to or subtracted from a conference call in progress that called station is rated for the time of inclusion in call.

3380. BILLING ARRANGEMENTS

1. Charges for conference calls may be reversed or billed to a third number provided that:

(a) The total charge is billed to one called main telephone or P.B.X. system.

(b) The originating telephone and the telephone to which the charge is to be billed are located in a country or on a ship with which arrangements for reversal of charges are in effect.

SERVICE DE CONFÉRENCE INTERURBAINE

Article

3340. GÉNÉRALITÉS

1. Le service de conférence interurbaine permet l'interconnexion de 3 des systèmes suivants ou plus, quelle que soit la combinaison, à condition toutefois que l'on dispose d'installations appropriées : téléphones principaux, lignes supplémentaires de PBX, que le téléphoniste de la compagnie peut atteindre directement, ou systèmes PBX. Tous ces téléphones peuvent être raccordés de sorte qu'il y ait communication bidirectionnelle entre tous ou que l'un des téléphones serve d'émetteur et les autres de récepteurs.

3350. TARIFS ET FOURNITURE DU SERVICE

1. Toute communication peut être destinée à des personnes ou à des postes particuliers, le tarif de personne à personne étant en vigueur dans chaque cas.

3360. USAGE ULTÉRIEUR

3370. CHRONOMÉTRAGE DES COMMUNICATIONS

1. La durée à facturer commence au moment où la communication est établie entre tous les participants de la conférence et se termine lorsque l'appelant raccroche.

2. Lorsque, en cours de conférence téléphonique, la liaison est établie ou rompue avec un ou plusieurs téléphones ou lignes principales de standard, chacun de ces postes demandés est facturé en fonction du temps durant lequel il a été relié à la ligne de conférence.

▲ 3380. MODALITÉS DE FACTURATION

1. Les frais de conférence téléphonique peuvent être virés ou portés au compte d'un troisième numéro pourvu que :

(a) Le total des frais soit facturé à un téléphone principal ou à un système PBX demandés.

(b) Le poste demandeur et le poste auquel seront portés les frais se trouvent dans un pays ou à bord d'un navire avec lequel il y a entente au sujet du virement des frais.

Continued on page 331 / Suite page 331.

See page 4 for explanation of symbols / Voir liste des symboles page 4.

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du 14 décembre 1979.

MESSAGE TOLL CONFERENCE SERVICE

SERVICE DE CONFÉRENCE INTERURBAINE

Item
3400. RATES

Article
3400. TARIFS

1. General

1. Généralités

(a) Rate distances are determined as stated in Item 3120.

(a) Les distances tarifaires sont déterminées selon les indications de l'article 3120.

(b) The charge for a message toll conference call is the sum of the following:

(b) Les frais d'une conférence interurbaine sont la somme de ce qui suit :

(1) The person-to-person message toll rate applicable to each called station beyond the local-service area of the originating station.

(1) Le tarif interurbain de personne à personne pour chaque poste demandé qui se trouve au-delà de la zone de desserte locale du poste demandeur.

(2) The local-conference charge applicable to each called station within the local-service area of the originating station see Item 1050.

(2) Les frais du service de conférence locale pour chaque poste demandé qui se trouve dans la zone de desserte locale du poste demandeur voir l'article 1050.

(3) The conference-service charge for each called station as specified in (e)(1) below for the initial 3 minutes and as specified in (e)(2) below for each additional minute.

(3) Les frais du service de conférence pour chaque poste demandé, indiqués en (e) (1) ci-dessous pour les trois premières minutes, et en (e) (2) ci-dessous pour chaque minute supplémentaire.

(4) Coastal-harbor or high-seas "other-line" charges if applicable.

(4) Les frais autre ligne, s'il y a lieu, pour les postes situés en haute mer ou dans les ports côtiers.

(c) The initial-service period rate is for 3 minutes.

(c) Le tarif de la période initiale minimum est prévu pour 3 minutes.

(d) When a ship reached through a United States high-seas or coastal-harbor land radiotelephone station is included in a conference connection, the charge is determined as specified in the Rate and Route Guide Pamphlet of the American Telephone and Telegraph Company Long Lines Department.

