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A STUDY OF

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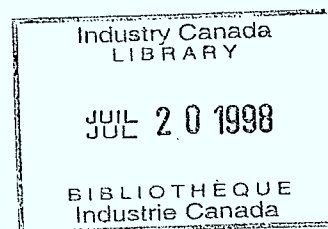
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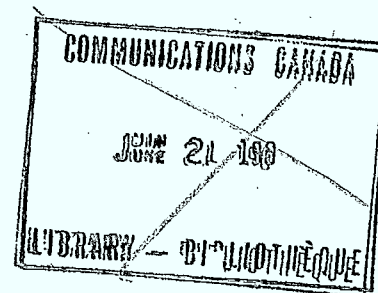
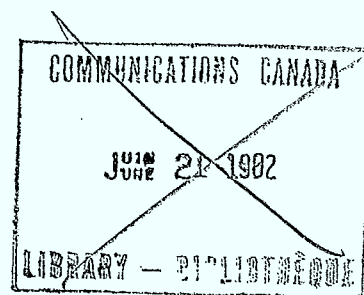
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A STUDY OF
NETWORK HARM 7



PREPARED ON BEHALF OF -
THE DEPARTMENT OF COMMUNICATIONS

BY - HARRY DULMAGE ASSOCIATES LIMITED
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MARCH 1982



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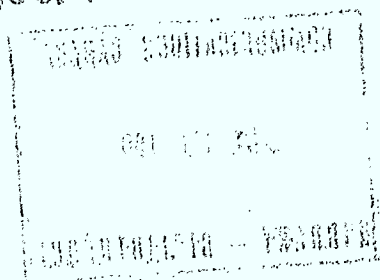


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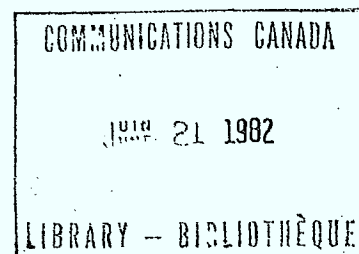


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EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

A study has been conducted into the adversarial positions taken by the telephone companies and non-carriers, relative to each other, on the adoption of TAPAC Certification Standard CS-03.

The furor which has been evident both in TAPAC and recent CRTC hearings, centres almost entirely around the Canadian proposal to include, in CS-03, more protection than is provided in the FCC Part 68 Regulations.

The disagreement is more one of principle, with the non-carriers contending that there is no need to provide greater network protection in Canada than the FCC standards now provide in the U.S.A.

The carriers on the other hand contend that the U.S. standards do not go far enough, because although telephone terminals registered with FCC may, and probably do meet CS-03 requirements, there is no compulsion in the U.S. program to demonstrate it through testing.

From an economic impact point of view this whole issue might be described as a tempest in a teacup with neither side putting forth substantial evidence of economic harm.

There is a general consensus that first party (the buyer of terminal equipment) does not warrant protection through federally controlled standards. Ontario in particular sees this as a consumer protection issue which is under provincial, not federal jurisdiction. At least one party has suggested that called (second) party protection may also be a matter not under federal jurisdiction.

Almost all parties favour and will support Canadian network protection standards, controlled by Canada. There is no support, however, for viewing stringent Canadian standards as a means of protecting Canadian industry. There is little, if any, fear that distinctive Canadian standards will inhibit industry from participating in other world markets, since a multiplicity of standards are already in existence internationally.

There is no question among the various parties, that Canadian Standards under TAPAC should apply.

Given then that the three sets of standards in CRTC Decisions 80-13 and 81-23 are CS-03, FCC Part 68 and Telephone Company standards, it appears that CS-03 could become acceptable to the non-carriers, as the exclusive Canadian standard if the called party protection clauses were relegated to non-mandatory status. CS-03 would then be approximately equivalent in technical content at least, to FCC Part 68.

Acceptance or rejection of CS-03 as the appropriate standard could depend on exercising one of the following options.

1. Delete the requirements for protection against called party harm until evidence, derived from experience, indicates a need to impose them.
2. Seek legal opinion regarding the possibility that "called party" protection is a consumer matter not under federal jurisdiction.
3. Classify called party protection requirements in CS-03 as desirable rather than mandatory. Certified equipment would be placed in one of four classes depending on the degree to which compliance with the desirable characteristics has or has not been demonstrated.
4. Implement CS-03 exactly as it has been issued, with the expectation that there will be initial protests from the non-carriers but that the protests will eventually subside.

STUDY OF NETWORK HARM

TABLE I - NETWORK HARM DEFINITIONS

NETWORK HARM DEFINITION TABLED IN TASK FORCE C BY BELL CANADA. SUPPORTED BY B.C. TELEPHONE	NATIONAL ACADEMY OF SCIENCES	FEDERAL COMMUNICATIONS COMMISSION	COMPONENTS OF NETWORK HARM IN THE CANADIAN CONTEXT PER H. DULMAGE
<ol style="list-style-type: none"> 1. Electrical energy which is hazardous to the public and Bell Canada personnel 2. Damage to network components by electrical energy or improper connections 3. Interference with normal functioning of network equipment 4. Degradation of service to others 	<ol style="list-style-type: none"> a) Voltage dangerous to human life b) Signals of excessive amplitude or or improper spectrum c) Improper line balance d) Improper control signals 	<p>Electrical hazards to telephone company personnel, damage to telephone company equipment, malfunction of telephone company billing equipment, and degradation of service to persons other than the user of the subject equipment, his calling or called party</p>	<ol style="list-style-type: none"> 1. <u>Actual Damage, Interference or Hazards</u> <ol style="list-style-type: none"> a) Electrical or mechanical damage to network components b) Interference, which prevents the network from performing its normal functions c) Hazards to personnel 2. <u>Negative Administrative and/or Economic Effects on the Common Carriers</u> <ol style="list-style-type: none"> a) Nuisance complaints arising from CPE b) Fraud arising from incompatibility with billing equipment 3. <u>Degradation of Quality Service</u> <ol style="list-style-type: none"> a) Perceptible to owners/users (first or calling party) of CPE b) Perceptible to (second) party called from CPE c) Perceptible to third parties (not directly involved in a call) d) Imperceptible to calling parties

INTRODUCTION

This study of "Network Harm" has been conducted by Harry Dulmage Associates Limited (HDAL) on behalf of the Structures and Services Directorate, National Telecommunications Branch, Department of Communications (DOC).

The terms of reference for the study are included in Appendix "A". The prime objective is to provide the DOC with a range of policy options which will enable the Minister to provide an informed response to possible future representations on network harm which may arise from CRTC rulings.

The main thrust of this study, rather than being a re-examination of technical standards, has been to examine the conflicting points of view concerning network harm, and to attempt to determine the underlying motivations that have given rise to them.

In carrying out the study, an examination has been made of the transcripts of the CRTC hearings, and of TAPAC minutes. Eleven separate interviews were conducted with some of the key participants in the CRTC hearings representing the common carriers, government, consumers and industry, as well as New York State Public Service Commission and the Common Carrier Bureau of the Federal Communications Commission (FCC) of the U.S.A.

Other issues which have surfaced, beyond the scope of this study may warrant further examination by the DOC. They are listed in Appendix "F".

PROBLEM

The divergent views of the common carriers and industry concerning network harm, which have been expressed in terms of technical standards appropriate to the Canadian Terminal Attachment Program, appear, on the surface, to be unreconcilable. The TAPAC program, and more recently, the CRTC hearings have served to bring these conflicting views into focus. What appeared initially to be a disagreement on mere technical standards has turned out to be a fundamental disagreement on the role of the government or its regulatory agency in the formation and application of public policy.

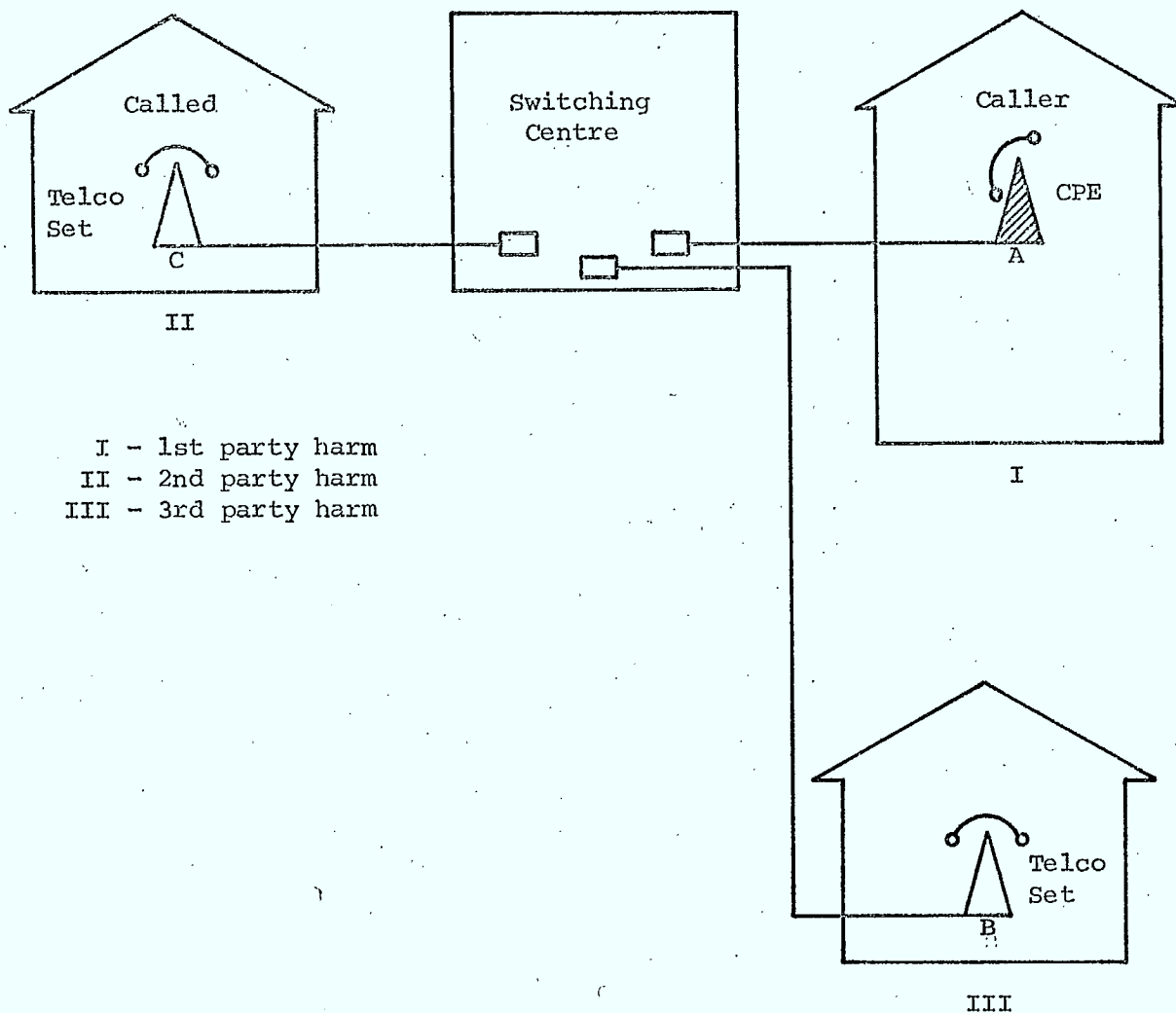
FACTORS

Network Harm

There is no single definition of network harm. Table I lists four versions. The major part of each are the same, but in the Canadian context, some elements have been included by the carriers which others have labelled as "performance requirements" rather than "harms".

In the CRTC hearings, frequent reference was made to first party, second party and third party. Table II provides definitions and a graphical illustration of the three parties.

Table III lists a number of factors related to the network harm issue.



First Party - Where degradation of service is caused by customer provided terminal equipment (CPE). The first party is the customer whose own equipment is the cause of the service impairment¹⁵.

Second Party - A customer who is in direct connection (being called*) with the customer whose terminals are the cause of service impairment¹⁵.

Third Party - All other users of the network who are neither¹⁵ calling nor are called by the party causing the problem.

*Although the definition of second party adopted by TAPAC is the "called" party, Bell's Memorandum of Evidence¹⁵ also referred to a "calling" second party.

TABLE II - 1ST, 2ND AND 3RD PARTY DEFINITIONS - TAPAC

Although there is some disagreement about the degree of protection required for third parties, the polarization of positions centres mainly around second party harm. The controversy embraces three main characteristics of the customer provided telephone which are elaborated in Appendix "D". In non-technical terms they relate to -

1. Defective dials or touch-tone pads, and ringers which do not work properly.
2. Receivers and transmitters which distort or inadequately reproduce the voice message.
3. Electrical balance characteristics which might give rise to excessive noise, such as background hum, on the line during a conversation.

Divergent Viewpoints in TAPAC

Task Force C was formed to draft network standards, designated CS-03, for equipment which can dial other subscribers. Disagreement on the scope of these standards has been present from the start. In a letter to the TAPAC Committee Chairman, dated December 3, 1979, CBEMA¹ drew attention to three major concerns surrounding the Terminal Attachment Program and requested a re-evaluation of the program. "Unnecessarily stringent and overly comprehensive specifications which are being imposed on the program by the telephone companies" was one of the concerns highlighted. The Canadian Manufacturers Association (CMA), Ontario MT & C, and EEMAC subsequently documented support of the CBEMA position regarding overly stringent specifications. CIST, CICA and CAC representatives subsequently verbally confirmed support for the CBEMA position.

It appears from the records² that an agreement was eventually, though reluctantly, reached to include tests of dials, touch-tone pads, ringers, receivers and transmitters as well as the more stringent limitations on potential for generating noise, in the draft standard with the proviso that they are subject to change as second party harm is more clearly established.

However, the September 11, 1981 TAPAC Minutes³ indicate that nine out of eleven members gave approval to issuing of CS-03 amid reminders that past objections by CBEMA, and a previous policy statement by CMA should be considered.

Motives

Underlying motives are difficult to pin-point. Table IV lists those expressed during the interviews.

As stated by the New York State Public Service Commission⁴, parties to a controversy can always be counted on to support things which work to their economic advantage and oppose those which work to their economic disadvantage.

COMPETITIVE IMPACT

On Carriers - Bell¹⁸ and B.C. Tel²⁰ see no threat to their own competitive positions if network harm protection no greater than provided by FCC. Bell¹⁸ feels that additional costs may occur and get passed on to the customer.

On Industry - Neither carriers^{18, 20} nor industry^{5, 6} see any threat to industry regardless of what degree of network harm protection is embodied in standards.

New York State Public Service Commission⁴ are of same opinion. Even if there was a threat to their own industry, they would not use tough standards to protect industry because it would inhibit economic benefits to consumers.

Possible Deregulation

Although FCC⁸ leans toward increased deregulation, they see no connection between network protection standards and deregulation.

Bell Canada¹⁸ and B.C. Tel²⁰ see no connection between the scope of network protection standards and any possible development toward deregulation. B.C. Tel²⁰ suggests that if good strong standards existed in a 100% interconnection environment, the regulator (CRTC) might see fit to no longer require the terminal environment to be included in the Telco's service measurements.

Telco's Image

The quality of service provided by the federally regulated carriers is a source of pride to themselves and is held in high regard by the public. Bell's V.P.,¹⁹ Mr. Hewat agrees that the preservation of Bell's image is part of their concern, but that there are other aspects of much greater concern coming to the surface in the new customer provided equipment (CPE) environment.

Global Product Mandating (See Report Reference 6)

Mr. Lees of⁵ CBEMA, Bell Canada¹⁸ and EEMAC⁶ pointed out that doing business in the international environment involves compliance with a diversity of standards in many different countries. Common practise is to design a basic product applying custom adaptations to suit a particular market. The existence of different network protection standards for Canada would not likely inhibit the Canadian subsidiary of a multinational from enjoying its role in the global market.

Mr. Murray, Past President of CBEMA,²¹ said that different network protection standards for Canada would be one more in a long list of negative (environmental) factors which inhibit Canadian subsidiaries from filling their potential roles.

Canadian Standards

All parties agree that there has to be Canadian network protection standards under Canadian control, but they must not be used as non-tariff barriers. Industry^{5, 6} and the Ontario Government¹⁰ insist that if such standards differ from the U.S.A. there has to be a good reason. The Ontario Government¹⁰ says that patriotism or nationalism is not an adequate reason. Consumers Association of Canada (CAC) assert that developing a Canadian network protection program is wasteful in view of the fact that the U.S.A. already has such a program in place. There is a need discussed in Appendix "F" to make network protection standards uniformly acceptable in all provinces.

Costs of Testing

On balance there is probably little if any difference in the cost of testing for FCC Part 68 or Canadian CS-03. CS-03 does require specialized test equipment costing about \$75,000. In the case of private laboratories, it is doubtful that there will be enough volume to pay for this equipment, which has virtually no other use.

EEMAC objects to the double costs of testing associated with FCC registration in the U.S.A. and DOC certification in Canada for the same equipment characteristics.

Implementation

Unless CRTC directs, the filing of a tariff, by the carriers, to permit attachment of customer provided equipment (CPE) for which TAPAC has issued network protection standards, is strictly voluntary. Carriers can exercise a veto or delay implementation by not filing an appropriate tariff.

There is always a fear that giving in on any point at issue may provide opposing forces with a foot-in-the door setting an undesirable precedent or weakening future argument. The network harm issue appears to be no exception.

Industry naturally wants to minimize the cost of testing and certification but the basic principle it is defending is that there is no justification for making any Canadian standard stronger than it needs to be^{5,6}.

The federally regulated carriers, on their part, insist that all users, except for the party who has Customer Provided Equipment, deserve protection from inferior equipment. During the past decade, they have gradually surrendered their traditional monopoly on the telephone terminal area. It is to be expected that they will not hastily abandon whatever influence or control remains. Although their concern for protecting the users is probably genuine, protection standards may also be a means, even though tenuous, of retaining a vestige of control or at least restraining the erosion process.

Unless a reciprocal registration/certification arrangement, as suggested by EEMAC⁶, is made between Canada and the U.S.A., removing the cost to industry of double testing, there has been no evidence to show that the choice of network protection standards for Canada will have any striking economic consequence for either side of the controversy. Direct economic loss or gain must therefore be discounted as a significant motive.

CONCLUSIONS

1. Regardless of what definition of network harm is adopted, there is virtually no support for using technical standards to protect the buyer (first party) of customer provided equipment. The Ontario Government, although concerned that the consumer gets what he or she pays for, considers consumer protection to be a provincial, not a federal jurisdiction.
2. The polarization of viewpoints with the common carriers on the opposite side from virtually all other participants including industry, users, consumers and the Government of Ontario, revolves almost entirely around the issue of called (second) party harm with the non-carriers contending that they are really performance characteristics and not "harms" at all.
3. There is a possibility that called (second) party harm is a consumer protection matter which falls under provincial rather than federal jurisdiction.
4. The carriers claim to being genuinely concerned with preserving the quality of service to both second and third party customers on an equal basis, is probably tempered with an element of concern for preservation of their own images which may suffer if quality of service deteriorates. The carriers' desire to perpetuate their own control of the terminal world by imposing stringent network protection standards, which they themselves are not obligated to meet, should not be discounted as a motive.

TABLE IV - POSITIONS AND MOTIVES RE 1ST, 2ND AND 3RD PARTY PROTECTION

FIRST PARTY (OWNER/USER OF CPE) PROTECTION	SECOND PARTY PROTECTION	THIRD PARTY PROTECTION
<p>The carriers, industry, the Ontario Government and the Consumers Association of Canada unanimously assert that it is not the responsibility of the <u>Federal Regulators</u> to protect the party who buys his own equipment (first party).</p> <p>The Ontario Government has a concern that the buyer gets his money's worth, but says this is a consumer protection issue coming under provincial, not federal jurisdiction.</p>	<p>a) <u>Pro</u></p> <p><u>Bell Canada's View</u> - Prime motive is to safeguard the network and its service for both second and third parties. There is potential for such harm and there is adequate reason to protect against it. It is as valid to protect the second party as anything else.</p> <p><u>B.C. Telephone's View</u> - B.C. Telephone is accustomed to feeling responsible for customer service and is measured in those terms by the regulator. CPE can cause trouble reports and overload the network, degrading the quality of service. In an interconnect environment, anything less than the quality of service to which the customers are accustomed is not in the public interest. It is B.C. Telephone's desire to not degrade that quality of service.</p> <p><u>CAC's View</u> - The Telco's along with certain private and government agencies want to perpetuate their control of the terminal world.</p> <p><u>Our Own Observation</u> - Even though not verbalized, preservation of Telco's respective images seems to permeate their repeated emphasis on maintaining the quality of service.</p> <p>b) <u>Con</u></p> <p><u>CBEMA</u>, on principle, opposes second party protection because there is no unique feature of the Canadian network that makes it more vulnerable to second party harm than the U.S. network, for which no such protection is provided by the FCC technical requirements. CAC and the Ontario MT and C strongly reiterated the <u>CBEMA</u> position.</p> <p><u>CBEMA</u> - G. Murray - Second party protection may not even be within federal jurisdiction.</p> <p><u>EEMAC</u> - Object to spending money in both Canada and the U.S.A. to obtain DOC certification and FCC registration for same characteristics on an equipment. Common standards and reciprocity with the U.S.A. on terminal equipment is desirable. Specific problems on telephone apparatus have been brought to EEMAC's attention.</p>	<p><u>Unanimous View</u> - Third parties deserve some protection. The question is "how much?"</p> <p><u>Telco's Views</u> - FCC Part 68 omits tests to safeguard against dialling the wrong numbers, failure to ring, poor transmission or reception of sound which could needlessly bother customer or overload the network, reducing its availability.</p> <p><u>Non-Telco Views</u> - U.S. has not experienced these problems although FCC standards do not protect against them. There is no need in Canada to require more tests or set more severe performance limits than the FCC does.</p> <p><u>FCC and New York State PSC Views</u> - There has never been a third party complaint. There has never been a formal complaint against any specific model of customer provided equipment.</p>

5. Industry and other non-carrier opposition to the carriers is a matter of principle that no Canadian standard should be more severe than necessary, and is based in this case on the fact that there is no evidence in the U.S.A. with a telephone community approximately ten times the size of that in Canada, that any such harm ever occurred.
6. All parties to the network harm issue agree that the public telephone network should be protected by enforced technical standards so that the innocent third party customers do not experience degradation in quality of service. There is disagreement with the carriers' contention that innocent third parties need to be protected at all against being called in error by defective customer provided dials or touch-tone pads. As with second party harm, this disagreement is based on FCC⁸ experience where no case of third party harm has ever been reported although their standards do not concern themselves with dialling accuracy at all.
7. There is almost total unanimity for the establishment of Canadian standards under Canadian control. There is no support^{5,6,9,10}, however for trying to protect Canadian industry by making these standards more stringent than those of the U.S.A. Such efforts, though well intentioned, are viewed as misguided.
8. That part of industry represented by EEMAC objects⁶ to the duplication of testing costs required to qualify the same equipment in Canada and the U.S.A.
9. In view of the fact that the three alternative sets of interim standards identified in CRTC Decisions 80-13 and 81-23 were CS-03, FCC Part 68 and Telephone Company standards, it is probable that the non-carriers would find CS-03 acceptable if the called party protection standards, which they have labelled "performance characteristics", were relegated to some non-mandatory status. CS-03 would then, in technical content at least, be approximately equivalent to FCC Part 68.

RANGE OF OPTIONS

In dealing with the contentious issues that have been raised, there is no question that all parties will accept a set of Canadian Network Protection Standards under Canadian control with a certification program administered by the DOC. Within such a standards program there are however at least four options which could determine the acceptance or rejection of CS-03 as the appropriate standard. These are:

1. Omit the requirements for testing of dials, touch-tone pads, ringers, receivers and transmitters, on the basis that there is insufficient evidence to indicate that a harmful situation will arise, but with the proviso that the standards will be amended should evidence to the contrary become available. This parallels the posture originally taken and still in effect by the FCC¹¹ with regard to dials, touch-tone pads and ringers.
2. Seek legal opinion on whether called (second) party protection is a consumer protection matter coming, as some suggest, under provincial rather than federal jurisdiction. In the meantime mandatory testing of the items listed in Option 1 would be deferred.
3. Classify performance requirements for dials, touch-tone pads, ringers, receivers and transmitters as desirable but not mandatory. The Certification label* issued by the DOC might then identify one of four possible classes in which the equipment had been certified. For example, -

Class I - Meets all mandatory and desirable criteria.

Class II - Meets all mandatory requirements as well as desirable ringer, dial or touch-tone performance criteria but not those for receivers and transmitters.

Class III - Meets all mandatory requirements as well as desirable receiver and transmitter characteristics but not those for ringers, dials or touch-tone pads.

Class IV - Meets only the mandatory requirements.

*There is a precedent in the FCC registration program¹² for this type of approach. It permits non-conforming ringer impedances which are categorized as Type Z. It is our understanding that, rather than risk the stigma of being labelled as non-conforming, all applicants have met the standards and no Type Z ringers have been registered during the history of the program.

4. Implement CS-03 in its entirety as drawn up by TAPAC with the risk that the argument for reducing the requirements will be revived, but may eventually subside.

REFERENCES

1. CBEMA letter to TAPAC December 3, 1979 (See Appendix E)
2. TAPAC Minutes, Attachment 2, Page 4 TFC January 29, 1980 (See Appendix E)
3. TAPAC Minutes September 11, 1981 (See Appendix E)
4. Interview with Public Service Commission of New York State (See Appendix B)
5. Interview with CBEMA (K. Lees) (See Appendix B)
6. Interview with EEMAC (See Appendix B)
7. Quality of Service definition, Bell Canada (See Appendix G)
8. Interview with FCC (See Appendix B)
9. Interview with CAC (See Appendix B)
10. Interview with Ontario M T and C (Mr. Peebles) (See Appendix B)
11. FCC Docket No. 19528 Proceedings Page 12-13, Paras. 22-23 (See Appendix C)
12. FCC Regulations Part 68 (See Appendix C)
13. A Report on the Panel on Common Carrier/User Interconnections - National Academy of Sciences June 1970 (See Appendix C)
14. Criteria for Network Protection, Bell Canada, 6 September 1979, for Task Force C of TAPAC (See Appendix E)
15. Bell Canada Memorandum of Evidence, June 1981, Page 55, Line 23 to Page 56, Line 5 (See Appendix G)
16. Bell Canada Memorandum of Evidence, June 1981, Page 54, Footnote re Quality of Service (See Appendix G)
17. The Report of the Advisory Committee on Global Mandating, December 1980
18. Interview with Bell Canada - Colem, et al (See Appendix B)
19. Interview with Bell Canada (W. Hewat) (See Appendix B)
20. Interview with B.C. Telephone (See Appendix B)
21. Interview with CBEMA, Past President (G. Murray) (See Appendix B)
22. Comparison of CS-03 Tests with FCC Part 68 Tests (See Appendix H)

A P P E N D I X A

TERMS OF REFERENCE

February 19, 1982

REVISED SCHEME FOR NETWORK HARM STUDY

PROBLEM

The divergent views of the common carriers and industry concerning network harm, which have been expressed in terms of technical standards appropriate to the Canadian terminal attachment program, appear, on the surface, to be unreconcilable. The TAPAC program, and more recently, the CRTC hearings have served to bring these conflicting views into focus. The irreconcilability seems to have spread from mere technical standards into the political arena with implications for public policy.