(d) Lorsqu'un des participants à la conférence téléphonique se trouve sur un bateau et est joint par l'entremise d'une station en haute mer ou d'une station côtière des Etats-Unis, les frais sont établis d'après le guide des routes et tarifs du Long Lines Department de l'American Telephone and Telegraph Company.

(e) Rates and charges/Tarifs et frais

(1) each/l'unité	\$1.85
(2) each/l'unité	\$0.18

See page 4 for explanation of symbols / Voir liste des symboles page 4.

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Item

LOCAL CONFERENCE SERVICE

1100 GENERAL

1. Local conference service is the furnishing of connections between three or more primary services within the same exchange or extended service area on one connection at the same time.
2. One class of service only is offered whether the call is to a specified person or a specified telephone.
3. The System, upon request, will undertake to arrange for the establishment of a conference connection at a time specified by the customer (appointment call).
4. Reversal of charges for local conference service is not permitted.

1110 RATES AND CHARGES

Rates for local conference service apply for each primary service connected in excess of the originating primary service and are as follows:

Each minute - per primary service connected	\$0.05
Minimum charge - per primary service connected	1.10



Item

MESSAGE TOLL SERVICE - continued

MESSAGE TOLL CONFERENCE SERVICE

2400 GENERAL

A message toll conference call is a connection of three or more telephones on which any two or more telephones so connected are at locations in different exchanges. At the request of the calling party, the System makes advance arrangements with a particular party or telephone for the establishment of a connection at a specified time (appointment call).

2410 SERVICE AND EQUIPMENT

1. Method of Measurement

Message toll conference service is provided on a per leg basis with each leg measured separately from the originating telephone. Measurements are determined in accordance with the methods as set out in Tariff Item 2315.

2. Timing of Messages

Chargeable time begins when connection is established between all the persons on the conference, and ends when the connection is terminated by the originating telephone, except when, at the originating customer's request, a telephone or telephones are added to or subtracted from those included in a conference call on which conversation is in progress. Such legs added to or subtracted from the conference call shall be subject to the chargeable time they are included in the call.

3. Reversal of Charges

Charges for conference calls may be reversed provided that the total charge is billed to one called main telephone or telephone of a P.B.X. or similar service.

2420 RATES AND CHARGES

Conference service rates are as follows:

1. Toll legs are provided as Two-point Service as set out in Tariff Item 2305 subject to the application of person toll rates.
2. Local legs use the appropriate local conference rates as stated in Tariff Item 1100.



Item

MESSAGE TOLL SERVICE - continued

MESSAGE TOLL CONFERENCE SERVICE - continued

2420 RATES AND CHARGES - continued.

3. In addition to rates and charges as set out in (1) and (2) above a conference charge of \$1.20 applies for each conference leg.

Effective:

April 1, 1979



FIRE CONFERENCE SERVICE

Item

2900 General

Fire conference service is the furnishing of more than one telephone (bridged telephones) on one connection at the same time for the purpose of contacting volunteer firemen.

2910 Service and Equipment

1. Fire conference service is only provided with individual line service. A continuous ring on the telephone distinguishes the call as being on fire conference.
2. Fire conference service is provided by means of 10 and 20 line conference cabinet units. Each conference cabinet must have a separate conference telephone. When more than twenty lines are furnished, additional cabinets are required.
3. Lamp cabinets which indicate when conference telephones are answered may be provided.
4. A siren control circuit may be provided to control customer-provided sirens.
5. The conference units and lamp cabinets are subject to a two year initial service period.

2920 Rates and Charges

The following rates and charges apply:

	Monthly Rate	Service Connection Charge
10 line conference unit	\$32.50	\$540.00
20 line conference unit	44.80	600.00
10 or 20 line lamp cabinet	5.60	120.00
Siren control equipment	6.70	60.00

GENERAL TARIFF

MESSAGE TOLL SERVICE

K. INTER-EXCHANGE CONFERENCE SERVICE (TRANS CANADA/SASKATCHEWAN)

1. DESCRIPTION

- a. Inter-exchange Conference Service is the furnishing of connections between any combination of three or more main telephones or private branch exchanges.
- b. Connections may allow each station to communicate with all the others or allow only one station to transmit and all others to receive.
- c. Provision of service is subject to the availability of suitable facilities.
- d. Generally available throughout the North American continent.

2. TIMING OF MESSAGES

- a. Chargeable time begins when all persons/stations are connected.
- b. When one or more telephones or trunk lines are added to or subtracted from a conference call in progress that called station is rated from the time of inclusion in the call.

3. CLASSES OF SERVICE

All conference calls are billed at person-to-person rates in the appropriate rate steps.

4. BILLING OF CHARGES

- a. Charges for conference calls are usually billed to the originating customer's number, however, they may be billed to any one of the main telephones connected on the call or to an entirely separate number, provided that the Telephone Companies involved have a suitable agreement.

5. RATESA. TRANS CANADA SCHEDULE

The charge for Message Toll Conference service is the sum of the following:

- 1) The person-to-person message toll rate applicable to each called station beyond the local-service area of the originating station.
- 2) The local-conference charge applicable to each called station within the local-service area of the originating station, if applicable.

GENERAL TARIFF

4017

MESSAGE TOLL SERVICE

K. INTER-EXCHANGE CONFERENCE SERVICE - continued

5. RATES - continued

- 3) The conference-service charge for each called station (including local stations) of \$1.85 for the initial 3 minutes and \$0.18 for each additional minute.
- 4) Coastal Harbour or High Seas "other-line" if applicable. The initial service period rate is for 3 minutes regardless of the number of stations on the conference.

B. SASKATCHEWAN SCHEDULE (All Conferencees must be in Area Code 306)

1. Between the hours of 8 A.M. and 6 P.M. Monday thru Friday, the rate is the sum of the following:
 - a) Person to person message toll rate applicable (SASK TEL Intra-Schedule) to each called station beyond the local Service area of the originating station.
 - b) Local-conference charge applicable to each called station within the local service area of the originating station (if applicable).
 - c) Conference service charge for each called station of \$1.85 for the initial 3 minutes and \$.18 for each additional minute.
2. Between the hours of 6 P.M. and 8 A.M. Monday thru Friday, and all day Saturday and Sunday, the rate is the sum of the following:
 - a) Same as 1 (a) less appropriate discounts.
 - b) Same as 1 (b).
 - c) Conference service charge for each called station of \$.93 for the initial 3 minutes and \$.09 for each additional minute.

L. LOCAL CONFERENCE SERVICE

1. DESCRIPTION

- a. Local Conference Service provides for connections between any combination of three or more main telephones or private branch exchanges within the same exchange area.
- b. One class of service only is offered whether the call is to a specified person or specified telephone.
- c. Local conference service is available only in Regina and Saskatoon.
- d. Upon request, SASK TEL will endeavour to establish the connection at a specified time.

GENERAL TARIFF

MESSAGE TOLL SERVICE

L. LOCAL CONFERENCE SERVICE - continued1. DESCRIPTION - continued

e. All charges will be billed to the originating telephone.

2. RATES AND CHARGES

The following rates and charges apply for each main telephone or private branch exchange in excess of the originating station;

- First five (5) minutes or fraction thereof..... \$.55
- Each additional five (5) minutes or fraction thereof. \$.25

M. NON-SUBSCRIBER TOLL CREDIT PLAN1. DESCRIPTION

This Credit Card service provides customers a means of identifying long distance toll calls by providing billing on an unique central office code (149-xxxx) Form 385 (Service Order) and form 158 (ADVISE OF LONG DISTANCE CREDIT CARD PLAN) are required.

It is available to:

- 1) Customers not eligible for Special Billing Code Service.
- 2) People without telephone service.

2. RATES AND CHARGES

<u>EQUIPMENT</u>	<u>USOC CODE</u>	<u>MONTHLY RENTAL</u>	<u>SERVICE CHARGE</u>
Non-Sub Credit Card	NSTCP	\$ 2.80 per number	NC

MESSAGE TOLL SERVICE

ITEM

845. Conference ServiceGeneral

Long Distance Message Toll Conference Service constitutes the provision of facilities for simultaneous telephone communication between any combination of three or more main stations or private branch exchanges.

This service is provided only to the extent that existing facilities will permit, and is subject to the limitations and exceptions specified.

The Company, upon receiving reasonable notice, undertakes to arrange for the establishment of a conference connection at a specified time.