OBJECTIVE

The objective of this study is to provide the DOC with a range of policy options which may enable the Minister to provide an informed response to future representations on network harm which may arise from the forthcoming CRTC rulings.

WORK PLAN

We propose to direct this study toward the views of common carriers, industry, users and governments.

In the Canadian context, "network harm" has included three broad categories of negative factors, namely:

- (a) Network Harm - i.e. actual damage, interference or hazards
- (b) Negative Administrative and/or Economic Effects on Common Carriers.
- (c) Degradation of Quality of Service.

There will be two main activities in this study as follows:

1. Classify the various kinds of harm under the above three broad headings.
2. Attempt to identify the motivations of the principals and relate them to the views which have been publicly expressed.

SOURCES OF INFORMATION

1. Review of literature -
 - (a) TAPAC minutes
 - (b) CRTC hearings
 - (c) Inputs to TAPAC
 - (d) NAS Report
 - (e) Technical Press
 - (f) Deliberation in other jurisdictions - FCC, New York State
2. Personal interviews with selected individuals - e.g. Chief, Common Carrier Bureau, Chairman, New York State PUC, IBM - VP, Presidents CBEMA, EEMAC, Bell Canada, BC Telephone; a few independent Canadian Industries not represented by CBEMA or EEMAC. Because of the limited budget for this study, it will be necessary to conduct some of the interviews by telephone.

REVISED SCHEME FOR NETWORK HARM STUDYTHRUST OF ANALYSIS

The data will be analyzed to determine the extent to which the motivations of the principals are self-serving or in the public interest. Possible motives that suggest themselves are:

- Carriers - Strict adherence to the extremely broad definition of network harm that includes all categories listed under (a), (b) and (c) above
- Fear that anything less than the broadest definition of network harm might not be in the public interest, may be quite genuine
 - Possible loss of market share and consequently revenue
 - Reluctance to abandon or share a market which has traditionally been the carriers' monopoly
 - Desire to encourage or precipitate deregulation
 - Any other, as yet not apparent, motive.
- Industry - Possibility of having to observe a more stringent quality standard for the smaller Canadian market
- Cost of double testing (Both in Canada and U.S.A.)
 - Possibility of precluding the Canadian multinational affiliate from a "specialized mission" role
 - Outrage of U.S. (or other foreign) parent company at Canadian refusal to accept U.S. standards
 - Economic burden imposed by multiple standards and certification programs on potential exporters among Canadian independent businesses
 - Concern for the public interest
 - Any other motive as yet not apparent.

The analysis is expected to support some conclusions which in turn will provide a basis for identification of a range of options, each related to a possible objective of public policy.

REVISED SCHEME FOR NETWORK HARM STUDYCONTROL

This study will be conducted primarily by Harry Dulmage with the assistance of a researcher in reviewing existing literature. Regular meetings will be held with the DOC (D. Gilvary) at approximately 1 1/2 to 2 week intervals to discuss progress and subsequent action.

Tentatively, the report will take the following form -

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2. Introduction
3. Problem
4. Factors
5. Conclusions
6. Range of Policy Options
7. Appendices

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"B" and supporting materials

"C"

etc.

A P P E N D I X B

RECORD OF INTERVIEWS

APPENDIX "B" INTERVIEWS

Interviews were conducted by H. Dulmage with the following organizations and are recorded in this Appendix.

1. CBEMA representative K. Lees - Personal Interview
- ✓ 2. CBEMA Past President, G. Murray - Telephone Interview
3. Bell Canada - J. Barry, R. Coleman, D. Dutton, W. Earl - Personal Interview
- ✓ 4. Bell Canada - Vice-President, Marketing and Development
W, B, Hewat - Telephone Interview
5. B.C. Telephone - D. Carter, J. Goodall, Ted Isaacson, G. Scheffler -
Telephone Interview
6. New York State Public Service Commission - R. Horton, R. Sutliff
Personal Interview
7. FCC - W. Van Alven, J. Talens - Personal Interview
8. EEMAC - T. Mimee - Personal Interview
- ✓ 9. Ontario Ministry of Transportation and Communications - Mr. Peebles
Telephone Interview
10. CAC - S. Northrop, H. Wetston - Personal Interviews
11. CICA - E. Wade - Telephone Interview

INTERVIEW WITH CANADIAN BUSINESS EQUIPMENT MANUFACTURERS
ASSOCIATION (CBEMA) AT IBM, DON MILLS, ONTARIO - MARCH 3, 1982

The interview was conducted with Mr. Ken Lees who is a member of the Telecommunications Committee of CBEMA. He is also the CBEMA representative on TAPAC.

The interview was generally unstructured. Mr. Lees provided some prepared notes on Network Harms, Regulations and Standards. These notes are attached hereto. In addition to the prepared notes, Mr. Lees made the following verbal comments.

- CBEMA takes the position that there has to be some kind of standard for protecting the network. There is no question about that.
- The major difference between Bell and CBEMA is in what constitutes protection of the network. Although Bell doesn't make a strong case for protecting the first party, they say they find no reason for not protecting the second party.
- This raises the question, "Does the second party deserve to be protected?"
- The FCC definition of harm does not attempt to protect the second party. That is, it exempts from protection, the calling and the called parties.
- We should be able to buy a terminal which meets the quality and price which the buyer selects as long as it doesn't hurt other users of the network, that is, innocent people not involved in the decision.
- Most of Bell's concern centres around the telephone and consumer protection of the unsophisticated buyer.
- These requirements should not be mandatory where sophisticated business equipment is involved. The requirements may not even be appropriate. Depending, for example, on the speed of a modem, it may work satisfactorily with noise levels that would not be acceptable on a telephone.

- Regarding the broad categories of network harm suggested by Dulmage, there is no question about the need for mandatory standards on the first subcategory - Network Harm i.e. actual damage, interference or hazards.
- Regarding the second category - Negative Administrative and/or Economic Effects on Common Carriers - CBEMA agrees to the extent that the carriers require protection from fraud or billing evasion. CBEMA does not necessarily support economic effects (as a network harm) to the extent that it affects competition with the carriers. CBEMA thinks there should be some competition.

There is a potential hazard in the problem of evaluating whose fault it is if equipment malfunctions; who pays? Bell's \$75.00 service charge seems to be out of line.

IBM puts extensive diagnostic equipment in the terminals they build.

Regarding the third subcategory, Degradation of Quality of Service, CBEMA would support standards which affect third parties. If it refers to quality of service on the terminal which a user has bought - that should be his problem, where there are quality/price trade offs.

There is no need for consumer protection. DOC has no business legislating consumer standards.

- CBEMA has strong views on non-tariff barriers. They consider that DOC has no business doing that. It narrows the choice of products. If a Canadian manufacturer is to establish himself in the Canadian base, he has to make a quality product.
- The Viewtran terminal does not have to be certified in Canada by the Telco who use it. Yet it doesn't meet Canadian standards. There would have to be a separate design to meet Canadian CS02(modem function).

- Regarding global product mandating, Mr. Lees doesn't think that having to make a unique Canadian product would upset the "specialized mission aspect" in IBM's case. If a smaller company were looking at this they might want to select a product which enjoys a big market in Canada.
- Unique Canadian model of the product currently exists. This comes about because -
 1. There is a separate administrative activity to get CSA approval
 2. Modems used to be identical in Canada and the U.S.A. Since the FCC program came in, IBM has elected to not certify it in Canada. The only common method across Canada is to interface with a coupler. As a result, the same old product continues to be used in Canada, unique to Canada. It interfaces with a coupler.
- Mr. Lees doesn't think that the non-federal carriers would adopt FCC Part 68.
- CBEMA's position is that there is no reason, since the Canadian and U.S. networks are the same, that there should be a difference in standards.
- CBEMA agrees that Canada has to have its own standards, but they should be the same as far as possible, with good reasons for making changes.
- There is no objection to a Canadian certification program.
- It would be nice not to have to double test (i.e. both in the U.S. and Canada). The cost of testing is a fact of life around the world. GATT agreements are supposed to provide (safeguards) but it is not certain that they are there. It would be nice if equipment which had met FCC requirements could have just whatever extra testing Canadian standards require. We haven't made an issue of the cost factor.
- DOC requirements are the most extensive ones.

- There are some CBEMA members who believe that FCC certification should be the criteria for attachment in Canada. It is the same network and a U.S. user can dial someone in Canada. This is not the consensus in CBEMA. Rather, it (the standards) should be as close as possible.
 - International industries are used to the fact that different countries have individual standards, right down to the provincial level.
 - With regard to the public interest aspects, we don't think that the government should be dictating the quality/cost trade-offs. That should be the user choice. Introducing hidden trade barriers is not helping industry and is not helping Canadian users.
 - Many of these problems would go away if you force the carrier to comply. When the FCC ruled that ATT would have to comply, the demands (for more stringent standards) disappeared.
 - Mr. Lees briefly reviewed the hard-of-hearing issue raised in CRTC hearings and questioned whether special interest groups should be allowed to influence standards that affect costs to everybody creating a unique national requirement. There is a lot of work going on internationally in EIC, CCITT, EIA(USA) and at BNR. When international standards have been determined, then national standards should be determined.
- Since most hearing aids are not made in Canada (except for one manufacturer here) it might in fact be doing the hard-of-hearing a disservice to include special provisions in the standards.

Documents provided by CBEMA were -

1. Two-page notes on Network Harms, Regulations and Standards
2. Sample EIA Standards front inside covering pointing out the voluntary nature of EIA standards
3. National Academy of Sciences report of June 1970 to the FCC on the Common Carrier/User Interconnection Area
4. FCC Notice of Rulemaking Docket No. 19528 released November 7, 1975
5. Extract from FCC Part 68 defining "Harm" with respect to Unprotected Premises Wiring.

MARCH 3, 1982.

NOTES ON NETWORK HARMS, REGULATIONS AND STANDARDSGENERAL

The Department of Communications Terminal Attachment Program (DOCTAP) has misnamed its work as standards. Standards are only written by standards writing bodies which have been approved by the Standards Council of Canada. The DOC is not such a body. Also, standards are voluntary and are arrived at by a consensus process, neither of which is the case with the DOCTAP.

The DOCTAP products are more correctly called regulations, in that they are specified by the DOC and made mandatory and given the force of law by being specified in the carriers tariffs which are approved by the CRTC.

This distinction between standards and regulations is very important when considering the implications of the definition of network harm and the inclusion of quality considerations in this definition.

REGULATIONS

Regulations, in our opinion, should only apply to essential protection of the public. Since the telephone network is a public resource, it is essential that regulations should be considered for the protection of this resource and the people associated with it. In establishing such regulations it is important to balance risk and cost, since it is not possible to eliminate all risk and so an intelligent compromise must be reached. Cost in this sense includes the social implications of raising the direct cost of the lowest cost products and also includes the cost to our economy of prohibiting existing and future products which might serve a useful purpose.

Regulations should include:

Protecting Personnel from Harm.

- Intelligent decisions must be made on the risk of such harm and the degree of protection which will be mandated.

Protecting the Network from Harm.

- Anything causes harm to this public resource if it:
 - damages telephone company equipment
 - causes undue or unnecessary maintenance costs
 - avoids the tariffed billing structure.

Preventing Degradation of Service to Innocent Users

- The owner of terminal equipment is not innocent because he buys equipment based on his judgement of the importance of the quality of his own service.
- Parties in communication with the owner of equipment are not innocent in that they choose to communicate with him.
- Innocent parties are harmed if they are prevented from accessing the network, or find that their communication with other innocent parties is affected

by noise or in other ways.

STANDARDS

We are referring here to standards which are not mandatory, but are voluntary industry standards. The purpose of such standards is to:

- Provide benchmark characteristics that the equipment either meets or doesn't meet, thereby permitting the customer to know what he is buying.
- Facilitate the specifying of compatibility between equipment and the network.
- To guarantee a specified level of quality.

Every such standard imposes restrictions on the equipment, both in cost and in design and functional capability. For this reason, such standards are not intended to be mandatory.

If voluntary standards are adopted as regulations, as has been done by the DOCTAP, the following are some undesirable results:

1. Whereas the manufacturer may design so as to meet voluntary standards and test that the results are achieved, once these standards become regulations additional costs are incurred because:
 - The manufacturer must put in place more extensive quality control capability to ensure continued compliance within the required tolerances.
 - The manufacturer must ensure himself of the quality control of all critical components and may have to buy more expensive components to guarantee the quality.
 - The manufacturer or supplier must meet the expense of the certifying bureaucracy.
2. There is no option about complying and hence no ability to sacrifice desirable but unessential parameters for the sake of producing a low cost product.
3. Other countries who have not considered these parameters to be essential will have produced products that will not be available to Canadian users without the cost of modification.
4. Canadian manufacturers exporting to such countries will be at a cost disadvantage with local industry.
5. Future products or product innovations may be precluded because they cannot meet non-essential parameters which have been mandated.

A very significant argument, in addition to the above, is that the standards referred to as having been mandated by the DOCTAP have been developed largely with voice products in mind and most often, the telephone. If a case can be made that such consumer items must have mandated quality standards to protect the public (and we don't believe such a case can be made), there certainly is no case for making these standards mandatory on expensive and sophisticated business equipment which is purchased by sophisticated business users, yet this is the case with the DOCTAP.

TELEPHONE INTERVIEW WITH MR. GRANT MURRAY,
PAST PRESIDENT, CBEMA, MARCH 25TH, 1982

Mr. Murray was contacted by Mr. H. Dulmage. Mr. Murray's responses, to questions posed by Dulmage follow.

- Question - Is your position on network harm standards that FCC Part 68 is adequate, and there is no need to be concerned about called/calling party (second party)?

Answer - Yes. Mandatory standards for attachment should concern network harm only, and not consumer matters such as quality or performance.

- Question - Do you agree that Canada should have its own standards?

Answer - Yes, subject to the above qualification. We feel that a difference between Canadian standards and that of any other country, in this case those of the U.S.A., should only be made when there is a unique Canadian requirement.

- Question - Does CBEMA anticipate any economic disadvantage if the CS03 TAPAC standard is adopted?

Answer - Yes. There are three possibilities.

1. There is a risk that equipment that is designed in a way that conforms to U.S. standards would require further modification to be sold in the Canadian market and thus incur additional expense.
2. If some organizations were to conclude that the additional cost or redesign wasn't worth it, then some equipment available in the U.S. would not be available to users in Canada.
3. Getting Canadian certification to different standards may be onerous - another element of cost and bureaucratic procedure of doubtful value. This may also result in a delay in product availability in Canada.

- Question - Is CBEMA's disagreement with the carriers based primarily on principle?

Answer - The point at issue is "Will it interfere with the actual operation of the network?" While there may be social or even economic value to being concerned for the second party, it may not even be a federal jurisdiction.

- Question - Would the existence of a different standard in Canada inhibit a Canadian branch plant of a multinational from taking full advantage of its potential role in global product mandating?

Answer - I don't want to overstate the case. Its just another factor in the long list of negative factors in Canada including duty, sales tax and so on which are not constructive. It is difficult to say which one will be the straw that breaks the camel's back.

- Question - Have you any other comments?

Answer - Our motivation is that we want to have a positive climate in Canada where the customer can take optimum advantage of the products that are available.

There is self interest of course. We want to have our business grow in Canada. Some of these factors may inhibit our growth in Canada. As a result the products may end up in the U.S. market instead of here. Being Canadians, even in a multinational company, we naturally want to see the growth occurring in Canada.

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GRANT MURRAY

INTERVIEW WITH BELL CANADA - MARCH 17, 1982

Initial request was for an interview with Mr. W. B. Hewat, Vice-President - Marketing and Development. A meeting was subsequently arranged through R. Coleman's office at 160 Elgin Street, OTTAWA, Ontario, with those present:

R. Coleman	- Director General Legislative Policy Bell Canada
J. Barry	- Director, Technology Development Bell Canada
D. Dutton	- Director, Policy Development Bell Canada
W. Earl	- Director, Regulatory Matters Bell Canada
H. Dulmage	- Harry Dulmage Associates Limited.

The interview was relatively unstructured. Some of the comments recorded were spontaneous and others were responses to direct questions from Dulmage. A summary follows:

- Bell does not think that standards per se would have any effect on the degree to which the terminal market may be retained by Bell or lost to interconnect companies. The subject has never been looked at within Bell in those terms.
- A major part of the standards issue has revolved around the safeguards for the public's ability to make, and have the use of, satisfactory connections through the network in the terminal connection environment.
- The fundamental difference between the U.S. and the Canadian approach (to network harm) is the greater reliance in the U.S. on market forces to automatically rectify problems which result in the degradation of service to the public. "Buyer beware" policy is stressed. Bell Canada has traditionally been more concerned with the potential service problems to the public arising from terminal connection and with technical standards to minimize such problems than has been the case in the U.S.

- Thus, the protection of second and third party users is the main part of the issue. The Canadian standards (CS-03) are aimed at protecting third party which the U.S.A. also does, but to a more limited extent. The difference (between CS-03 and FCC Part 68) is the degree of protection from such factors as noise, interference and wrong numbers. Dialling wrong numbers can use the telecommunication resource (telephone network) needlessly and cause annoyance to third parties.
- With reference to second party harm, the transmission requirement (of CS-03) is very minimal one which provides some degree of protection at the other end. The same is true of the alerting (ringer) requirement.
- It is not the intention of CS-03 to protect service on the first party's own terminal. Random generation of wrong numbers is a third or second party harm. It can give rise to trouble reports and network congestion which impose an unreasonable requirement on the network and reduce the network's availability to others.
- Thus, it is not intended to protect the guy who buys the instrument.
- The prime motive is to safeguard the network and its service for both the third and the second parties.
- There is a dynamic process going on with FCC Part 68. There appears to be a trend towards a narrowing of the difference between CS-03 and Part 68.
- Network protection standards in both CS-03 and Part 68 are really a subset of the network and terminal standards in use in North America. The network protection standards which apply to Customer Provided Equipment (CPE) are a very small part of the total set of terminal standards. The manufacturer has to design to those (overall) standards in any case. For example, in the case of network address signalling (dialling), it is probable that most equipment would be designed to the Canadian standards. The difference is that FCC Part 68 does not require to demonstrate it whereas CS-03 does require it.

- The incremental difference between Part 68 and CS-03 is not great in terms of achieving overall network compatibility.
- Some phones which would meet FCC standards could perform unsatisfactorily. Bell does not want to rely totally on the market place. When a telephone fails to operate, it affects someone else. Although some people have compared a faulty telephone to a faulty toaster, it is not really the same because a toaster doesn't hurt anyone else.
- Is it not the government's determination to see that the Bell's telecommunication network provides a satisfactory level of service to the public?
- The Telco can operate in a Part 68 environment but there will be an additional cost. Someone has to pick it up. One of the objectives is to try to contain that cost.
- We are shaking down a new environment. Service interruptions do occur. It is more complex now because it sometimes involves the interconnect company as well as the Telco and the subscriber under conditions of shared responsibility for end-to-end service.
- Question - Dulmage - Does the company encounter any local situations where equipment that meets the standard doesn't work?
 Answer - No standard can cover all eventualities. CS-03 goes further toward doing so than FCC Part 68.
- CS-03 describes the test method and also provides for optional methods of testing, subject to DOC approval. FCC requires the test conditions to be documented by the applicant and subjected to public scrutiny. We think that the TAPAC standard is a better package since it sets out agreed upon test procedures.
- Bell doesn't like the interim situation where the Telco doesn't get to see the test results. We couldn't accept that as a permanent arrangement. There has to be an independent body involved. The DOC has been proposed. They (TAPAC) have agreed to the manufacturer or an independent laboratory doing the testing.

- Re the role of TAPAC. It is essentially a voluntary body. There may be a need to make it a more formal structure so that it can more effectively handle the role.
- Bell sees TAPAC as a suitable forum. In Canada you can sell equipment which doesn't meet the standard, but you can't legally connect it to the network. There may be a need to put more teeth into TAPAC.
- In TAPAC, there has been a lot of give and take. The carriers do not have a right of veto. There is a broad representation among the participants.
- Nothing is static in the standards area. There is evolution in technology and it is an ongoing process.
- The TAPAC (CS-03) flow chart enables the manufacturer to deal with the certification on a per feature basis without having to make a public disclosure of proprietary information.
- In Canada we have missed the public scrutiny to which the FCC subjects the test results.
- If the argument is to adopt the FCC procedures, then they should be adopted in their entirety. All of the other associated FCC requirements such as Part 15 (Radio Regulations), should also be reviewed for potential adoption.
- Network non-addressing devices can be easily accommodated by CS-03 through the functional approach.
- Question - Dulmage - Does Bell's position on technical standards relate to a desire to become deregulated?
 Answer - We don't see standards having any connection with Bell's desire to become deregulated. There is no way that technical standards would have any bearing on deregulation.
- Bell has voluntarily committed itself to purchasing only certifiable equipment for all new designs.

- The Japanese have broader requirements than CS-03, e.g. reliability requirements in terms of failure rate.
- We believe that the British practice is to authorize a specific manufacturer's equipment rather than anyone's.
- The PTT's in some countries authorize certain models and typically test them severely, including in depth testing of individual installations at customer's expense.
- With regard to global product mandating, some countries, for example the Europeans, would impose more severe or different standards that we typically have to meet. There are numerous peculiar or local requirements. As a result the manufacturer tends to manufacture a basic product with a series of custom adaptations.
- There are ways in which billing can be avoided even if the technical standard is met. It has been known to happen already. The only way you could find out would be by noting an unusual reduction in toll charges.
- CS-03 is aimed at providing some protection to second and third parties. In doing that, it incidentally may also provide some protection to the first party. Even so, in the case of the ringer, CS-03 insures that the device responds but it doesn't say how loud it must be.
- Regarding categorization, suggested by Dulmage, of network harm, the negative factors could be further subdivided as shown below. However Bell Canada prefers and supports TAPAC's categorization as stated in The Transcript vol XV, pages 2987 and 2988.
- Dulmage's categorization is as follows:
 - (a) Actual damage, interference or hazards
 - i) Damage to network components
 - ii) Interference with normal network functions, that is influencing the network in such a manner as to prevent the network from performing its normal function

- iii) Hazards to personnel
 - iv) Mechanical damage to Telco's jacks. (Placed in this subcategory by Bell).
- (b) Negative Administrative and/or Economic Effects on Common Carriers
- i) Nuisance complaints arising from CPE
 - ii) Fraud arising from incompatibility with billing equipment.
- (c) Degradation of Quality of Service
- i) Perceptible to owners/users (first party)
 - ii) Perceptible to called/calling party (second party)
 - iii) Perceptible to third parties
- In the TAPAC's categorization, which Bell prefers and supports (see Transcript reference above), the second and third party service degradation are included in the network protection criteria.

Documents received from Bell during and following the interview:

1. Network Harm Testimony - CRTC hearings - 1981
2. Final Argument of Bell Canada - CRTC hearings - January 1982
3. Decision No. E1235 of the Public Utilities Board For the Province of Alberta, Alberta Government Telephones - December 1981.

TELEPHONE INTERVIEW WITH MR. W. B. HEWAT
VICE-PRESIDENT, MARKETING AND DEVELOPMENT,
BELL CANADA - MARCH 25TH, 1982.

Mr. Hewat was interviewed by H. Dulmage. Mr. Hewat's response to questions posed by Dulmage, follow.

- Question - What is Bell's motive for seeking to protect against a wider range of harms than the FCC does?

Answer - It is really a matter of classification. The FCC doesn't protect against second party harm. Bell's position is that it is as valid to protect the second party as anything else. In the view of our technical people, there is potential for such harm, and that is an adequate reason to protect against it.

- Question - Do you see Bell's image, in terms of quality of service or network excellence, being threatened if weaker standards than CS03 are applied.

Answer - Partly. There are other aspects which are beginning to show up already. Right now there are four things that we have noticed.

1. If a customer has a problem, he calls Bell. We test and, if we isolate the problem to the customer's equipment we don't charge, at present for doing it. If this grows, we may have to impose a tariff.
2. When the agent installs a new system, even though it meets the current technical standards, the agent sometimes has difficulty turning it up. The Bell engineers sometimes get involved helping him out.
3. When it comes to positioning the equipment, there seems to be some uncertainty about where to access the network.

4. Suppose a customer wants to put a key system behind his own PBX. There is no terminal to terminal interface standard laid down. If the key system is of one make and the PBX is of another, they may not work. Contrast this with data equipment. The EIA RS232 standard ensures that say a printer and a video terminal, even if they are of different makes will work together. There is no equivalent terminal-to-terminal standard for telephone terminals.

- Question - Do you see Bell's competitive position being threatened if weaker standards are adopted?

Answer - No, I don't think so. Problems will show up as additional costs to us, and they will get passed on.

- Question - Do you see Bell's operating cost increasing if weaker standards are adopted?

Answer - There is a cost issue. If harm occurs it will be visible to the customer. The first thing the customer does is turn to us.

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HEWAT

TELEPHONE INTERVIEW WITH BRITISH COLUMBIA
TELEPHONE COMPANY - MARCH 29TH, 1982

The original request for interview was made to the office of Mr. Carlile, President of British Columbia Telephone. Our request was referred to Mr. Ted Isaacson and carried out with -

Mr. David Carter	- Chief Engineer, B.C. Telephone
Mr. George Scheffler	- Engineer, B.C. Telephone
Mr. John Goodall	- Standards Engineer, B.C. Telephone
Mr. Ted Isaacson	- Special Assignment, Interconnection and Regulatory Matters, B.C. Telephone.