The total charge (including messenger charges) is billed to the station originating the call. This charge may, however, be billed to any one of the terminating stations, or to a non-participating station, provided such station accepts the total charge.

ITEM

847. Rates

The charge for a conference call is the sum of the charges for all legs of the call, a leg comprising the originating and one terminating station.

A conference leg can be one of the following types:

1. Extra Provincial Leg
2. Intra Provincial Leg
3. Local Leg

ITEM

849. Timing of Messages

The chargeable time begins when connection is established between all parties on the conference, and ends when the connection is terminated at the originating station.

When, at the customer's request, a terminating station is added or subtracted from those included in a conference call on which conversation is in progress, the leg involved is rated as appropriate to its actual call duration.

MESSAGE TOLL SERVICE

ITEM

851. Extra Provincial LegGeneral

An extra provincial leg is one in which the originating station is within Alberta and the terminating station is anywhere outside of Alberta.

ITEM

853. Rates

The charge for an extra provincial leg is the sum of the following:

1. The person-to-person message charge in accordance with the governing extra provincial message toll schedule. Off-peak discounts apply in accordance with the appropriate schedule.
2. An extra provincial conference surcharge of \$ 1.85 for the initial 3 minutes, and \$.18 for each additional minute.
3. 'Other-Line' message charges applicable to the terminating station e.g. coastal harbour service.

ITEM

855. Intra Provincial LegGeneral

An intra provincial leg is one in which both the originating and terminating stations are within Alberta.

ITEM

857. Rates

Using the Alberta Intra Message Toll Schedule, the charge for an intra provincial leg is the sum of the following:

1. Rate per minute, subject to off-peak discounts.
2. Set-up charge.
3. Conference surcharge.

MESSAGE TOLL SERVICE

ITEM

859. Local LegGeneral

A local leg is an intra provincial leg in which the terminating station is within the same exchange area as the originating station, or the terminating station is within an exchange area which has E.F.R.C. with the originating station exchange area.

A local conference call is one which consists entirely of local legs, and is provided to the maximum capacity of the selected serving office.

ITEM

861. Rates

Using the Alberta Intra Message Toll Schedule, the charge for a local leg is the sum of the following:

1. Rate per minute using Rate Step 1, subject to off-peak discounts.
2. Set-up charge.
3. Conference surcharge.

SECTION III
CONFERENCE SERVICE

Item

20 GENERAL

- A. Long Distance Message Toll Conference Service constitutes the provision of facilities for simultaneous telephone communication between any combination of three or more mainstations or private branch exchanges.
- B. This service is provided only to the extent that existing facilities will permit, and is subject to the limitations and exceptions specified in Item 1.A. preceding.
- C. The Company, upon receiving reasonable notice, undertakes to arrange for the establishment of a conference connection at a specified time.

21 CLASSES OF SERVICE

Only one class of service is offered, whether the call is to a specified station or specified person.

22 TIME PERIODS

Time Periods for person-to-person rates, as defined in Section II of this Tariff, are applicable on conference calls.

23 COLLECTION OF CHARGES

Charges (including messenger charges) are billed to the mainstation or private branch exchange originating the call, except that charges may be reversed provided that the called party accepts the total charge.

24 TIMING OF MESSAGES

- A. The chargeable time begins when connection is established between all the persons on the conference, and ends when the connection is terminated at the originating station.
- B. When, at the originating subscriber's request, one or more stations are added or subtracted from those included in a conference call on which conversation is in progress, the applicable charge(s) for those stations are added or subtracted.

25 REPORT CHARGES

Report charges apply to overseas connections under the same conditions as for two-point service, except that when a conference call is partially cancelled and one or more chargeable reports have been received, no report charge applies if any part of the original call is completed.

See Page 3 for explanation of symbols.

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By G.M. SMITH, Vice-President - Revenue Requirements, Burnaby, B.C.

CONFERENCE SERVICE

Item

26 RATES

A. Initial Period Rates

(1) The initial period is three minutes or any fraction thereof.

(2) The charge for message toll conference service is the sum of the following:

(a) The person-to-person message toll rate, as provided in Section II and IV of this tariff, applicable to each called station beyond the local-service area of the originating station.