Responses to questions posed by H. Dulmage follow.

- Question - Does B.C. Tel's criteria for network protection differ from those submitted by Bell Canada and subsequently adopted by TAPAC?

Answer - B.C. Tel's criteria are set out on page 59 of our Evidence in Chief. They line up with Bell and TAPAC.

- Question - What are B.C. Tel's motives for promoting standards which go beyond FCC Part 68?

Answer - As an operating company with a long history of feeling responsible for customer service, and being measured in terms of customer service by the regulator, we have felt that in an interconnect environment, anything less than 100% was not in the interest of the customers. We do not necessarily subscribe to the FCC approach. There is a market for the quality stuff and also for equipment which works but not that well. If the owner continues to use it, it can be a load on the network. An overloaded network can generate harm to third parties. It is our desire not to degrade the quality of service, as it is seen to-day, to any party.

- Question - Is it an objective of B.C. Telephone to protect first parties, - that is the person who buys the equipment?

Answer - If he buys an inferior telephone, we are not particularly concerned about him. He can throw it away if he wants to. If it doesn't hurt anybody else we are not concerned. We are not concerned about whether he got a good buy or not. However, he may start to complain to the telephone company on account of the poor performance of his terminal.

- Question - Is it an objective of B.C. Telephone to protect second parties?

Answer - We are concerned about second party. He could call a phone whose ringer doesn't work. He reports trouble. We get network blockage. Or, the called party does get the call but he can't hear the party who called. Poor signalling, poor transmission etc. can degrade the system.

- Question - Is it an objective of B.C. Telephone to protect third parties?

Answer - Our view is pretty much the same as the FCC. We don't perceive that Canadian standards are more stringent than FCC Part 68 as regards third parties.

- Question - Is B.C. Telephone content to let the market place decide in the case of the first party?

Answer - That is a nice philosophy. It is true if the product fails dramatically. It is the near failures where it almost works that cause the problems. When he owns the equipment himself he will probably go longer before he gets it fixed than he would if he doesn't own it. We don't think that the market place is that perfect.

It should be noted that TAPAC did not include the physical tests such as dropping it on the floor. The buyer will probably object if it breaks when it is dropped.

- Question - Does B.C. Telephone see its own competitive position being threatened if the standards are based solely on FCC Part 68?

Answer - We don't think it makes much difference. We spoke of this in the hearings and talked of impact on Canadian manufacturing. If we use Part 68, there may be a flood of products into Canada. Canadian standards might be a slight throttle on it, but it is not likely to be. They are not a protection for the Canadian manufacturer. The Telcos have unofficially had a "Buy Canadian" leaning. When this is removed, Canadian industry will no longer have that protection.

- Question - The FCC seems to be moving toward deregulation in the U.S. Is there any way that stringent technical standards could have an eventual effect on deregulation in Canada?

Answer - No, not too much. There is a potential relationship. If we had good strong standards that caused the network to continue to work as well as it does now, perhaps the regulators might, under 100% interconnect environment, no longer require the Telco to be subject to those service measurements which include the terminal environment.

- Question - Has there been any significant amount of CPE (NAD) installed in B.C. Telephone to date?

Answer - Lots of PBX's and quite a large number of 1A2 key systems. Most of it is the same kind of equipment as the Telco offers.

- Question - Have there been any problems of network harm resulting from CPE?

Answer - Plenty. We have had problems with a radio paging terminal that was installed without adequate grounding. It resulted in automatic busy out. There is plenty of evidence of incompetent installation.

- Question - Have you any other comments?

Answer - You might refer to our original submission - Evidence in Chief last June, pages 59 to 64 covering technical standards and procedures. This was reviewed in writing at the end of the hearing as Final Argument.

INTERVIEW WITH NEW YORK STATE PUBLIC SERVICE COMMISSION
IN ALBANY, NEW YORK, U.S.A. - MARCH 8, 1982

Initial request for interview was directed to Neil A. Swift, Director of Communications Division. Mr. Swift referred us to Roger Sutliff. Those present at the interview were -

Roger L. Sutliff, Chief System Planner, Communications Division
New York PSC

Richard Horton, Associate System Planner, Communications Division
New York, PSC

Harry Dulmage, Harry Dulmage Associates Limited, OTTAWA, Ontario.

The interview was relatively unstructured. Comments of the PSC representatives follow. Words in parentheses are added by Dulmage for clarification of the context.

- New York PSC regulates approximately 10% of the nation's telephones.
(Dulmage note: This is approximately of the same magnitude as all of Canada).
- The forces that work on all the parties to these matters are largely the economic forces that contribute to their (the parties) success. If they see a factor that works to their economic disadvantage, obviously they will oppose it. If it takes technical standards to do it, that's what they will use. If a factor is to their advantage they will support it.
- New York PSC has gone through similar things (disagreement on standards) on building cable. As many times as the forum is thrown open, the (same) old issues will come out.
- People are so consistent, it is perfectly predictable that they will take the same positions.

- The PSC(of New York State) has never found a significant network harm that has occurred as a result of interconnection. We have never found a case where a particular equipment consistently caused degradation of service.
- The PSC receives thousands of customer complaints a year. We can't recall a single service complaint.
- There was one case where the interconnect company undertrunked a City Bank installation so that it had insufficient capacity.
- The PSC experienced bigger (service) problems with the New York City telephone system in the early '70s.
- In the mid '70s the PSC adopted a standards and certification program before the FCC. It started with answering machines and expanded to cover all equipment. The standards were developed by Communication Certification Laboratory (CCL) of Salt Lake City. This program has since been cancelled (when the FCC issued standards).
- The PSC has now issued standards for customer owned premises wiring.
- The PSC published a report in 1975 of the Revenue and Cost Impact of Interconnection on the New York Telephone Company. It was updated in March 1977. (Dulmage was given a copy of the update). It is unlikely that any further updates will be done. No attempt has been made to determine the economic benefits to the customer or the interconnect companies.
- The PSC does not have an analysis of the % of telephone terminals which are customer provided. Such information is of doubtful benefit.

- With the matter of customers owning their own premises wire, the Telco took the positions based on the assumption that a large shift would take place. So far, only a small number of customers, about 1% have wanted to own the premises wiring. The PSC had expected a maximum of 10% in a 5-year period. It now looks like it won't be more than 5%.
- Regarding standards, perhaps they should have had more trust in the market place than they did. We probably would be concerned with network degradation if it had happened. We felt that the market place should decide if a particular telephone is good or not.
- We see a telephone as being like an electrical appliance, such as a toaster. If it fails prematurely, or doesn't work properly, the customer won't tolerate it; he will disconnect it from the network.
- The economic impact (of interconnection) does not appear to be nearly as great as the Telephone Companies predicted. Customers tend to want to maintain the status quo. There is a lot of inertia not to change. It takes a certain degree of economic pressure to cause them to change.
- It is not our (NY-PSC) objective to have customers to own their own equipment. Our objective is to provide them with that option.
- In terms of benefits, we have seen clear evidence of innovation on both sides.
- Regarding possible use of standards to protect domestic industry from foreign imports - we think it would be inappropriate to enhance the economic position of a company in the State (of New York) by inhibiting the economic position of the consumers.

Documents received by Dulmage -

1. 1977 update of The Revenue and Cost Impact of Interconnection Within The Service Area of New York Telephone Company.
2. Pamphlet entitled "Guide to Owning Your Phone and Wire".
Published by State of New York, Department of Public Service.
3. Copy of Standards for "Customer-Owned Telephone Premises Wiring".
Published by the Commission.

NY-PSC-4

INTERVIEW WITH UNITED STATES FEDERAL COMMUNICATIONS
COMMISSION (FCC) IN WASHINGTON, D.C. - MARCH 9, 1982

Present at the interview were -

Wm. Van Alven - Common Carrier Bureau FCC
James Talens - Legal Counsel, Common Carrier Bureau, FCC
H. Dulmage - Harry Dulmage Associates Limited.

The interview was relatively unstructured. Comments of the FCC follow. Words in parenthesis are added by Dulmage to clarify the context.

- Since the start of interconnection, there has been a complete switch on the part of the carriers. The independents, in particular, would love nothing more than to just sell dial tone. Many of them have set-up a separate subsidiary to sell terminal equipment, not just into Bell, but into other independents. It is very competitive. The Telcos were originally reluctant; now they are enthusiastically into the interconnect field themselves.
- Part 68 was aimed at the Plain Old Telephone (POT). That's where most of the money is right now.
- FCC has not received any formal complaints regarding any customer provided equipment.
- There have been no complaints against any network addressing (device). It (getting proper performance from a network addressing device) is more of a maintenance problem than anything else.
- There have been no third party complaints.

- In the case of cordless telephones, of which Uniden markets 100,000 a month, the FCC has heard stories of people driving up to an apartment building, listening for dial tone and making a long distance call. There have been no such formal complaints. Uniden is putting in security provisions to encode the system. Hence the big issues are being addressed; the industry is sorting it out.
- More frequencies will be needed to handle the cordless telephones.
- (J. Talens) - Thinks there should be standards for cordless telephones. The question is whether they should be industry standards (instead of FCC standards).
- EIA has produced Performance standards for T1 ports. Part 68 will carry the network harm aspect.
- With advent of fibre optics (non-metallic subscriber loops) future harms may be protocol (i.e. software) rather than metallic harms.
- The FCC is now geared to deregulation. Prospect of severe staff cuts has added weight to deregulation. If anything, it may be going too far.
- The carriers originally wanted to include network address signalling in the standards. They used much of the Bell (system) submission in Part 68. Section 202 of the Communications act, to avoid discrimination, was considered to be legal justification for requiring the Telco's to register equipment. They found that a lot of their own equipment wouldn't meet Part 68, although it was in by virtue of grandfathering rules. As a result, they didn't bother to register it (i.e. the equipment already in place that didn't meet Part 68).
- Improper signal levels and wrong numbers affect first and second parties. The FCC is interested in protecting third parties.
- IEEE is working on loop standards.

- There has been some pressure on the FCC to broaden the requirements. There is always the possibility that someone may request rule making to protect first or second parties.
- With regard to the Telco's market share, the trade press suggests that they (Telcos) have lost a lot of business on PB 's.
- Most people recognize Part 68 as a cost of doing business, i.e. the price of membership in the club.
- To protect the public interest, the FCC puts the onus on the manufacturer to get the Birth Certificate(Part 68 compliance) and to provide continuing Quality Control with ongoing compliance testing at 6 month intervals. In addition there is provision for random audits of equipment.
- There are other questions to be settled. Should there standards on loop and trunk performance? What about hybrid systems that are partly PBX, partly Key systems. In some jurisdiction the distinction affects the tariff rates.
- Early in the game the ATT critiqued the applications for Part 68 registration closely. This activity has virtually ceased, although the mechanism remains for anyone to make objection to an application for registration during the waiting period.
- FCC rules do not require the subscriber to get the first telephone from the carrier. However, the tariffs in some states favour it by not providing any discount when the first phone is customer provided.
- The FCC processes about 1000 new model applications (for Part 68 registration) a year.

Documents received -

Notice of Proposed Rulemaking and

Notice of Inquiry Docket No. 81-216 covering various
applications for amendments to Part 68.

INTERVIEW WITH ELECTRICAL AND ELECTRONIC MANUFACTURERS
ASSOCIATION OF CANADA (EEMAC) - OTTAWA, ONTARIO, CANADA

The initial request was for an interview with Mr. Leon Balcer, Executive Vice-President of EEMAC. In a brief conversation with Mr. Balcer he referred me to Mr. Tom Mimee, Manager, Government Relations. The notes taken during this interview were subsequently reviewed by Mr. Balcer.

Mr. Mimee was interviewed by H. Dulmage on March the 16th. Due to lack of time it was necessary to complete the interview on March 17th. It is summarized below.

- Since the beginning, Bell has concentrated on the network harm issue.
- In the early days EIAC had its own Interconnect Committee. A June 30th, 1972 paper agreeable to both IBM and Northern Telecom was put together. IBM doesn't belong to EEMAC now.
- EEMAC has representation on TAPAC. Motorola provides the representative. The representatives on the Task Forces of the Terminal Attachment Program comes from Northern Telecom and Lenbrook Industries.
- EEMAC does not support the use of standards as a non-tariff barrier. It is doubtful that the industry wants to have a unique Canadian product. EEMAC prefers the adoption of International Standards wherever possible.
- It would be desirable to have reciprocity with the U.S.A. on terminal equipment.
- GATT doesn't always work the way we would like to on international trade matters.

Included in a January 9th, 1980 paper in response to the CRTC Rule 9, we spoke in favour of having the same overall industry and terminal attachment standards in Canada and the U.S.A., provided that the U.S.A. standards do not have requirements that are inconsistent with the technical parameters of the Canadian Telecommunications System. One has to recognize that we have one of the best telephone systems in the world. The equipment, the technology and the techniques

must be right.

In order to sell into Europe the first barrier one has to meet is CCITT Telephone standards. There is not much chance that Europe will adopt our standards. However, in the development for standards in new services there are signs of convergence.

There are problems with some products, land mobile radio for instance, having to meet different standards in Canada than those in the U.S.A. In most cases, TV sets produced for the U.S. market have to be modified to meet CSA requirements when sold in Canada.

The television set manufacturers of EEMAC ask "Why can't noise figures in Canada be the same as those found in the U.S.A." No specific problems with telephone apparatus have been brought to our attention at the moment.

QUESTION: Does EEMAC object to having to double test a product? i.e to get FCC Registration and DOC Certification.

ANSWER: Yes, particularly as it affects double costing. It doesn't make sense to have to spend money in the U.S. and Canada to obtain FCC Registration and DOC Certification for the same equipment parameters. The situation in Canada is further compounded with the introduction of CSA Certification Program requirements.

QUESTION: What about World Product Mandating?

ANSWER: We see this arising from a situation in which the Canadian subsidiary conceives a product and brings it into being for the global market. Which standards they choose to meet is up to the subsidiary. They may have to meet a lot of standards produced in different countries, however.

QUESTION: Do any of your multinational member companies take umbrage at having to meet Canadian Standards?

ANSWER: Some of them have asked, "Why should you have to meet equipment standards in Canada which are not required anywhere else in the world?"

QUESTION: Does EEMAC see the Government having a public interest, i.e. a consumer protection role?

ANSWER: If a product doesn't meet consumer acceptance the company will suffer. Let the market place decide. In the United States the FCC depends on EIA Industry Standards as the reference level for minimum performance and compatibility recommendations. DOC standards have attempted to combine the regulatory requirements of the FCC with the voluntary industry standards of EIA. EEMAC members would prefer to see in Canada, a similar separation of regulatory requirements from market-oriented performance and compatibility standards. The Terminal Attachment Program Standards could be relatively simple if there was a consensus among TCTS, industry, users and the CRTC as to what the market place requires in terms of performance.

The solution to getting a place in the marketplace is to produce a superior product. Several Canadian companies have already demonstrated their ability to do so.

The Government's objective to provide jobs for Canadians is commendable but it should restrict its efforts to the protection of the public's health, welfare and safety. Efforts such as trying to protect Canadian industry through stringent technical standards should be discouraged.

NOTE: THESE NOTES REFLECT INFORMAL RESPONSES MADE DURING TELEPHONE INTERVIEW.

TELEPHONE INTERVIEW WITH MR. PEEBLES
ONTARIO DEPARTMENT OF TRANSPORTATION
AND COMMUNICATIONS - MARCH 25, 1982

Mr. Peebles was interviewed by H. Dulmage. Mr Peebles responses to questions posed by Dulmage, follow.

- Question - Is Ontario concerned with consumer protection of the owner/user (first party)?

Answer - Yes it is. The province wants to see that a consumer doesn't get fleeced and that he gets what he pays for. But consumer protection falls under provincial jurisdiction.

- Question - Is Ontario concerned about protecting the calling/called party (second party)?

Answer - That is a low order of concern. The second party may be inconvenienced. We think they would soon find out if the telephone is not working properly.

- Question - Does Ontario have an opinion on whether the broad requirements of CS03 should be applied or whether FCC Part 68 is adequate?

Answer - Our concern would be that we not make Canadian standards just for the sake of doing it that way, if protecting the network is not the problem. From a philosophical position, we would be reluctant to make a set of standards just to make ourselves look patriotic and drape ourselves with the Canadian flag. The danger is that this increases the cost of doing business. If we have to have unique Canadian standards, there had better be a good reason for doing so. We would hate to see the Canadian market undermined by well intentioned but misguided approaches.

- Question - Are there any fears for the competitive position of Ontario CPE (telephone) supply industries if a standard weaker than CS03 is applied?

Answer - It would probably have little impact on Canadian firms. They probably wouldn't want to manufacture two different kinds of equipment anyway.

- Question - Is there any concern that global product mandating would be inhibited if there were different standards in Canada than in the U.S?

Answer - It certainly wouldn't help. It would depend on what the differences were. Global product mandating would be a major argument in favour of common standards.

- Question - Will Ontario establish standards of its own with respect to carriers who are provincially regulated?

Answer - That is a matter to be decided by the Ontario Telephone Service Commission but we would very likely adopt whatever the CRTC decides on.

INTERVIEW WITH CONSUMERS ASSOCIATION OF
CANADA, MARCH 25, 1982

Contacts, interviewed separately by H. Dulmage were Shirley Northrup and Howard Wetston.

Mr. Wetston's responses to questions posed by Dulmage, follow.

- Question - Does CAC think that the federal government's role should be to set customer provided equipment (telephone terminal) standards with a view to protecting the buyer?

Answer - The CAC recognizes that not all of the consumers want to buy a Cadillac. They should have the opportunity to exercise their choice. The CAC believes in consumers exercising their preferences in the market. They don't need protection from the regulator and they don't need protection from Bell Canada. Some people may get ripped off in the process, but the market place will sort it out.

- Question - Does CAC believe that a called/calling (second party) party requires protection?

Answer - No, we don't.

- Question - Does CAC anticipate that consumers will have less choice if Canadian standards cover more things than are required by FCC Part 68?

Answer - No.

CAC-1
WETSTON
NORTHROP

- Question - Does CAC anticipate that consumers will have to pay more if Canadian standards cover more things than are required by FCC Part 68?

Answer - The CAC doesn't see anything wrong with FCC standards. We don't think that Canada should be putting in a whole new program with all of the extra costs it will involve.

- Question - Do you have any opinions as to why Bell Canada wants more parameters covered in the standards than the FCC demands?

Answer - Bell, along with certain other Canadians, including certain private and government agencies, wants to control the system, or have a part in controlling the system.

A major complaint about the FCC, at the CRTC hearings, was that things change too fast and that there is difficulty in understanding what is going on in a foreign environment. But the U.S. telephone companies are in on these proceedings and surely Bell knows what is happening.

We think it is a pile of bunk that the Canadian telephone system has requirements different from the U.S.

- In a separate interview with Shirley Northrup of the CAC, she indicated that regulatory matters were Mr. Wetston's field, but that the CAC focus has been with consumer advisory panels and consumer representations to protect consumers on Committees of CSA and Canadian Government Standards Board (DGSEB). She felt that the association would be concerned with protecting the buyer of telephone equipment.

- Documents received -

Extracts from CAC's Final Argument before the CRTC.

CAC-2
WETSTON
NORTHROP

TELEPHONE INTERVIEW WITH CANADIAN INDUSTRIAL
COMMUNICATIONS ASSEMBLY (CICA) REPRESENTATIVE
ON TAPAC - E. WADE - MARCH 24, 1982

Mr. Wade was interviewed briefly by Harry Dulmage. Mr. Wade indicated that CICA favours the FCC approach to technical standards, but has tended to go along with the proposed Canadian approach. He believes that most of the people on the Committee (TAPAC) would prefer to see some objective testing of a simpler nature on transmission characteristics.

He suggests that the telephone company (Bell) has cut back on preventative maintenance in favour of automatic threshold testing. This has potential for creating network crosstalk problems if levels from multichannel devices creep too high because of infrequent maintenance.

Mr. Wade also represents CAC on TAPAC, but referred us to Shirley Northrup of CAC on questions concerning CAC policy.

A P P E N D I X C

DOCUMENTS

APPENDIX C - DOCUMENTS

1. National Academy of Sciences Report June 1970
2. Electronic Industries Association - Sample Front Cover emphasizing
voluntary intent of standards
3. Bell Canada Submission to TAPAC September 6, 1979 - Criteria for Network
Protection
4. Copy of FCC "Harm" definition from Part 68
5. Extracts from FCC Docket No. 19528, Pages 11, 12 and 13 - dealing with
implementation of the FCC Registration Program.

A Technical Analysis
of
THE COMMON CARRIER/USER INTERCONNECTIONS AREA

A Report of the
PANEL ON COMMON CARRIER/USER INTERCONNECTIONS
COMPUTER SCIENCE AND ENGINEERING BOARD
NATIONAL ACADEMY OF SCIENCES

to the
Common Carrier Bureau
Federal Communications Commission
Washington, D. C.

June 1970

interconnection can be achieved without impairment of service to users of the network, generally, and hazards to employees of the carriers. In its approach to this objective, the Panel has analyzed the appropriate portions of the carrier network to determine how harm can be caused and has then considered how this harm can be prevented.

Harmful Effects

Harm may arise through the introduction into the network of (a) voltages dangerous to human life, (b) signals of excessive amplitude or improper spectrum, (c) improper line balance, or (d) improper control signals.⁹

INCREASED EXPOSURE TO
HAZARDOUS VOLTAGES CAN
RESULT FROM UNCONTROLLED
INTERCONNECTION¹⁰

Uncontrolled installation of user-owned terminal devices involving the use of 115 v AC and other hazardous voltages can introduce risks to telephone company installation and maintenance personnel. For maintenance and expansion of telephone service to be carried on without interruption of existing service, it is standard and efficient practice for cable and exchange plant workers to work bare-handed on pairs and junctions in the immediate proximity of hundreds of other pairs in normal use. To avoid increasing the hazard, it is mandatory that stringent measures be taken to ensure that hazardous voltages will not be applied at points of interconnection.

SIGNALS THAT VIOLATE THE
CRITERIA RELATING TO SIGNAL
AMPLITUDE, WAVEFORM, AND
SPECTRUM IN TARIFFS 260 AND
263 CAN CAUSE HARM BY INTER-
FERING WITH SERVICE TO OTHER
USERS¹¹

⁹Section 2

¹⁰Section 3

¹¹Section 4

The non-linear characteristics of transmission components, which are widely used in the telephone plant, require that inband signal power be limited to avoid deterioration of service to others due to cross-talk or overload. The signal-limiting characteristics of voice-frequency and carrier-transmission systems do not provide the required restraints on signal power. The signal powers specified in the tariffs represent reasonably optimized values for voice and data usage.

The limits on the inband signal-power spectrum are specified to avoid the possibility of interference with internal network signaling. The out-of-band power limits are based upon limitations of local cable plant and requirements for minimum interference with present and expected greater-than-voice-band services. The telephone plant does not supply this protection.

Signal criteria specified in the tariff must be observed for both voice and data services. Data services present the more serious problem, since, when transmitting data, the user has an incentive to exceed the signal-power criteria in order to reduce his error rate with possible degradation of service to others.

LINE BALANCE IS IMPORTANT TO NETWORK PERFORMANCE¹²

Imbalance in line terminations will render ineffective the careful electrical balance built into the pairs in the cables connecting users and the telephone company central offices. The resultant imbalances can cause loss of privacy and increased interference, not only to the unbalanced pair, but to other pairs in the cable as well. Terminal imbalance can occur due to poorly built equipment, improper installation, or inadequate maintenance.

IMPROPER NETWORK-CONTROL SIGNALING CAN IMPAIR TELE- PHONE SERVICE AND INCREASE COSTS¹³

¹²Sections 1 and 3

¹³Sections 1 and 4

Network-control signaling must be properly performed for correct system operation and message accounting. For example, in a telephone set, these signals are produced by the switchhook and the rotary dial or the touch-tone pad. Mechanisms for producing these signals, if not carefully designed, manufactured, installed, and maintained, can, in conjunction with the varying characteristics of the telephone loops, cause improper signals to be received at the central offices. Central offices vary in their tolerance to distorted control signals and in their ability to correct such signals before re-transmission into the network. In particular, dial-pulse signaling of poor quality can cause significant harm by the generation of wrong numbers, causing annoyance to others, wasteful use of central office equipment and transmission facilities, and improper billing. On the other hand, improper signals generated by touch-tone pads are inherently less harmful since, if a signal is out of tolerance, the central office equipment will not complete the call. Network-control signaling on multiparty lines is particularly difficult to define because of different practices with respect to ringing and line identification.

Protecting the Network

Several approaches for protecting the public telephone network were considered. Two which the Panel considers acceptable are:

- (a) Operation under present tariffs that call for common-carrier ownership, installation, and maintenance of connecting arrangements and adherence to tariff-specified signal criteria.
- (b) A program of enforced certification of equipment and personnel, with appropriate standards for safety and network protection. This approach would allow user ownership, installation, and maintenance of protective coupling units or complete terminal equipment.

PRESENT TARIFF CRITERIA AND
CARRIER-PROVIDED CONNECTING
ARRANGEMENTS ARE AN ACCEPT-
ABLE WAY OF ASSURING NETWORK
PROTECTION¹⁴

The present tariffs specify signal criteria for electrical, acoustic, and inductive coupling, and specify that the carrier provide

¹⁴Sections 3 and 5

connecting arrangements and network-control signaling. The signal criteria limit the signal inputs to the network to those considered to be harmless. The carriers, under the tariffs, assume responsibility for installation and maintenance of the connecting arrangements and for protection of carrier personnel and of the network itself. Technically, the Panel considers this to be an acceptable approach.

Carrier-provided connecting arrangements involve addition by the carrier of components between the user's terminal and the carrier's facilities. In some situations, these may duplicate components of the users' equipment; this redundancy in components and functions may, in principle, cause some loss in performance and some reduction in reliability. However, the Panel's analysis indicates that the added components, if well designed, should not significantly affect overall reliability or performance.