(b) The local-conference charge applicable to each called station within the free calling area of the originating station (See B.(1)).

(c) The two-number short haul message toll charge for each station to which two number rates are applicable from the originating station, as provided in C.R.T.C. (TP) No. 34, Item 25 (See also B.(2)).

(d) The conference service charge for each called station of \$1.85 for the initial 3 minute period and \$.18 for each additional minute.

(e) The 'Other Line' rates where applicable.

(f) Any charges of the overseas companies or administrations for an additional point in an overseas country or area.

(g) The charges for a ship or aircraft reached through a United States high seas or coastal-harbor land radiotelephone station, as specified in the Rate and Route Guide Pamphlet or the American Telephone and Telegraph Company Long Lines Department.

(3) Where F.M. operated aircraft, ship, or vehicle stations are included in the conference, any number of such mobiles are considered a single conference station provided they are all reached on the same channel through the same radio rate center. The F.M. radio center is considered as a toll point for rate calculation.

Pages 11-A and 11-B Cancelled.

See Page 3 for explanation of symbols.

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CONFERENCE SERVICE

NC

Item

26 RATES (Continued)

A. Initial Period Rates (Continued)

(5) When one or more "other line" points are included on a conference connection, the charges are computed as follows:

(a) Determine the initial period rate between the two points farthest apart; the rate center of the point of connection for each "other line" point is used instead of the "other line" point.

(b) The charge for the "other line" portion of the conference connection is the "other line" charge for a two-point person-to-person message to each main station, private branch exchange trunk, radio toll station or mobile station (see (c) following) located at an "other line" point.

(c) Where "other line" British Columbia A.M. operated aircraft, ship or vehicle stations are included in the conference, any number of such mobiles are considered a single conference station provided they are all reached on the same channel through the same radio rate center.

(6) When an overseas point is included in a conference connection, the initial period rate is the sum of the following:

(a) The highest charge that would apply for person-to-person overseas service (day, night or Sunday) from a point in Canada to an overseas point, determined by a consideration of all points participating in the conference.

(b) A rate of \$3.00 for each main telephone or trunk line in Canada in excess of one.

(c) A rate of \$3.00 for each main telephone or trunk line in the United States (including Alaska and Hawaii).

(d) A rate of \$6.00 for each main telephone or trunk line in Mexico.

(e) A rate of \$6.00 for each overseas country or area in excess of one.

(f) Any charges of the overseas companies or administrations for an additional point in an overseas country or area.

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CONFERENCE SERVICE

NC

Item

26 RATES (Continued)

A. Initial Period Rates (Continued)

- (7) When a ship or aircraft reached through a United States high seas or coastal-harbor land radiotelephone station is included in a conference connection, the charge is determined as specified in the Rate and Route Guide Pamphlet of the American Telephone and Telegraph Company Long Lines Department.
- (8) When more than 10 main telephones or trunks are interconnected on one conference connection at any one time, the minimum charge applicable is that for a conference connection of ten minutes' duration.

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CONFERENCE SERVICE

Item

26 RATES (Continued)

B. All Points Either In The Same Free Calling Area Or In Areas Between Which A Two- C
Number Short Haul Message Toll Charge Applies

(1) Same Free Calling Area

For a conference connection wholly within the same free calling area, the C
rates at all times are as follows: |

Each main station (or private branch exchange trunk) on the connection in
excess of the originating station:

First 3 minutes or fraction thereof \$.41
Each additional minute or fraction thereof \$.14

Exceptions:

- (a) Where F.M. operated aircraft, ship or vehicle stations are included in
the conference, a rate of \$.70 for each minute or fraction thereof
applies to each channel, regardless of the number of mobiles on the
channel.
- (b) Where "other line" British Columbia A.M. operated aircraft, ship or vehi-
cle stations are included in the conference, the "other line" rate applies
to each channel, regardless of the number of mobiles on the channel.

(2) Two-number Area

For a conference connection within areas between which a two-number short
haul message toll charge applies, the rates at all times are as follows:

Each main station (or private branch exchange trunk) on the connection in
excess of the originating station:

First 3 minutes or fraction thereof \$.46
Each additional minute or fraction thereof \$.15

(3) Collect Calls

Collect calling is not provided when the conference call is wholly within the C
same free calling area. |

Pages 12-A, 12-B and 12-C Cancelled.