Concerning the need for some of the protective features, analyses of the presently available connecting arrangements indicate that they provide a degree of protection of voice-signal limiting that, in some cases, is unnecessary. Present carrier-provided coupling units are, in some instances, complicated and marginally effective and may degrade performance,¹⁵ particularly in net-control signaling. According to AT&T, the problems relating to present protective equipment can be attributed to the rapid introduction of the connecting arrangements and lack of experience on which to base judgments. Further development should produce more effective units. Additionally, the sudden demand for interconnection and the need for time to determine the features required by a large number of users is a cause for present delays. Desired connecting arrangements are not yet available according to some users.

THE ESTABLISHMENT OF STAND-
ARDS AND ENFORCED CERTIFICATION
OF USER-SUPPLIED EQUIPMENT AND
PERSONNEL CONSTITUTE AN
ACCEPTABLE WAY OF ASSURING
NETWORK PROTECTION¹⁶

It is important to note that the standards to be established cover only network-protection considerations such as personnel safety, signal levels, transmission, and network-control signaling, and do not include standards for user-equipment performance.

¹⁵Section 5

¹⁶Section 16

Despite some variability from installation to installation, there has been enough experience with the telephone network to provide a basis for standards for network protection. A standards-development program requires the resources of a qualified standards organization. The purpose here is to provide coordination, structural guidance, and staff services to those preparing the standards. Such organizations exist in both the private sector and government. Standards can be prepared by qualified representatives of the carriers, suppliers, and users. A definition of the interface between the user-owned equipment and the network, so far as protection is concerned, is part of the basis for standardization.

Finally, although general standards can be written to cover interconnection with various types of central offices and loops, each individual installation will be, to some extent, customized due to varying loop characteristics and other factors. Therefore, interconnected equipment should be provided with proper adjustment features to deal with individual case-by-case variations. Necessary adjustments can be worked out cooperatively at the time of installation between carrier and user. Cooperative guideline procedures should be formalized.

Type certification of equipment could be accomplished by government or by independent testing laboratories. It must include evaluating and monitoring each manufacturer and his specific products. Government and independent test laboratories exist which are capable of performing these functions in related fields. They could expand their resources to qualify for the program envisaged here. With a significant volume of work, costs of this program should not be prohibitive. Certification can be applied to couplers, to protective sections of larger equipment, or to the protective characteristics of entire units of equipment.

Equipment-type certification alone is not sufficient to protect the telephone network. The equipment must be installed and maintained by certified technicians. In addition, standards must make provisions for assurance that the network protection is maintained by documented periodic inspection.

Certification of the installation and maintenance of interconnected equipment will require a program of personnel training, development of tests and test equipment, and licensing of installation and maintenance personnel. On the last point, the Panel believes that a nucleus of support personnel exists in the servicemen and organizations who now install and service communications and computer equipment. They can be certified (or licensed) by examination, following procedures included in the overall certification program. Each certification (or license) would be endorsed as applicable to equipment of one or more classes.

Requirements for an Enforced Certification Program

AUTHORITY FOR A NATION-
WIDE CERTIFICATION PRO-
GRAM MUST RESIDE WITH
THE FEDERAL AGENCY
RESPONSIBLE FOR THE
TARIFFS¹⁷

To be effective, a certification program must be recognized in the tariffs and the federal agency that approves these tariffs must assume responsibility for authorizing implementation of the overall certification program. This agency should develop and publish rules and procedures and propose timetables and sequence of applications.

Plans should be developed under control of the federal agency for the selection of the organization or organizations that will coordinate the preparation of standards, the procedures for the qualification of technicians, and the organizations to be given the authority to certify equipment.

Uniformity in standards and certification procedures for equipment and in personnel qualifications throughout the country is desirable, since installation and maintenance may be supervised and inspected locally. Therefore, coordination by federal and state agencies is necessary to establish policies which will permit the nationwide use of certified equipment and procedures for the certification of technicians.¹⁸

ENFORCED CERTIFICATION
PROCEDURES MUST BE TAKEN
AS A WHOLE

The Panel emphasizes that the development of standards and a program of certification requires a complete system of control, which will not be effective unless all elements of the system, as described in this report, are adopted. For example, the development of standards alone is inadequate. Certification of equipment without certification of installation, testing, and maintenance will be ineffective in protecting personnel, facilities, services, etc.

¹⁷Section 6

¹⁸Section 6

A CAREFULLY PLANNED
STEP-BY-STEP EFFORT IS
NECESSARY TO ENSURE THE
SUCCESSFUL IMPLEMENTATION
OF A CERTIFICATION PROGRAM¹⁹

Experience with interconnection is limited and has, for the most part, been with users with extensive experience and resources.²⁰ There is little applicable experience involving smaller, less sophisticated users or with large-scale public interconnection. A certification program is new to the telephone industry and to many of the major user industries.

Existing laboratories are not equipped to test and certify communications equipment in the quantities envisioned. The personnel needed by all parties for this kind of operation are in short supply.

There is much to be learned. If a start is made promptly, and if all concerned assign the task a high priority, the necessary certification programs and guidelines for qualifying personnel should be produced in reasonable time. The same effort should produce both standards for equipment and guidelines for qualifying personnel. Thereafter, when the personnel program has started to function, the certification of interface devices and equipment will permit their installation and operation by users according to the new standards.

The Panel believes that the certification program should be undertaken on an incremental basis in order to develop a meaningful base of knowledge and experience. The first implementation should be in an area with high probability of success and sufficient complexity to test the validity of the certification program. The first application should be to equipment with limited distribution and for which a knowledgeable technical base for manufacture, installation, and maintenance now exists (such as PBX). Application of the standards to one service can proceed while standards are set for others. Since the standards program is an iterative process, requiring procedures for continuous reconsideration and renegotiation of specifications, it is important that an organizational mechanism be set up to gather data and evaluate the progress of the program.

SELF-CERTIFICATION BY
MANUFACTURERS OR USERS
WILL NOT ENSURE AN ACCEPT-
ABLE DEGREE OF NETWORK
PROTECTION²¹

¹⁹Section 6

²¹Section 6

²⁰Section 8

A self-certification program allows the manufacturer or user to test and approve his own equipment, installation, and maintenance. On the other hand, an enforced certification program separates the responsibility for certification from the organizations having direct financial involvement in the production or use of interconnected equipment.

Self-certification requires the user to procure and use equipment considered harmless and to operate in accordance with the tariffs. In the absence of some control system, it is inevitable that marginal equipment will make its way to the market and that there will be usage outside of the rules.

WE FIND NO PERSUASIVE ARGUMENTS FAVORING THE EXEMPTION OF WHOLE CLASSES OF USERS

The Panel endeavored to classify users, including utilities, right-of-way companies, agencies of the federal government, etc., in an effort to show that one or more classes might be permitted unrestricted interconnection without risk of impairment to the operation of the network. An analysis of information in the Applicable Experience section²² and other information presented to the Panel led to a firm conclusion that this was not possible.

In a certification program that enables any user to qualify on reasonable terms, there is no reasonable basis, in the opinion of the Panel, for any class or group of users to be exempted from conforming.

EFFECTS OF INTERCONNECTION ON INNOVATION

THE PROPOSED CERTIFICATION PROGRAM SHOULD NOT SIGNIFICANTLY IMPEDE INNOVATION BY THE CARRIERS AND MAY PROMOTE INNOVATION BY USERS

Several opinions have been expressed to the Panel regarding the potential impact of interconnection on innovation.

²²Section 8

The carriers have said that widespread interconnection will tend to impede innovation in the network, because, among other things, users will tend to oppose changes by the carriers that make the users' equipment obsolete or require it to be modified. They have also said that direct interconnection without carrier-owned interconnecting arrangement will further impede their innovation because it removes the carrier-controlled buffer with known characteristics between the network and the interconnected equipment.

Some users, especially the large ones and those in rapidly developing fields such as computer time-sharing, have expressed the opinion that, with the necessarily deliberate rate of innovation expected in the network, there will be no major problems in keeping up with the network innovation. They do not agree with the carriers' concerns regarding the need for a carrier-controlled buffer.

Some suppliers of equipment and services have expressed the opinion that the presence of the carrier-owned interconnecting arrangement will impede innovation on the user side of the interface where the goal is to optimize the users' system or use of equipment. Further, and perhaps more importantly, they question the ability of the carrier to respond rapidly enough to new situations in which new interconnection arrangements are required.

While data on which to base conclusions are limited, it is the opinion of the Panel that:

- (a) The advent of widespread interconnection itself, regardless of how it is implemented and controlled, will indeed have some effect on the rate of innovation by carriers, suppliers, and users. In some cases, it may impede innovation in the network; in others, it could conceivably promote innovation because of competition and the pressures of demand from users. It will certainly tend to increase the rate of innovation by suppliers and users.
- (b) The introduction of a certification program permitting direct interconnection should not significantly restrict carrier innovation if there is effective information exchange between carriers, suppliers, and users. On the other hand, the suppliers and users will have more freedom to innovate.
- (c) On balance, under the certification program, innovation in the overall system of carriers and users of interconnected equipment is likely to increase.

INFORMATION INTERCHANGE

THE PANEL BELIEVES THAT
MECHANISMS SHOULD BE
ESTABLISHED TO PROMOTE
THE EXCHANGE OF INFOR-
MATION AMONG CARRIERS,
USERS, AND SUPPLIERS²³

As stated earlier, the Panel was continually reminded of the need for improved exchange of information among the parties concerned. There were instances of incorrect interpretations of conditions of use of the network by user and manufacturers, causing unnecessary confusion at both the technical and administrative levels. The carriers expressed strongly the need for more direct information exchange and a more comprehensive picture of user requirements. With the anticipated acceleration in innovation affecting data systems and telecommunications, the requirement for this improved exchange is even more pronounced. At present, no mechanism exists that adequately serves this function; such a mechanism should be established.

²³Section 9

This notice appears at the front of all EIA standards and stresses the voluntary intent of the standard.

NOTICE

EIA engineering standards are designed to serve the public interest through eliminating misunderstandings between manufacturers and purchasers, facilitating interchangeability and improvement of products, and assisting the purchaser in selecting and obtaining with minimum delay the proper product for his particular need. Existence of such standards shall not in any respect preclude any member or non-member of EIA from manufacturing or selling products not conforming to such standards, nor shall the existence of such standards preclude their voluntary use by those other than EIA members whether the standard is to be used either domestically or internationally.

Recommended standards are adopted by EIA without regard to whether or not their adoption may involve patents on articles, materials, or processes. By such action, EIA does not assume any liability to any patent owner, nor does it assume any obligation whatever to parties adopting the recommended standards.

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Bell

CRITERIA FOR NETWORK PROTECTION

Attached to
letter from Bell
of

6 Sept 79
filed under

TFC

Establishment

PREPARED BY BELL CANADA TO AID IN THE
DEVELOPMENT OF TERMINAL CONNECTION STANDARDS
WITHIN TASK FORCE C OF
THE TERMINAL ATTACHMENT PROGRAM
ADVISORY COMMITTEE

6 SEPTEMBER 1979

1. Introduction

It was previously declared by the Federal Government in its proposed Telecommunications Act, Bill C-16, that:

"efficient telecommunications systems are essential to the sovereignty and integrity of Canada, and telecommunication services and production resources should be developed and administered so as to safeguard, enrich and strengthen the cultural, political, social and economic fabric of Canada".

and further:

"All Canadians are entitled, subject to technological and economic limitations, to reliable telecommunication services, making the best use of all available modes, resources and facilities, and taking into account regional and provincial needs and priorities."

In order to achieve these objectives, it is essential that the existing high quality and reliable telecommunications network in Canada be maintained. Meeting these objectives is obviously not only in the best interest of the public and carriers but is of great importance to the terminal equipment manufacturers as well. Through the cooperative efforts of government, carriers, users and terminal equipment manufacturers, the objectives of the Telecommunications Act can be achieved.

The telecommunication network is a complex arrangement of transmission, switching, signalling and terminal equipment which has been designed as an intricate system to provide high quality service. The interdependence of network components requires that limits are defined for all parameters which affect network functions such as supervision, signalling and transmission. Terminal equipment is an integral part of the network and certification standards for customer provided terminal equipment are required to ensure protection of the network. While this concept has received general support from terminal equipment manufacturers, carriers, users, and regulatory agencies, only limited understanding and agreement has been achieved on specific criteria for network protection.

In the United States, submissions to the National Academy of Sciences from each of these interest groups reflected divergent views, and the recommendations of the Academy were not fully adopted by the Federal Communications Commission in developing the network protection requirements for terminal equipment registration. Outside of North America, there is little consistency of approach to network protection. In Canada, technical standards for network non addressing devices developed under the terminal attachment program were not based on clearly stated criteria for network protection, and considerable debate occurred in rationalizing each technical parameter considered for inclusion in the standards.

The differing positions on network protection criteria adopted by terminal equipment manufacturers and carriers are understandable since, although both of these groups share a common interest in protecting the telecommunications network, neither group wishes to constrain the operation of their distinctly different businesses. However, unless a common understanding of the positions of each group is established and agreement on a set of criteria reached, the development of certification standards for network addressing devices will be difficult, disorderly, and time consuming.

Consequently, in order that the Terminal Attachment Program may be extended in a logical and orderly manner, Bell Canada recommends that certification standards for network addressing terminal equipment be developed within the framework of the following criteria for network protection. This framework will allow parameter limits and associated test methods for customer provided terminal equipment to be uniformly and objectively established.

2. Criteria for Network Protection

The public telecommunication network requires protection from:

1. Electrical energy which is hazardous to the public and Bell Canada personnel.
2. Damage to network components by electrical energy or improper connections.
3. Interference with the normal functioning of network equipment including billing equipment.
4. Degradation of service to other users of the network.

These criteria are discussed further with some specific examples in the following sections.

2.1 Electrical Hazards to the Public and Bell Canada Personnel

Terminal equipment which is locally powered by commercial ac could, as a result of inadequate design or equipment failure, connect hazardous electrical energy to the network interface. This energy could be conducted through the network, and could potentially result in injury to the general public, or to Bell Canada personnel working on network facilities or equipment.

As an example, terminal equipment failures could be caused by environmental or operational stress, or component failures. Hazards could include electrical shock and electrical fires in the terminal equipment or network facilities.

2.2 Damage to Network Components

Terminal equipment which applies excessive levels of electrical energy to the network interface, or uses improper or inadequately designed connectors could cause damage to network equipment.

The following examples illustrate the potential for each such damage. Secondary protection devices such as zener diodes may be provided in terminal equipment. If these devices interfere with or prevent the normal operation of the primary carbon block or gas tube protection on the telephone line, damage to network equipment as well as to terminal equipment can result. As a result of an induced lightning surge or a power line cross on the telephone lines, abnormal voltages could be presented by the terminal equipment at the network interface, and high circulating currents could flow in the inside wiring and the cord of the terminal equipment. The possible effects of high circulating currents in the inside wiring and cord include fire and damage to network equipment. Physical damage to carrier provided equipment such as jack type connectors can result from the use of plug type connectors which are mechanically incompatible.

2.3 Interference with the Normal Functioning of Network Equipment Including Billing Equipment

Terminal equipment may intentionally or inadvertently operate in a manner which makes fraudulent use of network facilities, or interferes with the normal operation of network equipment.

For example, network signalling and supervision are frequently performed using voice band tones. Spurious tones from terminal equipment can cause serious interference with these functions and can also affect the proper operation of network billing equipment. Extreme variations in off hook resistance immediately following ring trip can simulate a false on hook condition and can prevent the normal functioning of billing equipment.

2.4 Degradation of Service to Other Users of the Network

Terminal equipment connected to the network can degrade the service provided to other network users.

The potential for such degradation can be illustrated with the following examples. Crosstalk interference can be caused when terminal equipment transmits excessively high signal levels to the network. Terminal equipment which has inadequate longitudinal balance can cause power line interference on the telephone line to be converted to noise and thus cause a service degradation. Crosstalk interference can also increase, because of terminal imbalance, through the longitudinal coupling between circuits in the same cable.

Terminal equipment that is designed to operate so that abnormally high calling rates, excessively long holding times, or other abuses of the network occur, will reduce network access to other users since network facilities are engineered on the basis of normal demands for service. Make busy devices which are designed for use with call answering machines and which operate by making busy all lines at a customer location except the one connected to the call answering machine deny normal access to facilities and equipment. Trouble in terminal equipment can cause a false presumption of a network malfunction by both parties in a connection. This can occur if the off hook resistance of the terminal equipment is marginally high resulting in failure to trip ringing. When such failures occur, the customers could conclude that the problem is in the network. Other terminal equipment problems which could lead to a false presumption of network malfunction include excessive noise, distortion, echo, and low transmission levels.

CRITERIA FOR NETWORK PROTECTION

- INTERDEPENDENCE OF NETWORK COMPONENTS
- CERTIFICATION STANDARDS TO PROTECT THE TELECOMMUNICATIONS NETWORK
- CRITERIA FOR NETWORK PROTECTION
 - NAS
 - FCC PART 68
 - DOC CS-01, CS-02
- TERMINAL PARAMETER STANDARDS
 - EIA
 - FCC PART 68
 - CSA
 - CS-01, CS-02
 - AT&T PUBLICATIONS

AGREEMENT ON "CRITERIA FOR NETWORK PROTECTION"

- EXTENDS TAP TO NETWORK ADDRESSING DEVICES IN A LOGICAL AND ORDERLY MANNER
- DEVELOPS A FRAMEWORK FOR EVALUATION OF TECHNICAL CATEGORIES, PARAMETERS, AND LIMITS IN A UNIFORM AND OBJECTIVE MANNER
- SHOULD MINIMIZE TIME SPENT ON DEBATE ON "NON-ISSUES" TO SHORTEN THE TIME INTERVAL FOR THE DEVELOP OF TECHNICAL STANDARDS

CP-01 SECT. 1.8.1

"THE CANADIAN DOC LABEL IDENTIFIES CERTIFIED EQUIPMENT. THIS CERTIFICATION MEANS THAT THE EQUIPMENT MEETS CERTAIN TELECOMMUNICATION NETWORK PROTECTIVE, OPERATIONAL, AND SAFETY REQUIREMENTS. THE DEPT. DOES NOT GUARANTEE THE EQUIPMENT WILL OPERATE TO THE USERS, SATISFACTION"

CS-02 SECT. 1.1

"THE STANDARD CONTAINED HEREIN ARE INTENDED FOR THE PROTECTION OF THE COMMUNICATION NETWORKS ..."

TELECOMMUNICATION NETWORK

- COMPLEX ARRANGEMENT OF TRANSMISSION, SWITCHING, SIGNALLING AND TERMINAL EQUIPMENT
- DESIGNED AS AN INTRICATE SYSTEM
- INTERDEPENDENCE OF NETWORK COMPONENTS REQUIRES LIMITS FOR PARAMETERS THAT AFFECT NETWORK FUNCTIONS

CRITERIA FOR NETWORK PROTECTION

1. ELECTRICAL ENERGY WHICH IS HAZARDOUS TO THE PUBLIC AND BELL CANADA PERSONNEL.
2. DAMAGE TO NETWORK COMPONENTS BY ELECTRICAL ENERGY OR IMPROPER CONNECTIONS.
3. INTERFERENCE WITH THE NORMAL FUNCTIONING OF NETWORK EQUIPMENT INCLUDING BILLING EQUIPMENT.
4. DEGRADATION OF SERVICE TO OTHER USERS OF THE NETWORK.

CRITERIA FOR NETWORK PROTECTION

- 1) ELECTRICAL ENERGY WHICH IS HAZARDOUS TO THE PUBLIC AND BELL CANADA PERSONNEL.

TERMINAL EQUIPMENT WHICH IS POWERED OR CO-LOCATED WITH COMMERCIAL AC COULD CONNECT HAZARDOUS VOLTAGES AND CURRENTS TO THE NETWORK RESULTING IN:

- ELECTRICAL SHOCK
- BURNS
- FIRE IN EQUIPMENT OR FACILITIES

CRITERIA FOR NETWORK PROTECTION

2) DAMAGE TO NETWORK COMPONENTS BY ELECTRICAL ENERGY OR IMPROPER CONNECTIONS.

EXCESSIVE VOLTAGE AND CURRENT LEVELS FROM THE TERMINAL EQUIPMENT COULD DAMAGE NETWORK FACILITIES AND EQUIPMENT. IMPROPER CONNECTION COULD DAMAGE CARRIER JACKS. EXAMPLES INCLUDE:

- CENTRAL OFFICE HEAT COIL OPERATION
- SWITCH CONTACT PLATING
- BROKEN CONNECTORS

BELL CANADA
1979 09 06

CRITERIA FOR NETWORK PROTECTION

3) INTERFERENCE WITH THE NORMAL FUNCTIONING OF NETWORK EQUIPMENT INCLUDING BILLING EQUIPMENT.

SPURIOUS TONES FROM TERMINAL EQUIPMENT COULD INTERFERE WITH NETWORK SIGNALLING, SUPERVISION AND BILLING FUNCTIONS AND RESULT IN:

- TRUNK CARRIER SYSTEM OVERLOAD
- TRUNK CARRIER SYSTEM DISCONNECTION
- FAILURE TO TRIP RINGING SIGNALS
- INCORRECT MESSAGE REGISTRATION

BELL CANADA
1979 03 06

CRITERIA FOR NETWORK PROTECTION

4) DEGRADATION OF SERVICE TO OTHER USERS OF THE NETWORK.

SERVICE IMPAIRMENTS AND DENIAL OF ACCESS TO
NETWORK FACILITIES AND EQUIPMENT COULD RESULT
FROM:

- CROSSTALK INTERFERENCE
- TRUNK CARRIER SYSTEM DISCONNECTION
- CIRCUIT OSCILLATION
- TRANSMISSION IMPAIRMENT

BELL CANADA
1979 09 06

CRITERIA FOR NETWORK PROTECTION

BILLING PROTECTION
EXTRANEOUS ENERGY CHARACTERISTICS
TRANSMITTED ENERGY CHARACTERISTICS
DC TERMINATING CHARACTERISTICS
AC TERMINATING CHARACTERISTICS
TRANSMISSION CHARACTERISTICS
SIGNALLING CHARACTERISTICS
~~SIGNALLING-CHARACTERISTICS~~
ALERTING CHARACTERISTICS
SAFETY REQUIREMENTS
ENVIRONMENTAL SIMULATION
MECHANICAL DESIGN

Network Integrity

Bell Canada

TFC 29 Jan meet

The Criteria For Network Protection submitted at the meeting of Task Force C on 1979 09 06 established the foundation for the development of draft technical standards for network addressing devices. An essential element of the Criteria For Network Protection is the principal of protecting other users of the telecommunications network from service degradation which might result from the connection of customer provided terminal equipment to the network. In the discussion and minutes of that Task Force C meeting it was clearly established that this principal is intended to protect both second and third party users from service degradation. Based on that discussion, the Criteria For Network Protection were accepted as a general framework for draft network addressing standards development.

In developing TCS-01 requirements to fulfill this principal, it was recognized that terminal equipment characteristics which affect second party service also affect service to the first party provider of the equipment. In order to ensure that service to second party users is not degraded while minimizing the constraint on manufacturers' design freedom, a distinction has been made between network integrity and performance. The intent of the following requirements of TCS-01 is to secure an end-to-end path for network signals and voice transmissions:

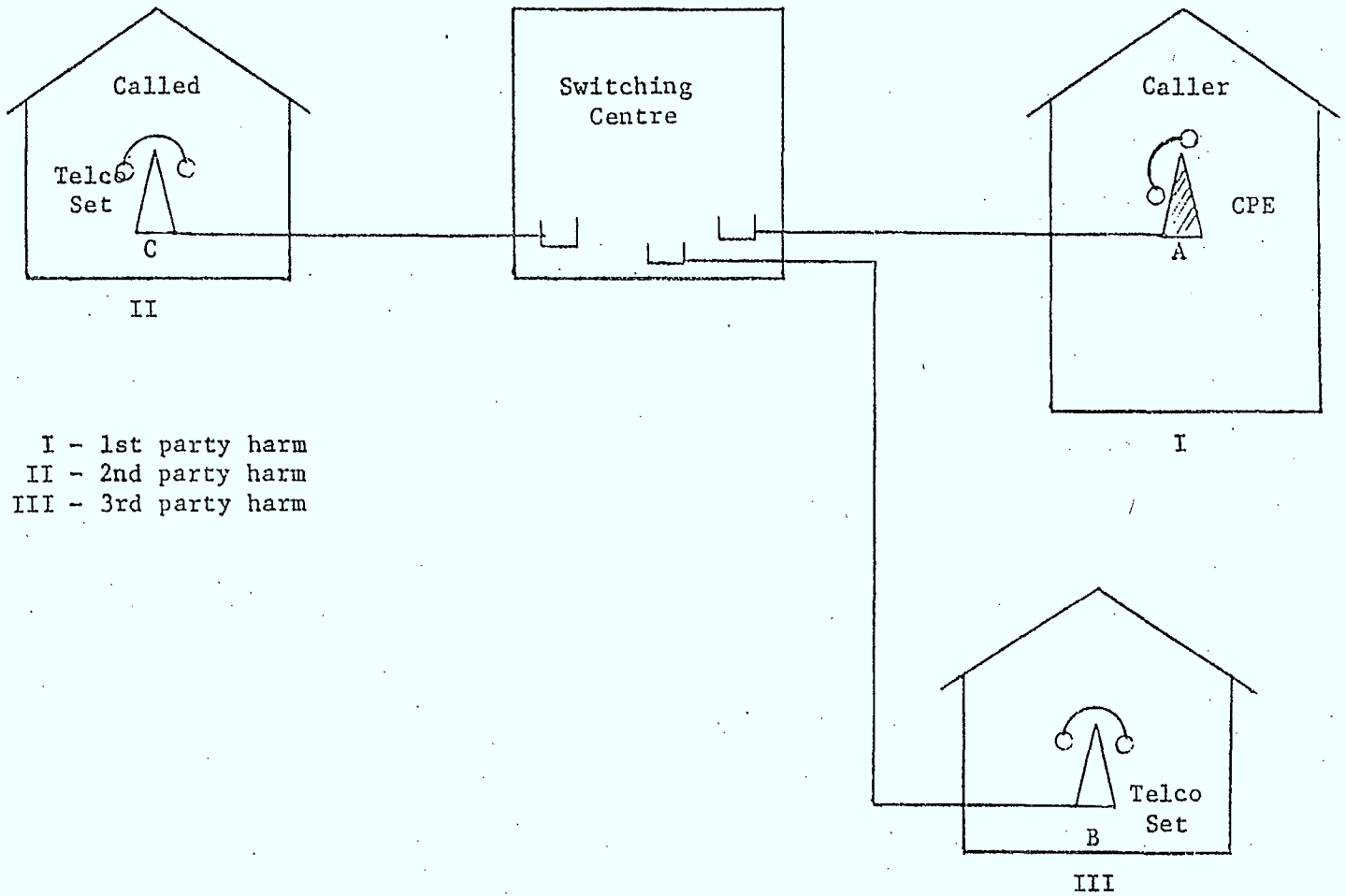
- | | |
|--------|---|
| 3.16.2 | Alerting Device Sensitivity |
| 3.17.1 | Transmit Objective Loudness Rating (TOLR) |
| 3.17.2 | Transmit Frequency Response |
| 3.17.3 | Transmit Distortion |
| 3.18 | Receive Objective Loudness Rating (ROLR) |
| 3.19 | Sidetone Objective Loudness Rating (SOLR) |

Most parameter threshold values for these requirements are specified at industry accepted levels developed in the U.S. These levels ensure absolute minimum acceptable service which, from the perspective of the second party user, constitutes basic network integrity. These parameter threshold values also limit voice signal power to levels which have already been established within the Terminal Attachment program to protect third party users. Manufacturers are not constrained by these TCS-01 requirements from establishing a broad range of higher design standards for their terminal products which can be marketed to first party users as performance options. As an example, the telephone sets provided by Bell Canada not only exceed these minimal requirements, but also meet additional requirements for such performance characteristics as receive frequency response, receive noise, sidetone, frequency response, and sidetone non-linear distortion. These performance characteristics are intended to provide quality service to the first party user and are not included in TCS-01.

It should be noted that disagreement over the principal of second party protection has focused on the manufacturer's need for design flexibility in order to meet first party performance requirements. The fact that service to second party users of the telecommunications network will be degraded by a customer provided terminal device which does not meet these minimal requirements has not been disputed. No convincing rationale has yet been submitted for discriminating between these second party users, and first party users, in the matter of design flexibility. The fact that the degradation of service to second party users is a direct result of such a rationale, and that the principal of network integrity must be fulfilled through the requirements of

TFC
JAN 29 80

NETWORK HARM CRITERIA



- I - 1st party harm
- II - 2nd party harm
- III - 3rd party harm

and authority required by § 68.215(e) will have to be received from the equipment's manufacturer.

(iii) Existing separate, identifiable and discrete protective apparatus may be removed, or replaced with apparatus of lesser protective function, provided that any premises wiring to which the telephone network is thereby exposed conforms to § 68.2(e) (ii) above. Minor modifications to existing unregistered equipments are authorized to facilitate installation or premises wiring, so long as they are performed under the responsible supervision and control of a person who complies with § 68.215(e). Since there is no "registrant" of unregistered equipment, the training and authority required by § 68.215(c) will have to be received from the manufacturer of the equipment so modified.

(d) *National Defense and Security.* Where the Secretary of Defense or authorized agent or the head of any other governmental department, agency, or administration (approved in writing by the Commission to act pursuant to this rule) or authorized representative, certifies in writing to the appropriate common carrier that compliance with the provisions of Part 68 could result in the disclosure of communications equipment or security devices, locations, uses, personnel, or activity which would adversely affect the national defense and security, such equipment or security devices may be connected to the telephone company provided communications network without compliance with this Part, provided that each written certification states that:

(1) The connection is required in the interest of national defense and security;

(2) The equipment or device to be connected either complies with the technical requirements of this part or will not cause harm to the nationwide telephone network or telephone company employees; and

(3) The installation is performed by well-trained, qualified employees under the responsible supervision and control of a person who meets the qualifications stated in § 68.215(c).

Governmental departments, agencies, or administrations that wish to qualify for interconnection of equipment or security devices pursuant to this section shall file a request with the Secretary of this Commission stating the reasons why the exemption is requested. A list of those departments, agencies, or administrations that have filed requests shall be published in the Federal Register. The Commission may take action with respect to those requests 30 days after publication. The Commission action shall be published in the Federal Register. However, the Commission may grant, on less than the normal notice period or without notice,

special temporary authority, not to exceed 90 days, for governmental departments, agencies, or administrations that wish to qualify for interconnection of equipment or security devices pursuant to this section. Requests for such authority shall state the particular facts and circumstances why authority should be granted on less than the normal notice period or without notice. In such cases, the Commission shall endeavor to publish its disposition as promptly as possible in the Federal Register.

[§ 68.2(a) amended & (d) added eff. 1-1-80; X(77)-3]

§ 68.3 Definitions.

As used in this part:

(a) *Auxiliary Leads:* Terminal equipment leads at the interface, other than telephone connections, which leads are to be connected either to common equipment or to circuits extending to central office equipment.

(b) *Direct Connection:* Connection of terminal equipment to the telephone network by means other than acoustic and/or inductive coupling.

(c) *Harm:* Electrical hazards to telephone company personnel, damage to telephone company equipment, malfunction of telephone company billing equipment, and degradation of service to persons other than the user of the subject terminal equipment, his calling or called party.

(d) *Interface:* The point of interconnection between terminal equipment and telephone company communication facilities.

(e) *Longitudinal Voltage:* One half the sum of the potential difference between the tip connection and earth ground, and the ring connection and earth ground.

(f) *Loop Simulator Circuit:* A source of dc power and a load impedance for connection, in lieu of a telephone loop, to terminal equipment loop and ground start circuits (Figure 68.3(a)), and reverse battery circuits (Figure 68.3(b)) during testing. The schematic diagrams of Figures 68.3(a) and 68.3(b) are illustrative of the type of circuit which will be required; alternative implementations may be used provided that the same dc voltage and current characteristics and ac impedance characteristics will be presented to the equipment under test as are presented in the illustrative schematic diagrams. When used, the simulator shall be operated over the entire range of loop resistance as indicated in the Figures, and with the indicated polarities and voltage limits. Whenever loop current is changed, sufficient time shall be allocated for the current to reach a steady-state condition before continuing testing.

See Pages 11, 12, 13
1-16

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D. C. 20554

FCC 75-1249

37950

In the Matter of)	
)	
Proposals for new or revised classes)	Docket No. 19528
of Interstate and Foreign Message)	
Toll Telephone Service (MTS) and)	
Wide Area Telephone Service (WATS))	

FURTHER NOTICE OF PROPOSED RULEMAKING

Adopted: October 31, 1975

Released: November 7, 1975

By the Commission:

Notice of proposed rulemaking in the above-captioned matter is hereby given. In a companion First Report and Order (FCC 75-1248) adopted this date, the Commission established a registration program designed to allow users of the nationwide telephone network to connect terminal equipment other than PBX's, key telephone systems, main station telephones, and coin telephones to the network without the need for carrier-supplied connecting arrangements, provided they comply with the standards incorporated in the registration program to protect the network from harm. For the reasons stated in paragraph 18 of that Report and Order, comments are being requested on the planned inclusion of PBX's, key telephone systems, and main station telephones in the registration program.

Accordingly, IT IS ORDERED, that interested parties may file comments not later than December 11, 1975, directed to the planned inclusion of PBX's, key telephone systems and main station telephones in our registration program.

FEDERAL COMMUNICATIONS COMMISSION

Vincent J. Mullins
Secretary

10. The Carterfone Decision placed the burden of proof squarely upon the carriers -- not the users or this Commission -- to demonstrate that a particular unit or class of customer-provided equipment would cause either technical or economic harm to the telephone network, note 4, supra; this burden was to be met prior to the filing of a tariff restricting the use of such equipment. The information accompanying the tariff revisions filed pursuant to Carterfone did not demonstrate that the direct electrical connection of all customer-provided equipment would cause harm unless accomplished through the carrier-supplied connecting arrangements provided for in the tariff. At best, it simply reflected one manner in which to protect the network. It was not even argued that this protection was the minimum protection required or the most cost effective. Nevertheless, the Commission, exercising an abundance of caution in protecting the telephone network from any possible harm, allowed the tariffs to become effective without ruling explicitly on their lawfulness. 5/

11. At the same time, the Commission instituted informal proceedings to obtain technical and operational data to assist its evaluation of the public interest factors involved in liberalizing the network control signalling unit and connecting arrangement provisions of the revised tariffs. Contracts to study these possible revisions were issued to the National Academy of Sciences and Dittberner Associates, and their subsequent reports together with comments from interested parties indicated that consideration should be given to revisions in MTS and WATS offerings under a program that would protect the telephone network from four types of harm: (a) hazardous voltages; (b) excessive signal power levels; (c) improper network control signalling and (d) line imbalance. Thereafter, the Commission created two advisory committees, pursuant to Executive Order 11007, to study the possibilities of initiating such a standards program for selected classes of equipment such as (1) customer-provided PBX's and (2) automatic dialers and recording and answering devices.

DOCKET NO. 19528 PROCEEDINGS

12. On June 14, 1972, the Commission instituted this proceeding by Notice of Inquiry and Proposed Rule Making, 35 FCC 2d 539 (1972), to determine whether and under what terms, conditions, or limitations the interstate MTS and WATS tariffs should be revised to allow customers to have the option of furnishing any needed network control signalling units and connecting arrangements (or the functional equivalent thereof), and to determine what rules, if any, the Commission should adopt with respect to the foregoing. In addition, a Federal-State Joint Board was established pursuant to Section 410 of the Communications Act of 1934, as amended, to submit its recommendations to the Commission concerning this matter.

5 / AT&T "Foreign Attachment" Tariff Revisions, 15 FCC 2d 605 (1968), reconsideration denied, 18 FCC 2d 871 (1969).

13. In our First Supplemental Notice in Docket No. 19528, 40 FCC 2d 315 (1973), we questioned whether, at that time, it was feasible from a technical, engineering, operational and administrative viewpoint to establish an optional program in lieu of or in addition to the present tariff requirements for carrier-provided network control signalling units and connecting arrangements and requested comments concerning a number of reports and proposals. These reports and proposals include: (1) the report and recommendations of the PBX Standards Advisory Committee; (2) the proposal of the Office of the Chief Engineer of this Commission; and (3) the proposal of the National Association of Regulatory Utility Commissioners (NARUC) Staff Subcommittee Report on Communication Interconnection. In addition to these specific proposals, we also invited comments concerning other alternatives such as: (1) the Rochester Telephone Company's NPD program; (2) the establishment of standards by the carriers and the incorporation of such standards in tariffs or technical references with the carriers being responsible for the program's enforcement; and (3) leaving the tariffs unchanged but requiring the carriers to improve their services and applying the same practices to both carrier and customer-provided facilities. The Joint Board we convened in this matter has reviewed these comments and issued its Recommended First Report and Order which is presently before us for consideration.

14. The Joint Board has proposed that customer and carrier-provided ancillary and data terminal equipment be directly connected to the telecommunications network if it is registered with the Commission under a program similar to this Commission's existing type acceptance program for radio transmitting equipment. The proposed plan is to apply to all terminal equipment other than PBXs, key telephone systems, main telephones, extension telephones and coin telephones. Registration is to be based on representations and test data submitted by an applicant to the Commission. If the representations and test data concerning a particular device are found to comply with specific interface criteria and other requirements and the Commission determines that it is in the public interest, convenience and necessity, such device would then be registered. The Joint Board proposal would require each device to have affixed to it installation, maintenance and operating instructions, and would allow connection of registered devices to the network to be accomplished through the use of standard plugs, jacks and other simple arrangements as provided in tariffs.

15. The California Public Utilities Commission in its General Order No. 138 has adopted rules permitting the direct attachment to the telecommunications network of customer-provided ancillary and data terminal equipment and of protective couplers where they have been certified by a registered electrical engineer qualified in the field of communications equipment. The program applies only to customer-provided equipment, not to carrier-provided equipment. Certification is based on the registered engineer's examination of the design and operating characteristics of the device, the manufacturer's quality control

procedures, and the servicing. The test standards and enforcement procedures regarding these factors are not specified in the plan, but are left to the discretion of the registered engineer. After being granted a registration number, the manufacturer must keep records of his quality control procedures, and these records are to be examined annually by the certifying engineer. Further, manufacturers or vendors must offer a maintenance contract with all certified equipment.

16. We have given careful consideration to American Telephone and Telegraph Company's (AT&T) connecting arrangement program (AT&T Tariff F.C.C. No. 263, Sections 2.6.4 (A)(1); (2) and (3); 2.6.4 (B)(1); 2.6.4 (D)(1)(a)), 6 / AT&T's manufacturer attestation program for customer-provided headsets and non-powered conferencing equipment (Tariff 263, Section 2.6.4 (E)), 6 / AT&T's conformance program (APCM program) for answering devices (Tariff 263, Section 2.6.4 (F)), 6 / the Rochester Telephone Company's NPD program (Tariff 263, Section 2.9), the reports of the National Academy of Sciences and Dittberner Associates, the various reports of the several advisory committees and subcommittees, the recommendations of the Federal-State Joint Board, the California registration program, and all the comments of the many parties who have participated throughout the various stages of the proceedings herein. In addition, we have noticed other reports and materials, and where such were used in arriving at our findings they are so noted. In the seven years which have elapsed since our Carterfone ruling, the carriers have been afforded ample opportunity to propose effective procedures and/or tariff conditions to prevent harm without unduly restricting a customer's basic right to make reasonable use of the facilities and services furnished by the carrier. This the carriers have failed to do (with the possible exception of non-powered conferencing devices, headsets and conforming answering devices). The evidence before this Commission amply demonstrates that many "special" entities (e.g., gas, oil, electric, and transportation companies, selected industrial firms, the Department of Defense, the National Aeronautics and Space Administration, and customers in "hazardous or inaccessible locations") have long been and continue to be allowed to connect their equipment and facilities directly to the telephone network by means less restrictive than carrier-provided connecting arrangements (Tariff 263, Sections 2.7.5, 2.7.6, 2.7.7 and 2.7.8) apparently without causing harm to the network. We also note that there has been no demonstration of network harm resulting from the interconnected operation of some 1600 independent local telephone companies and the Bell System (including small rural, municipal, and co-op systems) -- many of whom purchase and connect without benefit of carrier-supplied connecting arrangements the identical independently manufactured terminal equipment for which the individual user must lease carrier-supplied connecting arrangements. Accordingly, in view of our findings in this proceeding concerning the mechanisms which can cause technical harm and effective means for preventing such harms, the Commission has now reached three separate and independent conclusions.

6 / Similar tariff provisions appear in other sections of Tariff 263 (MTS) as well as Tariff 259 (WATS).

First, the present tariff provisions requiring the use of carrier-supplied connecting arrangements impose an unnecessarily restrictive limitation on the customer's right to make reasonable use of the services and facilities furnished by the carriers. Second, they constitute an unjust and unreasonable discrimination both among users (or classes of users) and among suppliers of terminal equipment. Third, the standards and procedures prescribed herein for the registration with this Commission of protective circuitry and/or terminal equipment will provide the necessary minimal protection against network harm which has been specified in various carrier operating procedures and/or the recommendations of the Joint Board, the California PUC, the NAS and Dittberner studies, and the Commission's interconnect advisory committees, and will serve the public interest. Equipment containing the appropriate FCC registered protective circuitry, or FCC registered terminal equipment, may, following the effective date of this Order, be connected directly with the telephone network pursuant to the procedures set forth in these rules, without benefit of carrier-supplied connecting arrangements. Carriers may continue to provide such connecting arrangements, if registered, and may require their use for equipment not registered with the FCC or not used in conjunction with appropriate FCC registered protective circuitry. Except as herein provided, carriers may not require the use of such connecting arrangements or other interface devices or arrangements for FCC registered equipment or protective circuitry, and may not impose other tariff conditions contrary to the Carterfone policy without prior approval of the Commission.

THE F.C.C. REGISTRATION PROGRAM

17. The program which we are adopting was designed with the goals of (1) protecting the public switched telephone network from harms which might be caused by connection of terminal equipment to the network and (2) keeping the program as simple and easy to administer as is reasonably possible with a minimum of government intervention. Basically the program allows users to connect any terminal equipment to the telephone network if such equipment is connected through protective circuitry registered with the Commission or if such equipment is itself registered with the Commission. The option of registering only discrete protective circuitry rather than the entire terminal equipment will (1) eliminate unnecessary documentation relating to total system design and performance criteria (Even for complex terminal equipment and/or systems, this option will require documentation relating only to the discrete protective circuitry.); (2) remove the need for filing proprietary information, thus eliminating the need to establish cumbersome procedures for handling such information; (3) allow users and manufacturers greater flexibility in satisfying the requirements of our registration program through the separate purchase of protective circuitry, if desired; and (4) enable us to administer our registration program with an absolute minimum of expense to both the government and private industry -- to the benefit of the ultimate users -- while at the same time protecting the public switched telephone network from harms which could be caused by the connection of faulty terminal equipment.

18. As noted above, the Federal-State Joint Board recommended that PBXs, key telephone systems, and main station, extension and coin telephones be excluded from the registration program at this time, thus requiring that these devices continue to be interconnected with the network via carrier-provided connecting arrangements. In this respect the Joint Board plan differed from that proposed in 1972 by the FCC's Office of the Chief Engineer, although the Joint Board largely adopted the Chief Engineer's proposal. Many parties have urged that some or all of these classes of terminal equipment be included, and point to the Joint Board's failure to provide any basis for such proposed exclusion. While it did not explicitly so state, we believe the Joint Board's recommendation to defer inclusion of these devices was based primarily on technical concerns relating to the more complex network control signalling functions performed by some of these devices. In view of the clarification of network harms; the delineation of the roles, responsibilities and incentives of the various parties in protecting against these harms; and the registration standards and procedures contained herein, we believe that many if not all the technical concerns reflected in the Joint Board's exclusion of these equipment classes have been mooted. With this clarification, we are tentatively of the view that there is no valid distinction as to the potential for harm from any of the excluded classes of devices. However, since all parties may not have considered it necessary fully to address the inclusion of PBX's, key telephones, and main stations at this time, in view of the Joint Board's recommendation, we shall afford interested parties an opportunity to comment further on the inclusion of these classes of equipment. Accordingly, PBX's, key telephone systems, main station telephones, coin telephones, and equipment connected to party lines 7 will be excluded from the registration program established herein, pending further order of the Commission. 8 /

7 / Since we do not now have interconnection criteria for party line service, we will, in the meantime, allow customer-provided terminal equipment to be connected through carrier-provided connecting arrangements as is now done under presently effective tariffs. Coin telephones are excluded because, under present regulatory policies, only telephone carriers may provide coin telephone service.

8 / While the rules proposed by the Joint Board listed extension telephones in the equipment to be excluded from the registration program at this time, we conclude that extension telephones properly fall within the category of "ancillary" devices included in the Joint Board recommendation. The record supports our view that there is no valid technical distinction between extension telephones and other "ancillary" devices. Because the standards adopted herein are equally applicable to extension telephones and because inclusion of extension telephones does not represent a significant departure from the Joint Board's recommendations, we feel that the public interest is best served by the prompt inclusion of extension telephones within the scope of our registration program.

19. Several of the parties to this proceeding have suggested that it would be inappropriate to adopt new policies concerning interconnection prior to collection and evaluation of the pertinent data filed in Docket No. 20003 concerning the economic effects of such interconnection. Recognizing that Docket No. 20003 constitutes a broad fact-finding investigation of the economic implications and interrelationships among a number of industry developments, policies, and practices -- some instituted pursuant to regulatory policy, others carrier-initiated -- we previously held that "the commencement of the notice of inquiry in Docket No. 20003 does not necessarily preclude further action in Docket No. 19528."^{9/} In short, the Docket No. 20003 inquiry is not to become a "dumping ground" for existing docketed proceedings. Consistent with Carterfone, *supra*, as well as the more recent decision in Mebane, 53 F.C.C. 2d 473 (1975), we will afford any carrier the opportunity to demonstrate the need to restrict specific instances or classes of interconnection on the grounds of economic harm, and will continue to examine the broad, long-term and interrelated implications of interconnection, jurisdictional separations, and rate structures in Docket No. 20003. The present decision relates only to the requirements which interconnected devices must satisfy in order to avoid technical harm to the telephone network. In view of our findings in paragraph 16 above, we believe that the public interest would be best served by the prompt implementation of our registration program.^{10/}

20. The carriers have argued that, as they have every incentive as well as the technical and operational means to maintain a high quality service, a registration program for carrier-supplied equipment is unnecessary, and may impose additional expenses on them which must ultimately be borne by the telephone user. We do not question the carriers' dedication to high quality service, nor their desire and ability to protect

^{9/} Economic Implications Relating To Customer Interconnection, Jurisdictional Separations, and Rate Structures, Docket No. 20003, 49 F.C.C. 2d 1238, 1240 (1974).

^{10/} Our Carterfone policy has permitted the public to utilize various types of equipment with the public communications network. It is our firm belief that public benefits have resulted from this policy. The purpose of Docket 19528 is not to revisit Carterfone but rather to review the present limitations imposed on the attachment of equipment to this network. Thus, issues relating to the potential overall economic impact of the Carterfone policy are beyond the scope of this proceeding. The potential economic consequences of any decision in this proceeding are minimal, since they affect only the differential costs and revenues associated with customer-provided vis-a-vis carrier-provided protective circuitry and procedures -- not with the terminal device per se. In view of this we would expect that the parties in commenting on PBXs, key telephone systems, and main station telephones would limit their arguments to relevant matters and not to the basic policy decision enunciated in Carterfone.

the network from any harms which might be caused by carrier-supplied equipment. However, we note that carrier-supplied terminal equipment possesses the same potential for harm to the network as does customer-supplied equipment -- particularly in view of the fact that much carrier-supplied equipment is purchased from independent manufacturers who market identical equipment to the general public. We also expect that the information provided by the carriers in their registration applications will be of considerable aid to the Commission as a benchmark against which other applications may be judged. Furthermore, when one participant in a competitive market is subject to regulatory constraints (e.g. registration of equipment) while another is not, there exists the possibility of using the registration, notification, and complaint standards and procedures for competitive advantage. In a related proceeding, the Courts have already commented on such a situation; 11/ and the carriers themselves have made the same argument in similar circumstances. These countervailing considerations require a careful weighing to ascertain wherein the overall public interest rests. On balance, and particularly in view of the relatively straightforward and inexpensive registration program we envision, we believe the public interest will best be served by requiring that carrier-supplied terminal equipment be registered, and consistent with the Joint Board recommendation we shall so order. However, we plan to reexamine the situation within the first year of operation of this registration program to determine whether the public benefits of requiring registration of carrier-provided equipment continue to outweigh any costs resulting therefrom, and to rule accordingly.

Technical Requirements

21. The National Academy of Sciences, in its 1970 report to the Commission, identified four areas of potential "harm" which might arise as a consequence of permitting uncontrolled direct connection of equipment to the telephone network: (1) hazardous voltages, (2) excessive signal power levels, (3) excessive longitudinal imbalance, and (4) improper network control signaling. The National Academy of Sciences reported that the carrier-provided protective connecting arrangements protected against such "harms" within the boundaries of acceptableness regardless of the design of particular equipment connected thereto. Our program adopts a similar approach. We have specified the boundaries which may not be exceeded for each of hazardous voltage, signal power and longitudinal imbalance. Without

11/ Hush-A-Phone v. U.S., 238 F. 2d 266, 268-69 note 9 (D.C. Cir. 1956).

requiring any particular circuit design to be employed, we have required that the design of registered terminal equipment and registered protective circuitry assure that these boundaries are not exceeded, and will continue not to be exceeded, under foreseeable usage and mechanical and electrical stress. Registered protective circuitry is required to provide assurance of conformance to our interface requirements regardless of the particular equipment connected thereto and regardless of what failure modes such equipment may manifest. Registered terminal equipment is required to provide such assurance under all foreseeable failure modes of such registered terminal equipment and of equipment expected to be connected thereto. Such assurance may be provided either by incorporating protective circuitry in the registered terminal equipment, or, alternatively, by virtue of a design which precludes violation of the boundary constraints.

22. With the exception of on-hook impedance, we do not believe it is necessary to impose standards upon network control signaling. We are not persuaded that individual violations of criteria on compatible network control signaling will have any significant effect upon the telephone service of other telephone network users. Improper network control signaling will most directly affect the telephone service of the user of equipment which generates improper network control signals. A user thus has no incentive to generate improper network control signals, as he will only decrease the utility of his own telephone service by so doing (e.g. fail to receive telephone calls, be unable to generate telephone calls, or reach wrong numbers); thus we feel that any problems which may arise will be self-correcting. We would note that the present telephone company-provided connecting arrangements do not fully protect against improper network control signaling,^{12/} and that since such connecting arrangements were first offered in 1969, the carriers have not increased the level of protection against improper network control signaling provided by their connecting arrangements. From this we conclude that improper network control signaling has not been a significant problem to the carriers, and that the presently-effective approach of specifying proper network control signals in the tariffs, and in informational materials ("Technical References") distributed to equipment manufacturers has been effective, and has provided the requisite protection. We encourage the carriers to continue to provide informational materials to equipment manufacturers and others concerning network control signaling,^{13/} and commend the reports of our advisory committees on PBXs, telephone answering devices and telephone dialers to the attention of equipment manufacturers as one source of such information.

^{12/} See Docket No. 19419 Tr. 3980-85; 3987-93; 4328-29; 4546-50; 4552-54; 4561-65; 4969-73, Testimony of L. Hohmann. Tariff F.C.C. No. 263, § 2.6.3.

^{13/} Section 68.110(a) imposes the requirement that the carriers supply compatibility information upon request; to the extent that such informational materials effect compliance with this rule, no additional action by the carriers will be necessary.

23. Should improper network control signaling proliferate on the telephone network, the point could be reached where telephone facilities which are shared among many network users (e.g. central office equipment, trunks, etc.) would be nonproductively engaged in reaching wrong numbers, and incomplete calls, etc., which would degrade the overall service quality. While we are convinced that such a situation will not arise, due to the self-correcting mechanisms previously noted, we would be receptive to amending our rules at any time to include evaluation of network control signaling functions of registered terminal equipment and registered protective circuitry, or to provide for manufacturer attestation of compatibility, should evidence to the contrary become available.