Item 26 B. formerly Item 26 C. and transferred from Page 13.

See Page 3 for explanation of symbols.

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CONFERENCE SERVICE

NC

Item 26 RATES (Continued)
B. Overtime Rates
(2) One or more points in Canada outside British Columbia and Alberta.

When the Initial Period Rate is:	The Overtime Rate per Minute or fraction thereof is:	When the Initial Period Rate is:	The Overtime Rate Per Minute or fraction thereof is:	When the Initial Period Rate is:	The Overtime Rate Per Minute or fraction thereof is:
\$.75	\$.15	\$ 4.75	\$1.25	\$ 27.00	\$ 6.75
.80	.20	5.00	1.30	28.00	7.00
.85	.20	5.25	1.40	29.00	7.25
.90	.20	5.50	1.50	30.00	7.50
.95	.20	5.75	1.50	32.00	8.00
1.00	.20	6.00	1.50	34.00	8.50
1.05	.25	6.25	1.50	36.00	9.00
1.10	.25	6.50	1.75	38.00	9.50
1.15	.25	6.75	1.75	40.00	10.00
1.20	.25	7.00	1.75	42.00	10.50
1.25	.30	7.25	1.75	44.00	11.00
1.30	.30	7.50	2.00	46.00	11.50
1.35	.30	7.75	2.00	48.00	12.00
1.40	.35	8.00	2.00	50.00	12.50
1.45	.35	8.25	2.25	52.00	13.00
1.50	.35	8.50	2.25	54.00	13.50
1.55	.35	8.75	2.25	56.00	14.00
1.60	.40	9.00	2.25	58.00	14.50
1.65	.40	9.25	2.50	60.00	15.00
1.70	.40	9.50	2.50	63.00	15.75
1.75	.40	9.75	2.50	66.00	16.50
1.80	.45	10.00	2.50	69.00	17.25
1.85	.45	10.50	2.75	72.00	18.00
1.90	.45	11.00	2.75	75.00	18.75
1.95	.45	11.50	3.00	78.00	19.50
2.00	.50	12.00	3.25	81.00	20.25
2.10	.50	12.50	3.25	84.00	21.00
2.20	.55	13.00	3.50	87.00	21.75
2.30	.55	13.50	3.50	90.00	22.50
2.40	.60	14.00	3.75	93.00	23.25
2.50	.60	14.50	3.75	96.00	24.00
2.60	.65	15.00	4.00	99.00	24.75
2.70	.65	15.50	4.00	102.00	25.50
2.80	.70	16.00	4.00	105.00	26.25
2.90	.70	16.50	4.25	108.00	27.00
3.00	.75	17.00	4.50	111.00	27.75
3.10	.75	17.50	4.50	114.00	28.50
3.20	.80	18.00	4.50	117.00	29.25
3.30	.80	18.50	4.50	120.00	30.00
3.40	.85	19.00	4.75	123.00	30.75
3.50	.85	19.50	4.75	126.00	31.50
3.60	.90	20.00	5.00	129.00	32.25
3.70	.90	21.00	5.25	132.00	33.00
3.80	.95	22.00	5.50	135.00	33.75
3.90	.95	23.00	5.75	138.00	34.50
4.00	1.00	24.00	6.00	141.00	35.25
4.25	1.05	25.00	6.25	144.00	36.00
4.50	1.15	26.00	6.50	147.00	36.75
				150.00	37.50

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CONFERENCE SERVICE

NC

Item

26 RATES (Continued)

B. Overtime Rates

(3) One or more points in the United States.