24. The technical requirements pertaining to registered terminal equipment and registered protective circuitry are contained in Subpart D of Part 68, and are explained in the following paragraphs. The term "reasonable application of earth ground", which appears in several of the rules in Subpart D, deserves particular note. Because the connection of earth ground to registered terminal equipment and registered protective circuitry may cause noncompliance with several of the technical requirements, it is important that such registered terminal equipment and registered protective circuitry be properly insulated and isolated from any "reasonable application of earth ground". In evaluating equipment, the following guidelines should be followed:

- a. For protective circuitry, "reasonable application of earth ground" shall include physical contact of all exposed surfaces of the circuitry with a conductor connected with earth ground, and of physical contact of each non-telephone line connection with a conductor connected with earth ground, and with all possible combinations thereof;
- b. For terminal equipment, "reasonable application of earth ground" shall include all reasonably foreseeable possibilities whereby earth ground may become connected with such equipment, including the possibility of physical contact of all exposed surfaces with a conductor connected with earth ground, the possibility of connection with earth ground of each power-line connection, and the possibility of connection with earth ground through foreseeable connection with other equipment.^{14/}

25. Environmental Stress Simulation. Registered terminal equipment and registered protective circuitry will be subjected to various environmental conditions during shipment and use, and accordingly we have required, in Section 68.302, that harm does not arise in registered equipment either prior to, or after the application of therein-specified stresses.

^{14/} Foreseeable additional connection; must include all expected possibilities, such as accessory sockets (e.g. an earphone jack).

A P P E N D I X D

GLOSSARY

GLOSSARY

- CAC - Consumers Association of Canada
- CBEMA - Canadian Business Equipment Manufacturers Association
- CICA - Canadian Industrial Communications Assembly
- CIST - Canadian Institute for Studies in Telecommunications
- CMA - Canadian Manufacturers Association
- EEMAC - Electrical and Electronic Manufacturers Association of Canada
- Interconnection - A term used, especially in the U.S.A. to describe the attachment of customer provided equipment to the public switched network. Terminal attachment, the term officially used in Canada, is generally synonymous with interconnection as used in the U.S.A.
- Quality of Service - See Reference 16.
- Signalling(IEEE Definition) - (1)(telephone switching systems). The transmission of address and other switching information between stations and central offices and between switching entities.
Note: Telephone dials and touch-tone pads are common addressing devices.

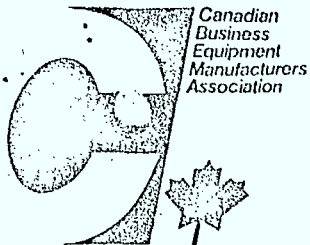
(2) In a telephone system, any of several methods used to alert subscribers and operators.
Note: Ringing of the called party's telephone bell is the most familiar example.
- Transmission Parameters - This is a generic term having a wide range of meanings. However, in the TAPAC context, it is frequently used to mean telephone air-to-air input-output characteristics. These refer to the acoustical output level of a telephone set as a function of the acoustical input level of another telephone set to which it is connected via the telephone network.

A P P E N D I X E

EXTRACTS FROM TAPAC MINUTES

APPENDIX E - EXTRACTS FROM TAPAC MINUTES

1. CBEMA letter December 3, 1979
2. Report of Task Force C Activities June 19, 1980
3. TAPAC Minutes of Meeting, September 11, 1981



Ref 1.
6380-29

December 3, 1979

Mr. M.E. Melnyk
Chairman, TAPAC
Government of Canada
Department of Communications
300 Slater Street
Ottawa, Ontario
K1A 0C8

Dear Mr. Melnyk

CBEMA believes that for a number of reasons, it is now an appropriate time for a re-evaluation of the DOC Terminal Attachment Program (TAP). The purpose of this letter is to address this subject.

CBEMA's objective at the start of this program was to obtain less restrictive and more cost effective access to the carriers' networks for customer-provided equipment. We felt such an objective was possible without jeopardizing the integrity of the carriers' networks or endangering carriers' maintenance personnel.

Our concept was to develop a set of specifications necessary for network protection to which equipment manufacturers could design. In our view, any equipment which was certified to meet the specifications should be eligible for attachment to the network. The specifications would apply to all equipment attached to the network, would be established through consensus under the supervision of an independent body such as the DOC or CRTC, and should be as compatible as possible with specifications for similar programs in other countries, particularly those being developed by the FCC in the U.S.A. In addition, we felt that compliance with the specifications should be administered through an independent agency such as the DOC or CSA. Certification of compliance would be obtained through either submission of test results to the certifying agency or through the submission of equipment for testing.

We foresaw a number of advantages to such a program, including the following:

- a) an alternative to the need for carrier-provided protective couplers on the telephone network. This would have numerous benefits, such as:

- i) improved reliability and fault isolation through integration of network protective features in the terminal equipment
 - ii) providing users with more control over installation schedules, eliminating delays sometimes caused by lack of availability of couplers, and eliminating some of the administrative burden
 - iii) removing the need for the proliferation of different types of couplers for different types of equipment
 - iv) the potential of lowering cost attachment for users.
- b) ease of extension of the program to all equipment which is eligible for attachment.
 - c) a workable program, providing protection to the carriers' networks with a minimum of administrative overhead and resulting cost.
 - d) Similarity of the specifications to those that were being developed in the United States. This would result in lower cost and wider availability of equipment to Canadian business, and easier reciprocal access to the markets on either side of the border. The latter point should be of special advantage to Canadian manufacturers, since it opens up a far greater market to them.

CBEMA believes that while the TAP initially held promise of meeting many of these objectives, today it is growing in complexity, restrictiveness and cost and diverging from the comparable FCC program in the U.S.A. We believe that this is a particularly opportune time to evaluate the direction the program is taking, and to take corrective action. This is especially important in view of the Bell Canada filing with the CRTC which gives increased significance to the role of the TAP.

CBEMA believes that there are three basic problems with the TAP that must be addressed at this time. These are the nature of the testing procedures, the unnecessary restrictiveness of the specifications and the limited geographic applicability of the program. These problems are outlined below.

Testing Procedures

The fundamental problem is the requirement that the DOC must perform all the testing to obtain certification. There are serious consequences of this that are causing rapidly increasing complexity and will result in increased costs of the program.

The most serious drawback of the "DOC testing only" approach is the resulting requirement to devise "standardized" testing procedures. In order to test that the output of a device is within specification, the DOC laboratory must have some means of providing an input, or of activating the device. Trying to build this into a standard is extremely difficult, since each type of equipment has a different media for input, (e.g. a document for a facsimile machine, a digital signal for a modem, a recording for an answering machine), and every manufacturer's models of this various equipment will implement the functions in a different manner using different technologies. Even for the simple devices the program has dealt with to date, establishing input standards for testing has been difficult. As the program expands to cover a potentially wide variety of new device types, this problem will become unmanageable. Thus, the program has shifted from the relatively straightforward job of defining a set of standards to adequately protect the network to the extremely complex job of standardizing test procedures. Such procedures are artificial, and in our view, place an unnecessary burden on manufacturers, the DOC laboratory, and on the overall administration of the program.

CBEMA believes a much more sensible approach is to permit manufacturers to test equipment for the environment and application of its intended use, and to submit the testing method and test results to the DOC, or other authority, for approval and certification. Such an approach would have many benefits, including:

- removal of the need to standardize testing procedures and define input standards for each device type
- elimination of much of the sophisticated test equipment in the certification laboratory - thus lowering the cost of the program
- elimination of the need for manufacturers to design and test for artificial inputs in addition to normal operational inputs - thus eliminating duplication and avoiding unnecessary product cost
- the DOC or independent laboratories could perform testing services for manufacturers who may not have adequate facilities.

Specifications

The second concern deals with the unnecessarily stringent and overly comprehensive specifications which are being imposed on the program by the telephone companies. These specifications are far more embracing than the network protection that is provided by the protective couplers. They are also much broader in scope and often more restrictive than the specifications of the comparable FCC program in the United States. This results in a program that will reduce the availability and increase the cost of equipment for use by Canadian businesses.

As an example, Bell Canada have now proposed a new 107-page document (TCS-01) as a proposed standard for single line network-addressing equipment which introduces many new and more stringent specifications. The attachment to this letter compares the specifications of the FCC program with this TCS-01 proposal. A glance will show that something is out of line. Of the 56 parameters considered, 33 are unique requirements of TCS-01 and another 8 are more stringently applied in TCS-01 than in the FCC program. In comparison, the FCC program specifies only 1 unique requirement and only 2 parameters are more stringent. The FCC program has had the advantage of considerable resources in its conception and extensive application to date. We believe that the degree of network protection provided by the FCC program is adequate, and to our knowledge, there is no evidence to the contrary.

Geographic Coverage

Our third concern deals with the jurisdiction of the TAP. As the program becomes more complex and restrictive, the cost of product development increases and the cost of certification testing increases. This results in increased cost to Canadian users and decreased efficiency of Canadian business. The cost effects are amplified because such products are still only certifiable for British Columbia, Ontario and Quebec. This is a small market to justify such costs. It does not help Canadian manufacturers that they must incur these extra costs to market only in B.C., Ontario and Quebec. Canadian manufacturers would have a greater advantage if they could develop and test their products for the North American market without unique specifications and additional testing costs in their home markets.

The problems we have identified can be addressed and hopefully can all be solved, but they require some basic re-evaluation of how the TAP should operate. They require, for example, re-evaluating the concept of testing by manufacturers with some form of attestation or other control. It is time to stop the proliferation of new and more stringent specifications and to see if we can establish requirements in line with those of the FCC program with the objective of obtaining, at a minimum, North American

Mr. M.E. Melnyk
Page Five
December 3, 1979

comptability. It is also time to evaluate what can be done to make the program acceptable to the provinces whose telephone companies are not federally regulated.

CBEMA believes that the above issues are critical to the TAP and must be faced now. We urge that the Advisory Committee recognize these problems and undertake action to resolve them.

Yours truly



K.C. Lees:ml
CBEMA Representative

cc: TAPAC Members

Mr. D.J. Flood - CBEMA

June 19, 1980

TO: TAPAC MEMBERS

FROM: M. MELNYK,
CHAIRMAN, TASK FORCE C

Ref. see page 4
Item VI c.

REPORT OF TASK FORCE C ACTIVITIES

I. TASK FORCE C MEETING - SEPTEMBER 6, 1979

RESULTS:

- a) General agreement to confine the work activities of the task force to a single line individual service interface standard.
- b) Bell Canada tabled two documents outlining criteria for network protection. These included:
 - 1. Electrical energy which is hazardous to the public and Bell Canada personnel.
 - 2. Damage to network components by electrical energy or improper connections.
 - 3. Interference with the normal functioning of network equipment including billing equipment.
 - 4. Degradation of service to other users of the network.

The Bell Canada criteria were accepted as a general framework to be used in the development of draft network addressing standards.

- c) General agreement to the plan for the development of a draft standard for network addressing equipment.
- d) Bell Canada indicated that a draft standard for single line individual service could be made available to all members by September 28, 1979.

II. TASK FORCE C MEETING - OCTOBER 31, 1979.

RESULTS:

- a) Review of Bell Canada Draft Terminal Connection Standard TCS-01 dated September 28, 1979 in three classes:

CLASS 1 - Parameters which are specified in CS-01 or CS-02 and which are applicable to

network addressing devices with appropriate changes to the threshold values and methods of measurement:

- Extraneous Energy
- Transmitted Signal Energy
- Terminating Characteristics
- Hazardous Electrical Energy
- Other Characteristics.

CLASS 2 - Parameters which are not specified in CS-01 or CS-02 and which are applicable primarily to network addressing devices such as telephone sets:

- Dial Pulse Network Control Signalling
- DTMF Signalling
- Billing Protection
- Alerting Characteristics
- Transmission Characteristics
- Other Characteristics.

CLASS 3 - Parameters which are not currently or adequately specified in CS-01 or CS-02 and which are applicable to both network addressing and network non-addressing devices:

- Environmental Simulation Conditioning Procedures.
- Extraneous Energy
- Transmitted Signal Energy
- Hazardous Electrical Energy

- b) Agreement to form a subcommittee to determine and establish appropriate values and test methods for the parameters agreed upon at the meeting.

III. TASK FORCE C SUBCOMMITTEE MEETINGS

- NOVEMBER 8 & 22, 1979

RESULTS:

- a) Preliminary review of all parameter values and test method requirements.
- b) Identification of parameters which required further review and additional work.

IV. TASK FORCE C MEETING

- DECEMBER 4, 1979

RESULTS:

- a) Agreement that the initial draft single line standard being developed by the task force for TAPAC would

contain applicable parameters and test methods extracted from CS-01 or CS-02 in their existing form. Bell Canada agreed to produce rationale, where applicable, for any changes in parameters unique to network addressing devices.

b) It was finally decided for the sake of expediency to accept the Network Control Signalling Parameters. All members agreed to include them in the draft standard with the proviso that these will not be interpreted as a precedent to bring in other performance requirements into the standard.

c) Agreement to delete the following requirements from the draft standard:

- Electromagnetic Susceptibility
- Transmission and Reception of Data
- Mechanical Rotary Dial Wind Time
- DTMF Network Non-Control Signalling
- Alerting Device Acoustic Output.

d) Unresolved items included the following:

- Environmental Simulation
Conditioning Procedures
- Off Hook Terminal Resistance
- Other Single Frequency Restrictions
- DTMF Tone Leak
- Alerting Characteristics
- Transmission Characteristics.

e) Agreement that further discussion was required on the subject of network harm.

V. TASK FORCE C SUBCOMMITTEE

- MEETING - JANUARY 15, 1980

RESULTS:

- a) Resolution of parameter values and test methods for various parameters.
- b) Recommended the compilation of the first draft of a network addressing standard.

VI. TASK FORCE C MEETING - JANUARY 29, 1980

RESULTS:

- a) Discussion continued on network harm criteria. Industry & user representatives voiced reservations on the validity of recognizing second party harm. It was realized that second party harm is directly dependent on the definition of quality and grade of service, so that the development of parameters related to it could

not be completed immediately.

- b) Industry and user representatives questioned the need for a complex method of measurement for Transmission Characteristics since the method is subjective. Alternative test methods were to be investigated.
- c) Agreement to place the parameters related to second, party harm in the draft standard with the proviso that they are subject to change as second party harm is more clearly established.
- d) Resolution of parameters - Answering Supervision
CSA Approval, DTMF Tone Leak, Call Progress Tones
(deleted)
- e) Discussion on Environmental Simulation parameters.
Unresolved.
- f) Agreement that DOC should start assembling the draft single line NAD Standard.
- g) Bell Canada indicated that a standard document for key telephone systems was available.

VII. TASK FORCE C SUBCOMMITTEE

- FEBRUARY 13, 1980

RESULTS:

- a) Development of test methods for Network Control Signalling parameters.
- b) Outline of problem areas and samples of test results were presented.

VIII. TASK FORCE C SUBCOMMITTEE MEETING

- MARCH 25, 1980

RESULTS:

- a) Development of test methods and test parameters for additional parameters.
- b) Review of progress. First draft of CS-03 distributed to members for evaluation and discussion.

IX. TASK FORCE C MEETING - MARCH 26, 1980

RESULTS:

- a) Discussions on the comparison of the FCC program and the DOC program.
- b) Bell Canada removed the requirement for Electrostatic Stress.

- c) Discussions on Environmental Simulation Conditioning requirements. Referred to TAPAC to determine whether these parameters should be included in the draft standard or reject them as being part of product quality assurance.
- d) Initial discussions on Automatic Call Initiation and Scaling.

X. TASK FORCE C SUBCOMMITTEE MEETING

- April 15, 1980

RESULTS:

- a) Discussion of draft CS-03.
- b) Review of Non-Network Ports.

XI. TASK FORCE C MEETING - April 17, 1980.

RESULTS:

- a) Discussion on Transmission Characteristics. Additional input requested.
- b) Discussion on Automatic Call Initiation. Additional input requested.
- c) Further discussions on Environmental Simulation.
- d) Cost estimates for test equipment and testing time were reviewed.
- e) Bell Canada presented a paper on scaling of terminal equipment and a copy of a standard for key telephone systems.

XII. TASK FORCE C SUBCOMMITTEE MEETING

- MAY 21, 1980

RESULTS:

- a) Review of draft CS-03.
- b) Resolution of outstanding issues.

XIII. TASK FORCE C MEETING

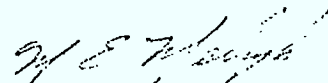
- MAY 23, 1980

RESULTS:

- a) Review of progress on the draft single line standard.
- b) Discussion of Transmission Characteristics. Various

proposals were presented. To be reviewed at the next subcommittee meeting on June 24, 1980.

- c) Discussion on Automatic Call Initiation. Bell Canada and B.C. Telephone to respond to industry input.
- d) Further discussions on Environmental Simulation Conditioning parameters. This item was unresolved and further direction is to be requested from TAPAC.
- e) Further discussion on testing procedures and testing times.
- f) Review of proposed schedule for the development of a draft standard for key telephone systems. Schedule to be submitted to TAPAC for approval.
- g) Bell Canada standard for key telephone systems to be reviewed by committee members.
- h) Discussion of the Bell Canada paper on terminal equipment scaling. Committee members are to submit comments to Bell Canada.
- i) Agreement to recommend to TAPAC that the committee commence the development of draft network addressing standards for key telephone systems.



M.E. Melnyk
Chairman, Task Force C.

TERMINAL ATTACHMENT PROGRAM ADVISORY COMMITTEE

MINUTES OF MEETING

SEPTEMBER 11, 1981

PLACE: Room 520, Journal Tower South
365 Laurier Ave. West
OTTAWA, Ontario.

ATTENDEES:

REPRESENTING:

1. MEMBERS

M. Melnyk
H. Mar
D.J. Slind
A.J. Robinson
E.H. Rowe
J. Tapsell
E.M. Wade
M.J. Eric
J.L. Wood
D.M. Ferguson
J.J. Goodall
T. Mimeo
D. Gilvary
R.B. Bulger

DOC (Chairman)
DOC (Secretary)
CN Communications
CBEMA
Gov't of Newfoundland
CMA
CICA/CAC
CNC Telecommunications
Bell Canada
CIST
B.C. Tel
EEMAC
DOC
MTC (Ont.)

2. ALTERNATES AND OBSERVERS

L.R. Miller
A.M. Duke
D. Hogan
R. Perrin
F.M. Boivin
P. Fleury
F. McInerney
R. Wilson
S. Nakamoto
K. Cameron
M. During
K. Rabbat

CMA
DOC
CBEMA
CRTC
CRTC
Anaconda Ericsson
NBI
TCTS
Bell Canada
Bell Canada
AGT
DOC

1.0 OPENING REMARKS

The Chairman welcomed the member representatives and observers to the meeting and asked each one to introduce himself and his affiliation.

He then briefly reviewed the background related to the commencement and progress towards the development of the draft network addressing standards and that this TAPAC meeting was called to review and approve the final working draft of Standard CS-03 which incorporated revisions to accommodate PBX's, public comments and revisions related to parameter requirements and test methods. In addition, he indicated that there was parallel activity related to the development of administrative procedures.

- 1.1 The Chairman referred to the proposed agenda (attachment 1) and asked for any additions. Mr. J. Wood, Bell Canada, requested that administrative aspects of Certification Standard CS-04 (Radio Paging Terminal Equipment) be added to the agenda. Mr. A. Robinson, CBEMA, stated that they had some input on "Series Connection" which would be introduced later in the meeting.

2.0 MINUTES OF LAST MEETING

The Chairman requested if there were any revisions to the minutes of the July 10, 1981 TAPAC Meeting. Mr. J. Tapsell, CMA, stated that at the last meeting (item 4.5), CMA had agreed to the publication of the standard only when the administrative procedures were all available. The Chairman indicated that administrative procedures were being reviewed and that the prime consideration of this committee was the development of the standards.

On a motion by D. Ferguson, seconded by D. Slind, the minutes of the July 10, 1981 meeting were approved.

3.0 TASK FORCE "C" SUBCOMMITTEE REPORT

The Chairman of the Task Force "C" Subcommittee, Mr. A. Duke, reviewed the general structure of the CS-03 Working Draft (81-09-10) and he outlined the revisions made to the document as a result of the joint Task Force "C" and subcommittee meeting held on September 10, 1981. (Revisions were made to the sections on On-Hook Longitudinal Impedance, Alerting Sensitivity and the Glossary of Terms). He stated that as a result of this meeting, the document was being forwarded for TAPAC approval.

- 3.1 The process for the development of the technical standards in phases - single-line, key telephone systems and PBX equipment - was described by the Chairman. He reviewed the public comment stages and the incorporation of revisions to the standard as a result of public comments and further review in the task force. The Chairman stated that he was seeking the approval of the tabled document as CS-03, Issue 3.

3.2 Considerable discussion took place on the standard.

Mr. E. Wade, CICA, questioned how this standard will affect the interim arrangement under the CRTC decision and addressed the shortfall in the standard in relation to the interim (e.g. equipment to equipment connections are not included). The Chairman responded by outlining that TAPAC had agreed to develop the standard in phases and future work areas had already been identified. He also stated that any deficiencies in the standard in relation to the interim or final decision should be addressed in the regulatory forum.

Mr. R. Perrin, CRTC, stated that the final hearing will determine the connection of COAM equipment and that there is no guarantee that the equipment being connected under the interim will be allowed as it is at the present time.

Mr. R. Bulger, MTC (Ont.), expressed the view that there was a definite need for a Canadian certification standard and that TAPAC should set up an ad hoc technical group to update the published standard and clean up all the issues.

E. Wade, CICA, expressed the view that any deficiencies in the standard should be worked on quickly so that a smooth transition could be achieved.

Mr. J. Tapsell, CMA, supported the development of a Canadian standard. However, he stated that such a standard should be reasonable and consistent with other similar standards published anywhere and that procedures are needed to apply to the standard.

Mr. A. Robinson, CBEMA, supported the CMA position.

- 3.3 The Chairman stated that the procedures have been identified and that activity is progressing in this direction. He also stated that there was a need to separate the technical standards development from the administrative procedures and that the purpose of this meeting was to complete the standard work and to identify any further work required.

4.0 DISCUSSION AND RECOMMENDATIONS - CS-03, Issue 3

- 4.1 The Chairman requested comments from the representatives on the issuing of the standards. This question was addressed as follows:

EN COMMUNICATIONS (D. Slind)

- The standard is acceptable providing that there is a qualifying paragraph in the document or a covering letter that indicates that future revisions can be made.

CBEMA (A. Robinson)

- Any missing items from the document should be identified and a timetable prepared.
- Past objections to the standard by CBEMA should be considered.

NEWFOUNDLAND (E. Rowe)

- No problems with the standard but it should be identified that the standard is not complete and future revisions will be made.

CMA (J. Tapsell)

- CMA have issued a policy statement which should be considered.
- No objection to a Canadian standard providing that the administrative elements are in place and it should be highlighted that the standard is not complete and that future revisions will be made.

CICA/CAC (E. Wade)

- There should not be any changes made to the current document and the standard should be released, but a full disclosure of any missing items and any shortcomings should be provided.
- It should be indicated in the Gazette Notice that future revisions will be made, similar to wording in previous Gazette Notices.

CNCP TELECOMMUNICATIONS (M. Eric)

- Standard is acceptable.

BELL CANADA (J. Wood)

- Standard is suitable to be released as Issue 3.
- Additional items previously identified by Bell Canada should be included in future work.
- Complete administrative procedures can not be developed until a regulatory decision is made.

CIST (D. Ferguson)

- Standard should be released and any further work should be completed as soon as possible.

B.C. TELEPHONE (J. Goodall)

- Standard is acceptable.

MT&C (ONT.) - (R. Bulger)

- Standard is acceptable but further work needs to be done.

EEMAC (T. Minee)

- Standard is acceptable but further editorial work and consideration should be given to additional equipment items.

4.2 The Chairman summarized the views of the members:

- (a) Nine of the eleven members in attendance agreed to the release of the revised Certification Standard CS-03.
- (b) Wording should be included to indicate that future work is continuing and that revisions can be made.
- (c) A timetable should be established to identify further work required.

- (d) Further review of concerns raised by members will continue in TAPAC task forces.

5.0 FUTURE WORK

Members were requested to identify future work requirements of the Program. These included:

- (a) OPX's and tie lines for Key Telephone Systems.
- (b) Equipment to equipment connections.
- (c) Series connections
- (d) Key systems behind PBX's.
- (e) Editorial items.
- (f) Procedures.

The Chairman indicated that a timetable of future work would be developed by Task Force "C".

6.0 TASK FORCE "B" REPORT

Mr. R. Bulger, Chairman of Task Force "B" reported on the work of the Task Force "B" Editorial Committee in reviewing three documents (copies were distributed at the meeting): Network Affecting Function Approach, Connection Information and Administration and Certification of Network Addressing Equipment. He stated that CMA and CBEMA had prepared written comments which required review. CBEMA and CMA stated that they would have additional comments.

- 6.1 Mr. J. Wood, Bell Canada, expressed a desire to complete the network affecting function approach as soon as possible. The Chairman, Task Force "B", agreed to coordinate with CMA and CBEMA before a meeting on the subject to be held in Toronto on September 28th.
- 6.2 The TAPAC Chairman distributed a draft revision to the Certification Procedure, CP-01, which included previous revisions approved by TAPAC, additional clarifying information and revised forms. He also identified that the procedure was rewritten to outline a certification procedure for terminal equipment, irrespective of whether it was network addressing or network non-addressing.

7.0 OTHER BUSINESS

- 7.1 Mr. A.J. Robinson, the CBEMA representative, tabled a letter to the TAPAC Chairman which outlined an industry view on "series connection".

- 7.2 Mr. J. Wood, the Bell Canada representative, requested clarification on the administrative procedures required for the implementation of CS-04 (Certification Standard for Radio Common Carrier Paging Terminals). The TAPAC Chairman identified that the existing standard could be used for connection to the public switched network and that the question of channel connections was still under consideration by the subcommittee of Task Force "A". He also stated that the transition from installed systems (attestation to Bell Canada) to new system installations (equipment certification by DOC) was a matter to be resolved between the carrier (Bell Canada) and the regulator (CRTC).
- 7.3 The Chairman distributed copies of TRC-52, Issue 5 (Program Application Notes) which was effective August 14, 1981. This adds the following network non-addressing devices to the Program: Hotel/Motel/Message Registers, Single-Line Hold, Audio Input on Single-Line Hold, Audio Input on Multi-Line Hold, Network Non-Addressing Telephone (No Dial), and Slow Scan Frame Freeze TV Terminals.
- 7.4 A letter from Bell Canada dated July 16, 1981 to DOC was distributed for information. The subject letter gives notice to the Department that effective Feb. 1, 1982, Bell Canada will destandardize the 4-position 404B-type jack for the connection of certified customer-provided voice and data terminal equipment.

8.0 NEXT MEETING

The Chairman indicated that it may be suitable for a TAPAC meeting to be held after a timetable of future work was developed by Task Force "C".

A P P E N D I X F

ISSUES RELATED TO

"NETWORK HARM"

WHICH MAY WARRANT FURTHER STUDY

APPENDIX "F"

ISSUES RELATED TO NETWORK HARM WHICH MAY WARRANT FURTHER STUDY

During the course of this study, several issues not within the terms of reference of this study came to light. They are identified here as matters which the Department of Communications may wish to examine in greater depth.

1. National Network Protection Standards

The TAPAC Program, although it has had some participants and observers from various provinces, has been directed primarily toward the federally regulated carriers. This is borne out by the fact that at the time of writing, there is no provision whereby the DOC will certify any terminal equipment until there is actually a tariff in place with at least one of the federally regulated carriers, covering that type of terminal and identifying one of CS-01, CS-02, CS-03 or CS-04 as the appropriate technical standard.

Current moves in other provinces toward a more liberalized environment for customer provided terminals have brought the matter of appropriate standards to the surface. Alberta Government Telephones (AGT), for instance, has requested a DOC certification number of at least one Radio Common Carrier Radio Paging Terminal user, in accordance with the requirements of CS-04, at a time when there is no corresponding tariff in place among the federal carriers and the rules, as set out in Certification Procedure CP-01, do not provide for such certification to be made.

In the recent hearings (Decision E81235) of the AGT before the Public Utilities Board of Alberta the AGT stated that it had drawn on network protection standards developed by "the DOC under its Terminal Attachment Program, from standards developed by Bell Canada pursuant to a CRTC direction, and from AGT's own requirements that are deemed necessary to protect the network. The result is standards that AGT believes will be, for all practical purposes, consistent with national standards."

Mr. Peebles of the Ontario M T and C expressed the opinion, during our interview, that Ontario would be very likely to adopt the same network protection standards with respect to carriers regulated by that province that are adopted by the CRTC.

CBEMA, has expressed concern, in writing, to TAPAC, about the possibility that TAPAC generated network protection standards will not necessarily be adopted nationally. EEMAC, CMA and CICA representatives have reiterated these concerns.

It now appears that while it remains probable that individual provinces, to the extent that they permit the use of customer provided terminals, will either adopt TAPAC network protection standards or some variant of them, this will proceed on a piecemeal basis amid a great deal of uncertainty as to what standard or what procedure is likely to be applicable in a given jurisdiction. This is a developing problem which needs early resolution. The DOC could take a lead role to initiate appropriate action.

APPENDIX "F"

(Continued)

2. Jurisdiction Over Consumer Protection

There is a strong feeling within industry that the definition of "network harm" tabled by the telephone companies and adopted by TAPAC goes beyond actual network harm and includes performance characteristics, which although labelled second party harm, are really consumer protection matters. Mr. Murray of CBEMA commented that it is not at all certain that second party harm falls within federal jurisdiction.

The Ontario Ministry of Transportation and Communications (Mr. Peebles) emphasized that consumer protection of the buyer/user, i.e. the first party, is a provincial, not a federal matter.

Although the telephone companies indicated that it is not their objective to protect the owner of customer provided equipment (CPE) against making a bad investment, it is apparent that the performance characteristics that have been identified as potential sources of "second party harm" would also have equal relevance to the user/owner (the first party).

The Department of Communications may wish to seek legal opinion as to whether or not first party and second party protection are federal matters.

3. Operational Difficulties in Implementing the Standards

The quantity and diversity of apparatus coming on the market is proliferating rapidly. Some of these devices do not fit neatly into any one of the equipment categories envisaged by CS-01, CS-02, CS-03 or CS-04. As a result, the would-be marketer encounters frustration and lengthy delays while he seeks to get a ruling from the carriers. The carrier in turn has to examine his tariffs and the existing TAPAC standards and if there is no objection on his part, to initiate new tariffs and propose changes to the standards to accommodate the device in question.

It appears that there may be a need for TAPAC to broaden the scope of all standards to achieve a greater degree of flexibility without necessitating a series of case-by-case amendments.

APPENDIX "F"

(Continued)

4. New Issues Arising Out of Terminal Attachment Experience

Bell Canada and B.C. Telephone have each identified new problem areas that have surfaced in the current CPE environment. Those which may be of direct interest to the DOC are -

- a) B.C. Tel has commented that there is plenty of evidence of incompetence among installers.

In Bell Canada territory, interconnect companies sometimes seem uncertain about where to access the network. There are times when the agent/installer has difficulty in tuning up the equipment and Bell engineers get involved helping out.

The FCC, during our interview with them commented that potential harms with network addressing devices is more of a maintenance problem than an equipment qualification matter.

The 1972 DOC Working Paper on Interconnection suggests possible licensing of interconnect companies and licensing of craftsmen to install and maintain CPE.

It appears that re-examination, by the DOC of the installation and maintenance aspects, under DOC auspices, might be in order, now that a significant amount of experience has been accumulated.

- b) In the data world, for instance, the EIA RS232 interface standards ensures compatibility of printers, keyboards, video terminals, etc. There are no equivalent industry standards for telephone equipment. Consequently when attempts are made to connect, for example, a key telephone system of one manufacturer beyond a customer provided PBX of another manufacturer, the arrangement sometimes will not work satisfactorily.

The DOC could take the lead to investigate these types of problems and make recommendations for minimizing or solving them.

A P P E N D I X G

REFERENCES ON THE ISSUE OF
"NETWORK HARM" - CRTC HEARINGS

REFERENCES ON THE ISSUE OF "NETWORK HARM"

1. BELL CANADA
REPLY ARGUMENT
February 1982

Pages 91 to 95

Brief overview of the arguments on standards; references to degradation of service and protection criteria ("network harm" issue) on pages 93 and 94.
2. BELL CANADA
FINAL ARGUMENT
January 1982

Pages 45 to 49

Arguments on the issue of TAPAC CS-03 versus FCC Part 68; references to service safeguards on pages 46 and 48; TAPAC's technical standards versus FCC'S reliance on market forces approach ("network harm" issue), page 47; Bell's support and CBEMA's opposition to TAPAC's service safeguards, pages 48 and 49.
3. PUBLIC HEARING
TRANSCRIPT VOL. XV
December 8, 1981

Pages 2973 to 2991

Cross-examination (by Bell) of CBEMA's position on the "network harm" issue; TAPAC's criteria for network protection quoted on pages 2987 and 2988.

Pages 3112 and 3113

Cross-examination of CBEMA by BC Tel; a hypothetical example of "market forces" given on line 22 (page 3112) to line 8 (page 3113).
4. PUBLIC HEARING
TRANSCRIPT VOL. VI
November 20, 1981

Pages 1252 to 1258

Cross-examination (by CAC) of Bell's position on the "network harm" issue; distinction between FCC Part 68 definition and TAPAC's criteria, line 20 on page 1252 to line 22 on page 1253; discussion of network addressing (dialing) requirement, page 1254 to 1258.

Pages 1367 to 1369

Cross-examination of Bell by Gov of Ontario; TAPAC and FCC standards differ due to difference in objectives.

5. PUBLIC HEARING
TRANSCRIPT VOL VII
November 24, 1981

Page 1463 to 1465

Cross-examination of Bell by NIAC; TAPAC and FCC concerns may not be the same, line 18 of page 1463 to line 5 of page 1464; TAPAC's standards process is non-discriminatory, page 1464 and 1465.

6. PUBLIC HEARING
TRANSCRIPT VOL XI
December 1, 1981

Page 2366

Cross-examination of BC Tel by NIAC; the main area where CS-03 is more stringent than FCC Part 68 is the necessity of having the call go through, line 20 to 30.

7. RESPONSES TO
INTERROGATORIES
July 1981

Bell (CAC) - 2 TC
Bell (ONT) - 700 TC

Objectives of TAPAC-formulated Bell standards and a few examples of differences from FCC-formulated standards.

Bell (TIAC) - 157

Quantification of potential hazards is not available.

8. BELL CANADA
MEMORANDUM OF
EVIDENCE
June 1981

Pages 48 to 50

General overview of Bell's network; concern about service impairments, pages 49 and 50.

Pages 54 to 57

Prime objective of TAPAC terminal connection standards is stated, line 7 to 15 of page 54; "network harm" according to TAPAC includes potential service impairments listed under "degradation of service to the network users", page 55 to 57.

3.14 TECHNICAL STANDARDS

The arguments of most of the submissions concerning technical standards revolve around the desirability of having a single set of Canadian standards; the desirability of adding to such Canadian standards the FCC (Part 68) standards; and the suitability of the DOC and TAPAC as administrator and developer of such standards.

The stated position of most of the participants, in their respective arguments, was that Canadian standards were solidly supported. Who would have it otherwise? However, closer examination of the arguments reveals that many of the participants, notably OHA et al, CTG and CAC have paid lip service only to this notion, and would favour almost complete abdication of the development of Canadian standards in favour of adoption for Canada of the standards contained in FCC (Part 68).

In its Written Argument, at pages 45-51, Bell Canada stated the reasons why a Canadian set of standards should be adopted instead of foreign standards, such as the FCC (Part 68) standards. The following remarks are therefore limited to Reply.

In their Argument at page 76, paragraph 111, OHA et al allege that:

"Through its veto power on TAPAC, Bell has been able to insist on the inclusion of a number of quality and service standards which have nothing to do with the protection of the network as defined by the FCC. The result of this insistence by Bell Canada has been to produce a standard which is much more complex than the FCC program, imposes unique costs for manufacturers seeking to serve the Canadian marketplace or compete in the U.S. and other world markets. The standard certainly is overly stringent by comparison to any such standard in the world."

That Bell Canada has had a veto power over the TAPAC is contradicted by the evidence put before the Commission in this proceeding. In the first place, Bell Canada is only one of sixteen members of TAPAC. (See Exhibit Bell TC 81-3) In addition, Bell Canada has only one member in each of the TAPAC Task Force committees. That the TAPAC committees operate on a consensus basis and are not dominated by Bell Canada or the carriers was proved beyond a shadow of a doubt. This need for consensus will become even stronger when the Commission assumes its role of granting approval to the standards developed by TAPAC, in any case of disagreement and application to the Commission.

In addition, changes in procedures put forth by the manufacturers have been accepted by the carriers (eg. suggestions for alternative test methods as proposed by manufacturers have

been included in CP-01, Issue 3, Section 1.4.2; concept of manufacturers being able to test their own equipment and submit their test results has been supported by the carriers (See Bell Argument, Selected Reference 24(c).)).

Bell Canada's support for TAPAC's position on potential degradation of service quality, the concerns to be addressed by terminal attachment standards and the difference between these standards and FCC (Part 68) standards were covered in discussions between Messrs. Hewat and Worrall and Mr. Burtnick (see Bell Written Argument, Selected Reference Number 24(a)).

The superficiality of the evidence produced by OHA et al in an attempt to show that the Canadian standards developed under TAPAC were much more complex than the FCC (Part 68) standards was discussed at Page 46, lines 1 to 7 of the Bell Canada Argument. That this "evidence" was used in the OHA et al Argument as support for its position only serves, in Bell Canada's submission, to demonstrate how desperately those parties wish to discredit Canadian standards in favour of the FCC (Part 68) standards.

That such standards might pose "unique costs", as stated in the above quote from the OHA et al, was not quantified in the evidence presented by OHA et al and the seriousness of its implications as to any substantial modifications to sets as sold in the U.S. and Canada was put in its proper perspective by

Mr. Worrall when asked by Mr. Burtneck as follows: "Translated into the device, would any of the differences mean a substantial modification to the set as sold in the U.S. and in Canada?". Mr. Worrall replied, "In most cases probably not . . ." (See Bell Canada Written Argument, Selected Reference Number 24(a) C(1).) Canadian Standards are different than FCC (Part 68) because they are based on different network protection criteria (See Bell Canada's Argument, Page 47).

The overall impact on terminal equipment cost of adopting CS-03 standards rather than FCC (Part 68) standards should be minimal. CS-03 contains many similar requirements to FCC (Part 68). Moreover, FCC (Part 68) contains drop, temperature and vibration tests which are not included in CS-03 and are very costly in terms of test equipment (See Bell(CAC)17Jul81-2TC).

It is interesting to note that the Alberta Public Utilities Board in its Decision E81235 dated December 22, 1981 at Page 98 supported network protection criteria similar to those supported by TAPAC. For example, dialing (addressing) and supervision, which are not included in FCC (Part 68) are supported by the Alberta Decision.

The statement in the above quotation from the Argument of OHA et al as to the "overly stringent" Canadian standards also stands unsupported by any credible evidence. The facts are otherwise.

Irrespective of any argument OHA et al may have regarding alleged Bell Canada and other carrier activities to prejudice the free working of TAPAC, such argument falls by its own weight when compared with the facts. (See Bell Canada Written Argument - Page 49 and following and Selected Reference Number 24(b)). Any party affected by the requirements established by TAPAC may apply to the Commission for a determination as to the reasonableness of such requirements, either those in existence now, or any to be produced in the future.

In addition to the contested allegations contained in the OHA et al Argument, NIAC, at Page 36 of its Argument stated that:

"It objects, however, to a situation where technical certification proceeds at that pace the carriers want it to."

Such a statement would suggest that this has been the case in the past and that somehow carriers' foot-dragging has acted to circumvent the interests of other parties. There is no evidence in the record of this proceeding to support such a statement. Moreover, the adoption by DOC of manufacturer testing, alternative test methods and the CS-03 functional approach will simplify and reduce the time to obtain certification.

SUBJECT AREA 8

The technical standards that should apply to subscriber-provided terminal equipment and the procedures that should be adopted to ensure compliance with them.

TECHNICAL STANDARDS: GENERAL

Bell Canada's position with regard to the technical standards that should apply to customer provided equipment intended to be attached to Bell's facilities was stated clearly in the written Evidence under Subject Area 8, Pages 48 to 60. During the course of the public hearing, Mr. Hewat and Mr. Worrall answered many questions having to do with the Company's views. It is respectfully submitted that the Company's position is well stated in the written Evidence and in the answers given during the hearing, a number of which answers are collected in the Selected References under Number 24.

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Certain of the parties to this case appeared to feel that Canada should not have its own set of technical standards, and the persons who espoused this view, while they adopted various methods of "sugar-coating" their arguments, were in effect arguing that the technical standards adopted by the Federal Communications Commission of the United States in Part 68 of F.C.C. rules should be adopted in Canada. The arguments were, in the main, specious and, in certain cases, were demonstrably wrong. For example, C.T.G. suggested that Part 68 had "stood the test of time" and was then forced to admit, under cross-examination, that it did not know how long Part 68 had been in force and it was very apparent that the statement had been made without knowledge of the many amendments to Part 68 which had occurred during each year of its very short life. C.T.G. would have been more correct if it had said that Part 68 had not stood the test of time. (Volume XVI, Page 3318 and following)

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Again, the superficial and futile attempt by CBEMA to supposedly show the simple nature of Part 68 as against the alleged complexity of CS-03 (the TAPAC standards), by comparing the number of pages in one section of Part 68 to the full complement of pages in CS-03 demonstrates the weakness of the position of those persons opposing the adoption of Canadian standards developed in Canada. The Commission will recall that it was amply demonstrated that Part 68 was every bit as complex as CS-03.

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No one would suggest that Canadian standards should render Canadian terminal equipment incompatible with U.S. terminal equipment or, for that matter, terminal equipment in any other major country. However, standards vary from country to country, depending upon the considerations which lie behind them. The principal consideration for terminal connection standards is of course protection of the network from physical damage and from conditions which will cause damage to persons or property. There are also considerations with regard to standards to safeguard network service to other terminals.

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As we learned during the cross-examination of the witness for CBEMA, Mr. Lees, Volume XV, Page 2977, line 13 and following, the international CCITT standard requires that the terminating longitudinal balance be 40 decibels. FCC Part 68, on the other hand, requires 60 decibels in order to limit the effect of cross-talk, and "to prevent harm to innocent third parties on the network" (Volume XV, Page 2980). The Canadian standard CS-03 requires 72 decibels, reflecting TAPAC's concern to limit not only crosstalk but also noise impairment to other network terminals.

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The FCC Part 68 standard contains no requirements as to proper dialing signals in a piece of terminal equipment. The reason given is that market competition will drive out the pieces of terminal equipment which do not function up to the expectations of the user and the people with whom he communicates.

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This theory does not appear to be backed up by any evidence whatsoever. If analogies are of an assistance one might look out on the streets of Quebec and Ontario where one can see automobiles ranging in quality from Cadillac to Volkswagen, but where one can also see automobiles in the most horrendous physical and mechanical condition which, while still moving on the roads, are clearly menaces both to those using them and other persons on the highway. Competition in supply has not driven such menaces off our highways. Consequently, in order to protect the public, compulsory automobile safety checks and similar regulatory devices are used in many jurisdictions.

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As was admitted by Mr. Lees, the witness for CBEMA, who is a member of TAPAC, when questioned about the difference between FCC Part 68 and CS-03 (Volume XV, Page 2991):

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"Q. Would it be fair to say on this question of harm, Mr. Lees, that in broad terms the only difference between the FCC standards and the standards in CS-03 is that the standards in CS-03 are concerned about degradation of service to the called party and/or other persons on the network whereas the FCC concept is that the market will take care of that?

25

A. (Lees) You are correct. If we were able to work on the same definition of harm that the FCC has and which we believe is a correct one for competitive terminal marketplace, the two standards would be very close. They would not be identical but they would be very close."

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It has been amply demonstrated that Bell Canada is not interested in establishing a Canadian standard in order to give itself any competitive advantages. The Company has stated that it would expect to be subject to the standard in the same way as any other supplier of terminal equipment.

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The reasons Bell Canada is pressing for a distinctive Canadian standard are:

- first of all, this country should be the master of its own technical requirements and safeguards,
- secondly, the Canadian standard will provide better safeguards for service to all users of the network. The Company suggests that standards regarding service to other network terminals can easily be met by anyone who wishes to compete in the Canadian market in a serious way.

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It has also been argued in this case that Canadians should adopt FCC Part 68 as a "Canadian" standard, subject to exclusion or adjustment where special Canadian conditions require. The supporters of this proposition argue that the standard then becomes a Canadian standard adopted by Canadians but compatible with the U.S.

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The proponents of this proposition ignore entirely that once a foreign standard is adopted, the complete control of how that standard will be varied, amended or otherwise used remains in foreign hands and all that Canadians can do is meekly wait for a foreign country to make its decisions and then follow. To do otherwise would be to set up a situation of confusion worse confounded where a foreign standard would first be adopted and then, subsequent changes deemed necessary in the foreign country might or might not be adopted in Canada.

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The real purpose behind the expressed wishes for adoption of FCC Part 68 is of course to permit foreign manufacturers who manufacture primarily for the U.S. market to treat Canada as an incremental and ready-made market to which they can ship terminal equipment for sale without worrying about Canadian requirements. It should not be surprising that the chief proponents of this type of thinking are first of all CBEMA, which is controlled by and largely composed of giant multinational corporations based in the U.S., and second, by interconnect companies which do not manufacture but which simply purchase equipment for re-sale.

Under the circumstances, and for the reasons set out in the Company's written Evidence and in the witnesses' testimony referred to above, Bell Canada submits that the Commission should opt for the adoption of a sole set of Canadian standards and procedures applicable to the attachment of terminal equipment to the facilities of Bell and the other Canadian carriers. Such standards and procedures should be those developed and approved by TAPAC, as set out in CS-03 and in related procedure documents such as CP-01. These will provide reasonable service safeguards and will not impose serious limitations on any manufacturer.

TECHNICAL STANDARDS: PROCEDURE

During the proceedings, a number of parties proposed that the Commission give orders with regard to the procedure to be followed in setting standards. In many cases, the procedure suggested requested the Commission either to designate itself as the body initially responsible for prescribing technical standards or in another dimension, to designate itself as a court of appeal from decisions to be made by DOC or by TAPAC.

1 revenues were approximately 500 million, but I am
2 not sure what proportion was exported. I do not seem
3 to have any figures here right now.

4 Q. And from your general knowledge
5 of the company, you could not guess?

6 A. (Lambert) I would rather not.
7 I prefer not to, but I can obviously obtain the
8 figure.

9 Q. Yes, I would ask you to do that,
10 please, perhaps in the course of the day.

11 A. (Lambert) Right.

12 Q. Gentlemen, on that same page 56,
13 CBEMA chose to list Digital Equipment of Canada
14 Limited, which it states, provides sizable export
15 revenue, according to the evidence. Does
16
17 any of you have any idea what Digital Equipment of
18 Canada Limited's sizable export revenue amounts
19 to?

20 A. (Murray) No, we do not.

21 Q. So "sizable" could be anything
22 at all?

23 All right. Would you turn, please,
24 to paragraph 121 on page 71. Perhaps we could just
25 read paragraph 121 together, and I quote:

26 "Second is resolution of what
27 constitutes network harm. All parties
28 agree the standards should prevent
29 network harm, but it has not been
30 possible to obtain consensus on whether



1 network harm should be as defined
2 by the FCC:

3 'Electrical hazards to telephone
4 company personnel, damage to
5 telephone company equipment,
6 malfunction of telephone company
7 billing equipment, and degradation
8 of service to persons other than
9 the user of the subject terminal
10 equipment, is calling, or called
11 party.'

12 Or whether it should include
13 harm to the user of the subject terminal
14 equipment (the first party) and his
15 calling or called party (the second
16 party), as insisted on by Bell. The
17 resolution of conflicting views on
18 the need for a number of the tests
19 in the standards and the required
20 parameter values in other tests hinges
21 on resolution of this issue. CBEMA's
22 position, which supports the FCC
23 definition of network harm, was
24 developed in the preceding section."

25 On what do you base yourself, Mr.

26 Murray, for the statement that Bell's position is that
27 the question of network harm should include harm to
28 the users of the subject terminal equipment (the
29 first party) and his calling or called party (the
30 second party)?



1 A. (Murray) I would ask Mr. Lees
2 to respond to that question.

3 A. (Lees) This has been the
4 position of Bell throughout the TAPAC program that
5 it was given a form when we started developing the
6 standards for network addressing equipment, which
7 became CS-03, and in agreeing to work on the development
8 of these standards, Bell did so on the condition that
9 the standards developed would include what we have
10 referred to as the first and second party harm, whereas
11 the FCC says "the calling and the called party",
12 Bell tabled a document with the TAPAC task forces
13 at that time, stating what their position was on this,
14 and in subsequent meetings of the task force, in spite
15 of the objections of many of the members of TAPAC,
16 Bell insisted on that definition, and the definition
17 of network harm that they had submitted at that time.

18 Q. And is it your position that
19 Bell's definition is in CS-03 now in the third
20 issue?

21 A. (Lees) Very much so.

22 Q. Would you take out your copy of
23 CS-03, please, Mr. Lees, and tell me where you find
24 that definition?

25 A. (Lees) That definition will
26 appear in two forms in CS-03. It will appear, first
27 of all, in the stringency of some of the standards
28 in the parameter values that have to be met by
29 some of the standards, and I will give you an example
30 of that. It also appears in the fact that a number



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Murray, Lees, Lambert, Paine,
cr. ex. (Saunders)

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of these standards are in here at all, they are in
here to serve that purpose and I can give you examples
of those.



1 An example of the stringency
2 question, I might refer you to what has come to be
3 a favourite subject of mine; it is called terminating
4 longitudinal balance. In your document CS-03, it is
5 Section 3.6. It appears on page 46 of CS-03.

6 If you look at page 46 and the Section
7 3.6 on terminating longitudinal balance, you will
8 find a table of frequencies and a minimum balance
9 that must be met to pass this particular test. Now,
10 just looking at the first item in that table, it
11 says that at a frequency of 200 hertz, the equipment
12 must have a minimum balance of 72 decibels, Db.

13 If you look at international standards
14 for that particular test, the CCITT requires that
15 that balance should be a minimum of 40 Db. If you
16 look at the various countries where we submit our
17 equipment for testing, we face values of between 40
18 and 60 decibels that we have to meet.

19 In the United States, the FCC program
20 for that particular value calls for 60 Db as a
21 minimum. So there appears to be quite a discrepancy
22 between what is called for in this standard and what
23 we are required to meet in the rest of the world.

24 The reason for that, and Bell has put
25 this reason forward in the TAPAC deliberations, the
26 reason is that this is not a standard for network
27 protection. This is a standard for quality of the
28 terminal.

29 I might explain a little about this
30



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1 given in CS-03, the 72 decibels, the purpose of that
2 is to ensure that if a spurious signal is generated
3 on your telephone line, it will not result in
4 excessive noise on your terminal. In other words, if
5 we are talking about a telephone, it will not result
6 in excessive noise on your telephone.

7 The FCC standard says that the
8 criteria here should be that your terminal does not
9 generate excessive signals that will interfere with
10 other users of the network, and that accounts for the
11 difference between the FCC requirement and our
12 requirement in that ours is much more stringent because
13 it is specifying what the quality of the terminal will
14 be.

15 It is our belief, and we have pointed
16 this out in our evidence, that the marketplace should
17 be determining the quality of this terminal device
18 in a competitive environment, that quality may have
19 been appropriate for the carriers when they had a
20 monopoly on the terminal and somebody had to specify
21 a minimum quality that they would meet. But in a
22 competitive terminal supply situation, we believe that
23 the marketplace and industry standards will provide
24 the user with what he needs, and he should be able to
25 make a choice of what he will pay for quality of the
26 instrument.

27 So that is an example in CS-03 of
28 where the standards are overly stringent because of
29 quality requirements, first and second party harm being



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1 built into the standard.

2 Now, the other thing I said was that
3 there are tests in here that are a result of that
4 requirement. Examples of these are all the tests in
5 here.

6 If you refer to the Index of CS-03,
7 all the tests starting at Section 3.12 and 3.13,
8 which deal with network control signalling, we
9 consider to be introduced because of quality or first
10 and second party harm considerations. The FCC does
11 not have these kinds of standards in its program, and
12 the FCC ruled that network signalling was inherently
13 self-correcting, implying that the marketplace would
14 reject a product that did not have adequate network
15 signalling capability and that standards were not
16 required to ensure that that happened.