When the Initial Period Rate is:	The Overtime Rate per Minute or fraction thereof is:	When the Initial Period Rate is:	The Overtime Rate Per Minute or fraction thereof is:	When the Initial Period Rate is:	The Overtime Rate Per Minute or fraction thereof is:
\$.75	\$.15	\$ 4.50	\$.85	\$ 25.00	\$ 5.00
.80	.15	4.75	.95	26.00	5.25
.85	.15	5.00	1.00	27.00	5.50
.90	.20	5.25	1.00	28.00	5.50
.95	.20	5.50	1.00	29.00	5.75
1.00	.20	5.75	1.25	30.00	6.00
1.05	.20	6.00	1.25	32.00	6.50
1.10	.20	6.25	1.25	34.00	6.75
1.15	.20	6.50	1.25	36.00	7.25
1.20	.25	6.75	1.25	38.00	7.50
1.25	.25	7.00	1.50	40.00	8.00
1.30	.25	7.25	1.50	42.00	8.50
1.35	.25	7.50	1.50	44.00	8.75
1.40	.25	7.75	1.50	46.00	9.25
1.45	.30	8.00	1.50	48.00	9.50
1.50	.30	8.25	1.75	50.00	10.00
1.55	.30	8.50	1.75	52.00	10.50
1.60	.30	8.75	1.75	54.00	10.75
1.65	.30	9.00	1.75	56.00	11.25
1.70	.30	9.25	1.75	58.00	11.50
1.75	.35	9.50	2.00	60.00	12.00
1.80	.35	9.75	2.00	63.00	12.50
1.85	.35	10.00	2.00	66.00	13.25
1.90	.35	10.50	2.00	69.00	13.75
1.95	.40	11.00	2.25	72.00	14.50
2.00	.40	11.50	2.25	75.00	15.00
2.10	.40	12.00	2.50	78.00	15.50
2.20	.45	12.50	2.50	81.00	16.25
2.30	.45	13.00	2.50	84.00	16.75
2.40	.45	13.50	2.75	87.00	17.50
2.50	.50	14.00	2.75	90.00	18.00
2.60	.50	14.50	3.00	93.00	18.50
2.70	.50	15.00	3.00	96.00	19.25
2.80	.55	15.50	3.00	99.00	19.75
2.90	.55	16.00	3.25	102.00	20.50
3.00	.55	16.50	3.25	105.00	21.00
3.10	.55	17.00	3.50	108.00	21.50
3.20	.60	17.50	3.50	111.00	22.25
3.30	.60	18.00	3.50	114.00	22.75
3.40	.60	18.50	3.75	117.00	23.50
3.50	.65	19.00	3.75	120.00	24.00
3.60	.65	19.50	4.00	123.00	24.50
3.70	.65	20.00	4.00	126.00	25.25
3.80	.70	21.00	4.25	129.00	25.75
3.90	.70	22.00	4.50	132.00	26.50
4.00	.75	23.00	4.50	135.00	27.00
4.25	.80	24.00	4.75	138.00	27.50

NC Denotes re-issued matter.

Issued: May 20, 1977

Effective: May 30, 1977

By G.M. SMITH, Vice-President - Revenue Requirements, Vancouver, B.C.

CONFERENCE SERVICE

NC

Item 26 RATES (Continued)
B. Overtime Rates
(3) One or more points in the United States (Continued)

When the Initial Period Rate is:	The Overtime Rate per Minute or fraction thereof is:
\$141.00	\$28.25
144.00	28.75
147.00	29.50
150.00	30.00
Over \$150.00 by \$5.00 multiples	One-fifth of the initial period conference rate.

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Issued: May 20, 1977

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By G.M. SMITH, Vice-President - Revenue Requirements, Vancouver, B.C.

APPENDIX F

DIRECTION TELEPHONE COMPANY IS HEADING:

- (a) "Meet me" bridge options
- (b) Dial-up TC
- (c) Operator-handled TC (always some need)
- (d) Facilities located on Telco or customer premises
 - i) Facsimilie
 - ii) Slow Scan Video
 - iii) Real Time Video
- (e) Offerings: speaker identification
 - chairman control
 - security (1) when parties come in to bridge
 - (2) during conference i.e. privacy
- (f) Rates: flat
 - person-to-person
 - ddd
 - other

IMMEDIATE NEED: Dial up by customer and ddd rates and billing

THE ORGANISATION

APPENDIX G

1. Name of Organisation

2. Type of Operation

3. Number of Employees

4. Percentage of Employees who are significantly involved in business travel.

5. Number of locations of company facilities

6. Cost of travel as percentage of operating budget or sales (state which)

TRAVEL PATTERNS

7. Percentage of travel budget spent on:

a) Sales Activities

b) Personnel

c) Labour/Management Relations

d) Financial Matters

e) Technical

f) Production

g) Other ()

h)

i)

8. Percentage of travel budget spent on:

- a) Intra Mural Business _____
- b) Extra-Mural Business _____
- c) Conventions (semi-social _____ attendance optional) _____
- d) Conventions (Technical or business -- attendance mandatory) _____

9. Percentage of travel budget spent by:

- a) Senior Management _____
- b) Middle Management _____
- c) Professional _____
- d) Other (Junior Management, Technical, Clerical etc.) _____

COMMUNICATIONS

10. Long distance costs as percentage of operating budget or sales (state which)

11. Conference call charges as percentage of long distance charges

12. Number of parties (typical) involved in conference calls

13. Number of PABX in organisation

14. Number of TELEX terminals in organisation

15. Number of FACSIMILE terminals in organisation

16. Do you rent dedicated leased telephone circuits for intra-mural use? _____

EXPERIENCE

17. Does your organisation use the following:

	<u>Significantly</u>	<u>Moderately</u>	<u>None</u>
a) Audio conferencing			
b) Video conferencing			
c) Audio plus facsimilie, teleblackboard, slow scan			

18. Are you concerned about confidentiality of teleconferencing?

Extremely	<input type="checkbox"/>
Moderately	<input type="checkbox"/>
Not at all	<input type="checkbox"/>

19. What are your reactions to the following physical attributes of conference calls:

	<u>Good</u>	<u>Indifferent</u>	<u>Poor</u>
a) Quality of speech			
b) Operator handled calls			
c) Need for speaker identification			
d) Need for Chairman control			
e) Lockout			
f) Clipping			

BENEFITS

20. On a scale of one (high) to five (low) how do you rate the following factors in favour of teleconferencing versus travel:

- a) Conferee in office rather than on road. _____
- b) Conference has home office back-up if required (files, secretary, colleagues etc.) _____
- c) Relaxed attitude because he is not travelling _____
- d) Safety factor _____
- e) Time not wasted in travel _____

21. On a scale of one (high) to five (low), how do you rate the following factors in favour of travel versus teleconferencing:

- a) Eye ball to eye ball contact _____
- b) Informal exchanges over meals, drinks, coffee etc. _____
- c) Display of documents or artifacts _____
- d) Visual impressions (body language) _____
- e) Possible lack of confidentiality using TC _____

COST

22. Do you consider audio-conferencing to be cost effective based upon:

- a) Direct Distance Dialling Charges _____
- b) Person-to-Person Charges _____

23. Taking audio conferencing as unity charge -- what do you consider the cost effective charges are for:

- a) Audio plus Facsimilie _____
- b) Audio plus Electronic Blackboard _____
- c) Audio plus Slow Scan Video _____
- d) Audio plus one way real time video _____
- e) Audio plus two way real time video _____

FUTURE

24. Do you sense or feel strongly that TC will become an important alternative to a significant portion of business travel.

DEFINITIONS

- a) Teleconferencing (TC): Communication between more than two people through the telecommunication media.
- b) Audio-Conferencing: TC using audio methods only.
- c) Augmented audio conferencing: TC using audio means plus such devices as:
 - Electronic Blackboard
 - Facsimile
 - Slow Scan Video (T.V.)
 - One way real time video
- d) Video-Conferencing: TC using two way, real time, T.V.
- e) Voice Switch: Common to most hands-free, loudspeaking, telephones. On speaking, the send condition is enabled and the receive condition is disabled.
- f) Clipping: The loss of syllables or words due to the action of a voice switch.
- g) Lockout: A situation arising when two or more conferees, in different locations, speak at the same instant, enable their respective voice switches, and are unaware that anyone else is speaking.
- h) Speaker Identification: Some visual form of indicating which conferee is speaking.
- i) Chairman Control: Some physical means of calling the chairman of a conference to override the speech of any other conferee.

CACC / CCAC

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HOLBROOK, G.W.
--Teleconferencing as a viable commu-
nications alternative; an ...

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DATE DUE			
DATE DE RETOUR			
19	AUG 1985		
20	SEP 1985		
DEC 16	1987		
JUL 10	1988		
NOV 15	1990		