17 So that is the justification, Mr.
18 Saunders, for that statement in our evidence.

19 Q. Thank you, Mr. Lees. Did I
20 understand you to say earlier in your answer that the
21 international standard was 40 decibels, but that the
22 FCC standard was 60 decibels?

23 A. (Lees) That is correct.

24 Q. Why the difference?

25 A. (Lees) I believe -- I am not
26 exactly sure -- that the 40 decibels that to the best
27 of my knowledge is still in the CCITT standard was an
28 earlier developed standard, and that the FCC has
29 determined in its deliberations that that is not
30



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1 adequate to prevent cross-talk from you, the user,
2 over to other lines in the network. In other words,
3 40 decibels is probably not enough to prevent harm
4 to innocent third parties on the network.
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1 Q. I see. Now, would you agree that
2 this hearing is later in time than when the FCC set
3 their standards in the same way that the FCC setting a
4 standard was later in time to the CCITT?

5 A. (Lees) No, I would not, Mr.
6 Saunders, because we started these deliberations
7 publicly in 1975 at the same time the FCC standards
8 were being developed. This was a set of parameters
9 that was developed at that time. So I think they have
10 been developed in parallel.

11 Q. I see. So the international ones
12 are not okay, but the FCC ones are just swell; is that
13 generally your attitude?

14 A. (Lees) Obviously, from a
15 manufacturer's point of view, the international ones
16 are easier to meet. However, we have had no objection
17 to meeting the FCC requirements.

18 Q. But you do object to meeting the
19 CS-03?

20 A. (Lees) What we object to is having
21 mandated the quality of terminal that we have to
22 produce. We believe, as I said before, that this
23 should be a manufacturer's option and that selection
24 should be made by the users.

25 Q. Is that not exactly what the FCC
26 did when it ordered 60 decibels?

27 A. (Lees) The FCC ordered 60 decibels
28 because they thought that was required to protect other
29 users of the network.



1 Q. And so they mandated the quality
2 of the terminal to that extent?

3 A. (Lees) To the extent that a
4 standard prevents harming other people on the network,
5 we agree with it fully.

6 Q. I see. Would you turn then to page
7 2 of CS-03 under the general heading of "Scope". I do
8 not think we need to read paragraph 1.1, the first
9 three paragraphs. I will, if you request me to, but if
10 you turn to the top of page 2, which is a continuation
11 of the scope of CS-03 would you read with me please?
12 Have you go it there? I quote:

13 "The requirements contained herein are
14 intended for the protection of the
15 communications network and will not
16 afford the user any measure of
17 equipment performance, or safety other
18 than those covered by CSA approval.
19 Part I of CS-03 shall be used to
20 determine the appropriate sections of
21 Part II and III, which are to be applied for
22 a particular type of equipment."

23 Should I gather from your previous
24 answers that you do not agree that that is a statement
25 of the purpose of CS-03?

26 A. (Lees) I agree that should be the
27 purpose of CS-03. The problem, Mr. Saunders, is that we
28 disagree on what constitutes protection of the
29 communications network, as it says in this statement.



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#3

1 Q. I see. How many of your members
2 manufacture telecommunications equipment other than
3 office equipment?

4 A. (Lees) Other than office equipment?

5 Q. Yes.
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1 A. (Lees) I can give you examples of
2 members who manufacture different products but it is
3 not a complete and exhaustive list. We have two
4 suppliers of telephones that I am aware of, maybe more.

5 Q. Who are they?

6 A. (Lees) Do you include a telephone
7 as a piece of office equipment?

8 Q. No, it is telecommunications
9 equipment. Who are your suppliers?

10 A. (Lees) ITT and Nelson Business
11 Machines, to my knowledge.

12 What about a telephone answering machine,
13 Mr. Saunders?

14 Q. As long as you identify it, go
15 ahead.

16 A. (Lees) Telephone answering
17 machines, we include as business equipment and
18 manufacturers are Dictaphone, Sony, Philips - there
19 may be others that I am not aware of.

20 Remote dictation machines which we
21 include as business equipment - I should point out to
22 you, Mr. Saunders, that I am looking at the list on
23 page 7 of our evidence where we list a number of
24 products.

25 Q. It will not be necessary if that
26 is what we are looking at to go over it, unless you
27 wish to.

28 A. (Lees) There is a list on that
29 page of different devices that our members produce and
30



1 Q. I notice that it says marketed as
2 opposed to manufactured.

3 A. (Lees) Yes.

4 Q. And I was really interested in how
5 much experience your members had in manufacturing in
6 Canada telecommunications equipment, as you seem to
7 have such strong views on the characteristics of
8 telecommunications equipment.

9 A. (Lees) I don't think our views are
10 dependent on where equipment is manufactured. As you
11 are aware our members manufacture some products here
12 and other products in other locations and our experience
13 is based on those products. It does not really have
14 anything to do with where they are manufactured.

15 Q. I will accept that. I do not think
16 you can mistake looking at the book I am holding up,
17 Mr. Lees, have you seen that book before?

18 A. (Lees) I have seen that bright
19 cover before, Mr. Saunders, but I have not read the
20 contents.

21 Q. You have not read the contents?

22 A. (Lees) No.

23 Q. I will point out to you and to the
24 Commission that the book is entitled "The Supply of
25 Communications Equipment in Canada" published by the
26 Government of Canada, Department of Communications. It
27 is stated that it was prepared in the Communications
28 Economics Branch, Department of Communications, March,
29 1981, and an address is given.



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1 So you have not read this, Mr. Lees.

2 Have you read it, Mr. Murray.

3 A. (Murray) No, I have not.

4 Q. Have you, Mr. Paine.

5 A. (Paine) No, I have not.

6 Q. Have you, Mr. Lambert.

7 A. (Lambert) No, I have not.

8 Q. You should try it sometime.

9 Now, Mr. Lees, during your introduction
10 Mr. Grant mentioned that you sat and had been a
11 representative of CBEMA with the TAPAC program for a
12 number of years.

13 I would like to hand you a document
14 concerning the TAPAC program which are the notes to a
15 meeting of September 6 of Task Force C and ask you
16 whether you have seen this document before.

17 A. (Lees) It says September 6, Mr.
18 Saunders, but it does not say which year. Can you
19 help me?

20 Q. I hope so. If you look in about
21 five pages I think you will find a meeting summary for
22 September 6, 1979 and if you look further down you will
23 find an agenda for Task Force C meeting on September 6,
24 1979.

25 Do you recall having received that set of
26 notes and minutes from Mr. Melnyk, or from someone?

27 A. (Lees) Yes, I see that I attended
28 that meeting, yes, and I am fairly sure that I have
29 read this document before.
30



1 Q. Fine. I wonder if that document
2 could be filed as exhibit Bell TC-N.

3 THE SECRETARY: Bell TC-17, Mr. Saunderson

4 --- EXHIBIT NUMBER BELL TC-17: Document dated
5 September 13, 1979,
6 entitled "Terminal
7 Attachment Program
8 Advisory Committee
9 Task Force C".

10 Q. I would like to ask you to address
11 your attention, Mr. Lees, to the first page of text in
12 the notes. It starts at the top with "General" and
13 then "Guidelines" and number three is "Criteria for
14 Network Protection".

15 If you just read with me, it is quite
16 short, I quote:

17 "Bell Canada tabled two documents
18 outlining criteria for network
19 protection. These included:

20 1. Electrical energy which is
21 hazardous to the public and Bell Canada
22 personnel.

23 2. Damage to network components by
24 electrical energy or improper
25 connections.

26 3. Interference with the normal
27 functioning of network equipment
28 including billing equipment.

29 4. Degradation of service to other
30 users of the network."

Then, paragraph 3.1, the quotation

continuing:



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"3.1 The meaning of the term 'other users' in the context of .4 above was discussed. It was explained by the Bell Canada representative that in the context of .4, the term was intended to cover both second and third parties.

3.2 Discussion centered on the existing standards and what additional parameters would be required for network addressing equipment. Signalling and supervision were identified as new requirements. A discussion followed concerning whether or not old standards should not be reopened for discussion.

3.3 Based on these points, the Bell Canada criteria were accepted as a general framework to be used in the development of draft network addressing standards."

Does that seem to be a fair representation of what when on, according to your memory, Mr. Lees?

A. (Lees) I remember this particular section quite well, Mr. Saunders. The documents referred to here are the documents I was referring to that Bell had tabled concerning their position on what constituted network harm.

Some of the statements here need some interpretation.



Section 3.3 says:

"Based on these points, the Bell Canada criteria were accepted as a general framework to be used in the development of draft network addressing standards."

Now, to put that in context, you have to understand how TAPAC has proceeded. The position of the carriers in TAPAC has been that they have been there on a voluntary basis. We pointed this out in our evidence on paragraph 117, what exactly this means and if I may just summarize that, it means that the carriers were under no obligation to tariff any devices which were approved by these standards.

So the whole development of TAPAC has been one where the carriers were in a position to decide what would or what would not happen, what would or would not be in the standards, what the parameters of any given standard would be, because if they did not accept the standard they would not tariff it and nothing happened.

So, as we pointed out in our evidence, our position has been to try and negotiate the best possible standard that we could under those terms.

So paragraph 3.3 in this document is another example of where we agreed to go along with Bell's position because if we did not we would not have a standard. The time that this occurred was just after we had convinced the carriers to go along with the development of a standard for network addressing and we were very proud of ourselves for having accomplished



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1 that because the carriers were very reluctant to do
2 this and the carriers did not agree that they would
3 tariff the results of this.

4 So if we were going to have a
5 standard for network addressing we had to go along with
6 whatever terms were imposed on us in TAPAC and it
7 became evident that Bell's interpretation of network
8 harm was going to be one of the things that we had to
9 go along with if we were going to obtain a standard.

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1 Q. Would it be fair to say on this #3
2 question of harm, Mr. Lees, that in broad terms the
3 only difference between the FCC standards and the
4 standards in CSO-3 is that the standards in CSO-3 are
5 concerned about degradation of service to the called
6 party and/or other persons on the network whereas the
7 FCC concept is that the market will take care of
8 that?

9 A. (Lees) You are correct. If we
10 were able to work on the same definition of harm
11 that the FCC has and which we believe is a correct one
12 for competitive terminal marketplace, the two standards
13 would be very close. They would not be identical
14 but they would be very close.

15 Q. So it really depends on what
16 concept the Commission has as to the necessity or not
17 of a quality sufficient to protect called parties
18 and third parties.

19 Q. (Lees) That is correct, and
20 that is why we pointed out in our evidence that this
21 was an area which required a decision to be made.

22 Q. All right.

23 Now, gentlemen, whoever wants to pick
24 up on this can, I would like you to turn to paragraph
25 28 in which you were discussing the impact of the
26 interim decision, and I note that you say, in talking
27 about the amount of equipment certified under the
28 DOC program is also growing.

29 "On August 1981, the DOC
30 published a Terminal Equipment

1 A. (Lees) Equipment standards from a
2 quality point of view, if they are in the competitive
3 marketplace, then my statement was that the competitive
4 marketplace should be determining the quality it wants
5 and the price it is willing to pay; if the carrier is
6 offering that terminal on a monopoly basis then, of
7 course, there have to be controls on what quality of
8 service he provides.

9 Q. Are you aware of the quality of
10 service measurements that this Commission requires
11 B. C. Tel and Bell Canada to report on?

12 A. (Lees) I have had some indication
13 of them. I am not detail familiar with them.

14 Q. And the working paper on quality of
15 service measurements, are you vaguely familiar with
16 that?

17 A. (Lees) Yes, sir.

18 Q. Are you aware of the customer
19 expectation or attitude survey measurements required
20 of B. C. Tel and Bell by the Commission?

21 A. (Lees) Not in any detail.

22 Q. Well, let us take an example of a
23 business customer who buys one of these "buyer beware"
24 telephone terminals you are advocating, and let us
25 assume that I am a potential customer of that man's
26 business, so I phone him at his listed number, enquire
27 about his products, and I am met with, oh, a poor
28 transmission, cross talk or noise, would you think
29 that my attitude of the telephone company is going to
30 be good, bad or indifferent as a result of "buyer beware"



1 equipment that I had nothing to do with, that B. C. Tel
2 had nothing to do with, or Bell had nothing to do with?

3 A. (Lees) Well, in the new
4 environment you would probably assume that because
5 terminals meet the requirement that they will not harm
6 network, that the problem is being caused because that
7 person had a low quality inexpensive device, and being
8 shrewd, you would not buy your terminal from him.

9 MR. BUTLER: I see. I have no further
10 questions.

11 THE CHAIRMAN: Fine. Thank you, Mr.
12 Butler.

13 Just before you leave, I wonder if it
14 might clean up the record by giving that document you
15 filed an exhibit number. Mr. Secretary.

16 MR. BUTLER: That is the Globe & Mail
17 newspaper --

18 THE CHAIRMAN: Globe & Mail article of
19 November 19, 1981.

20 THE SECRETARY: Thank you, Mr.
21 Chairman. That document will be marked as B. C. Tel
22 exhibit number 9.

23 --- EXHIBIT NUMBER B. C. TEL-9: Globe & Mail article
24 dated November 19,
25 1981.

26 THE CHAIRMAN: Thank you. We will
27 resume again in 15 minutes. Nous repondons dans
28 quinze minutes.

29
30 --- Short recess.

1 your own information, you do not have any?

2 A. (Hewat) No, I do not.

3 Q. May I ask you a question once
4 again with respect to the FCC standard? Of the
5 FCC interface circuitry standards currently in place
6 does Bell feel it could live with any of those
7 particular standards, with or without modification?

8 A. (Worrall) No, there are
9 differences, Mr. Wetston, and the differences arise
10 from the principles that are applied to the standards
11 process.

12 If you wish, I can compare the
13 objectives of basically the FCC approach to protection,
14 and the TAPAC approach. And that might indicate
15 why some of the standards that come out of that do
16 in fact differ. Would that be of any help?

17 A. By all means. I am just trying
18 to get as much information to assist the Commission
19 perhaps in deciding on which is a better system?

20 A. (Worrall) Well, specifically in
21 FCC part 68, harm is defined as:

22 "Electrical hazards to telephone
23 company personnel, damage to telephone
24 company equipment, malfunction of
25 telephone company billing equipment,
26 and degradation of service to
27 persons other than the user of the
28 subject terminal equipment, his
29 calling or called party."

30 It is the latter part of that which



1 differs from the approach that has been taken in
2 TAPAC. And in TAPAC the approach is reflected in
3 these criteria. The hazards are seen to include:

4 "Electrical energy which is hazardous
5 to the public and Bell Canada
6 personnel ..."

7 That is essentially similar to FCC.

8 "... damage to network components by
9 electrical energy or improper
10 connection ..."

11 That is essentially similar to FCC.

12 "Interference with the normal
13 functioning of network equipment
14 including billing equipment."

15 That is essentially similar,
16 although in terms of degree there are some differences
17 which I can elaborate on later.

18 The final point:

19 "Degradation of service to other users
20 of the network."

21 This is a distinction between TAPAC
22 and FCC.

23 Q. That is something like cross-
24 talk on the network, for example?

25 A. (Worrall) Well, it manifests
26 itself in four specific items. There are others to
27 a degree, but there are four that were perhaps
28 descriptive and are worth pursuing.

29 One of those would be the question of
30 dialling validity, whether it be a regular rotary



1 dial or whether it be a touch-tone pad. TAPAC
2 recognizes the concern with inefficiently pumping
3 addressing information into the network and
4 effectively de-optimizing the utilization of network
5 switching and transmission equipment, and has
6 accordingly set up standards for that.

7 The FCC approach is not to do that,
8 so that is one of the criteria that has flown out
9 of this distinction between these two approaches.

10 Q. Perhaps we might be able to
11 take the distinctions one step further. You might
12 recall that CAC directed an interrogatory to Bell
13 regarding the matter of TAPAC, it is CAC-2, I
14 believe. TAPAC and FCC standards. What I am just
15 trying to get at, Mr. Worrall, is Bell's perception
16 of the difference between the FCC and TAPAC
17 standards which you are assisting me with, and I take
18 it that what you are really saying is that the TAPAC
19 standard appears to be dealing with not only
20 technical harm to the system, if I may use that
21 phrase, but also with respect to performance criteria
22 which may or may not have some economic harm to the
23 network.

24 Would you agree with that?

25 A. (Worrall) Well, I do not think
26 it is quite as simple as that. There is a technical
27 capability that is harmed in effect, and whether you
28 harm it by taking it out of service completely or
29 whether you harm it by tying it up with ineffective
30 attempts, I find it very difficult to distinguish



1 between the end effect of that in terms of its use
2 to the public as a whole.

3 Q. You are not suggesting, though,
4 that the FCC standard does not include criteria which
5 you have just described? For example, let me refer
6 specifically to CAC-2, page 2 of 3, and do you have
7 that interrogatory, sir?

8 A. (Worrall) Yes, I do.
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1 Q. And in the latter part of that --
2 well, it starts, I do not have a line reference but
3 the middle of the last paragraph where it states:

4 "FCC formulated standards do not
5 provide the same degree of protection
6 that is provided by TAPAC standards."

7 I take it that is what you are talking
8 about here when you are comparing the TAPAC standard
9 with the FCC standard; is that correct?

10 A. (Worrall) Well, some of it is
11 degree and some of it is, in essence the standard in
12 total is not addressed necessarily in FCC. Maybe that
13 it a fine point, but perhaps I can bring you out an
14 example of that.

15 Going back to the question of the
16 validity of the dialing, and referring specifically to
17 the appropriateness of the touch tone signal that
18 addresses the routing equipment in the network, there
19 is a TAPAC standard for that relating to metallic
20 impedance of the terminal which can impact on the
21 operation of touch tone pads on associated terminals.

22 There is a TAPAC standard for that, it
23 is 3.7.1 in CSO 3. There is no such standard in FCC.

24 Now, there are other situations where
25 the degree of the standard addresses some of the
26 concerns in FCC but not all of the concerns, so there
27 is a mixture of both. There is both the absence of a
28 standard and there is the degree to which the standard
29 is pursued.
30



1 Q. You use the word "validity" of the
2 dialing? Is that the word you used?

3 A. (Worrall) Yes. What I am trying
4 to say there is the touch tone is set up to operate at
5 certain frequencies and certain levels, and if indeed
6 you deviate from that you get to the point where it
7 will not work.

8 Q. By that you mean the number dialed
9 will not be reached?

10 A. (Worrall) Or an incorrect number
11 will be reached.

12 Q. I notice in your interrogatory here,
13 in response to the CAC Interrogatory, fifth line from
14 the bottom you say:

15 "Another example is exclusion from FCC
16 standards of network addressing signalling
17 requirement which ensure that the number
18 dialed is reached."

19 Is that what you are getting at in part?

20 A. (Worrall) Yes. I think in
21 ~~retrospect I am sure it~~ ^{"Answer"} is perhaps too commanding a
22 word because other factors are involved. But certainly
23 to give it a reasonable chance of arriving at the
24 appropriate destination.

25 Q. Are you aware of any FCC approved
26 equipment which does not ensure that the number dialed
27 is reached?

28 A. (Worrall) Well, if I take it very
29 literally, and we are in very fine ground here, I am
30 certain there are standards for FCC equipment that do



1 not in fact provide for any addressing at all. In fact,
2 it would meet the standard without providing any
3 addressing at all and therefore there is no way you can
4 reach a number by using that piece of equipment.

5 However, I take it that is not really
6 the sense in which you are asking the question and, no,
7 I have no personal knowledge of a particular piece of
8 equipment under FCC not in fact meeting that standard.

9 Q. What do you think is the likelihood
10 of a manufacturer of equipment which might overlook
11 this design feature in their equipment? Do you think
12 that is a likelihood as well?

13 A. (Worrall) It is a likelihood. It
14 is not something that I think would be consciously done.
15 To that degree the standard -- maybe a better way of
16 answering this is that standard does not guarantee
17 anything. The standard is a basis for setting your
18 objectives in a way that you can reasonably meet the
19 expectation of the business. It in itself does not
20 guarantee anything. However, most certainly in my
21 opinion the absence of a standard would just take the
22 probability further down the scale in terms of
23 achieving that objective.

24 Q. Let us just move on to one other
25 part of this and that is CAC, the same interrogatory,
26 it is Interrogatory Bell CAC 2 at page three and the
27 very last paragraph, the last sentence of that paragraph
28 you say that:

29 "By contrast test procedures are not
30 generally specified in FCC part 68



1 It would be much more desirable if the Americans
2 would follow us.

3 Q. What are you talking about here,
4 the hearing impaired?

5 A. (Hewat) No, I was talking the
6 straight question of standards. In my understanding
7 in the TAPAC standards, the standards under TAPAC
8 that we have thus far in the single line market and
9 the prescription for them in general go beyond some
10 of the standards, particularly in second party harm
11 that are embraced by FCC Part 68. It does not
12 suggest that the standards themselves in the other
13 areas need necessarily be different standards but the
14 administrative processes and the total extent of the
15 standards may be different in Canada.

16 Q. But you were suggesting that
17 some of your standards go beyond -- the TAPAC
18 standards go beyond those of the FCC?

19 A. (Hewat) Yes.

20 Q. In technical terms?

21 A. (Hewat) Yes.

22 Q. So that means if the 83-13 were
23 changed so as to exclude partial reliance on FCC
24 certified devices, that at that point a manufacturer
25 might not be able to sell the same device in the
26 U.S. and in Canada?

27 A. (Hewat) That would be true.
28 That is a possibility.

29 Q. In your view, are the TAPAC
30



standards, to the extent that they go beyond what the U.S. requires, is that a good thing?

A. (Hewat) I am going to let Mr. Worrall answer that one for you.

A. (Worrall) Again, it depends on the objectives, Mr. Burtnick, and particularly with regard to second party harm. We think it is a good thing and particularly, I guess, the elements I mentioned this morning, the standard that exists with regard to the validity of the addressing signal, we think it is important; again, it stems from the objectives of the standards are designed to meet. The objectives of TAPAC are slightly different from the ones of FCC.

Q. Translated into the device, would any of the differences mean a substantial modification to the set as sold in the U.S. and in Canada?

A. (Worrall) In most cases probably not in that whilst no standard is set in the States for, say, the element that relates to the touchtone pad and the validity of the signal that comes out of that, that is not to say that the devices produced in the States won't meet that standard. It is just that they are not tested against that standard, and to our way of thinking it is an important test. It is something that merits recognition in terms of products entering the market passing that particular test.

Q. I suppose it would follow that

1 there might be a cost difference?

2 A. (Worrall) Well, again, I would
3 suspect, and particularly when you look at the
4 well established manufacturers I would suggest that
5 they would probably have no difficulty meeting the
6 test. It is just that they are not subjected to it
7 in terms of standards.

8 Q. Well, Mr. Hewat, I think,
9 mentioned this morning that there was a difference
10 in one machine -- I cannot remember which one it
11 was.

12 A. (Hewat) The Logic 1.

13 Q. Pardon me?

14 A. (Hewat) The Logic series of
15 telephone sets.

16 Q. Does that have to do with
17 standards?

18 A. (Hewat) No. Well, it had to do
19 with standards in this sense, the particular consumer
20 -- we were talking about difficulty in this whole
21 attestation field; the particular consumer had
22 purchased some Logic sets and had attested to them
23 under Part 68. When we looked at the attestation,
24 we determined the attestation was based on a
25 different technical configuration for Logic in the
26 United States than is produced in Canada and,
27 therefore, the sets that were produced in Canada and
28 purchased by the subscriber in Canada did not meet
29 the FCC Part 68 standard.
30

1 Q. One of these competitive
2 advantages, of which you hope to take full advantage.

3 A. (Hewat) I would look at it
4 as one of the costs of competition, Mr. Denton.

5 Q. You have stated that there be a
6 single set of Canadian standards and procedures
7 which respond to the specific requirements of the
8 Canadian telecommunications environment. What might
9 the specific requirements be? In other words -- yes,
10 what might the specific requirements be?

11 A. (Worrall) Of course you can
12 look at this fairly widely but we can look at two
13 things that we discussed over the past few days.
14 If it is determined that one of the requirements
15 in the Canadian system is indeed to have hearing aid
16 compatible sets then that may well be a Canadian
17 requirement.

18 The other thing that I referred to
19 the other day related to the validity of the signalling
20 addressing information. I think TAPAC has seen this
21 to be a particular concern and it is being addressed
22 in the Canadian situation whereas at the present
23 time it is not reflected in the same way in FCC,
24 although there are things that they are studying
25 which are similar to some of the things we have
26 done.

27 One of the things relates to
28 repertory dialers where they are now investigating
29 some of the concerns that come out of the addressing
30 information that comes out of those forms of dialers.



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Hewat, Owen, Worrall,
cr.ex. (Denton)

1 So I could not pretend to put an envelope around
2 all the considerations that might apply, but there
3 might be things that we see to be important which
4 may not seem to be as important in the environment
5 in the States.

6 Q. Could you see circumstances in
7 which Canadian standards might function in a fashion
8 to render equipment not manufactured in Canada or
9 specifically designed for our market to render that
10 equipment incompatible or unattachable in our
11 environment?

12 A. (Worrall) I cannot think of a
13 specific case there but, again, I would refer it back
14 to this functional approach whereby the specific
15 device itself with its proprietary content, or
16 whatever, is not the form by which the standards
17 will be measured. They will be measured against
18 its functional capability, and as such, in effect it
19 will be a black box that has certain functions, and
20 those functions must be seen to be consistent with
21 our requirements.

22 Q. Which requirements?

23 A. (Worrall) Well, the requirements
24 of TAPAC in essence, and it seems to me that that is
25 a fairly broad and non-discriminatory approach to
26 the standards process.

27 Q. Now, if it became evident that
28 other manufacturers, other countries were closing
29 their markets through non-tariff barriers to
30 Canadian manufactured products, is there some ground



1 then for believing that TAPAC ought to function in a
2 similar fashion, say, with respect to Japanese or
3 European telecommunications manufacturers?

4 A. (Worrall) I do not believe so.
5 I think TAPAC addresses the technical concerns in the
6 light of pre-determined objectives, and I do not think
7 it is TAPAC's role to be discriminatory in that regard,
8 otherwise it would negate some of its big advantages.

9 Q. Well, presumably it is the
10 companies like Northern Telecom which are at least
11 as much hurt by non-tariff barriers or tariff
12 barriers which discriminate against its entry into
13 foreign markets. Why then should standard setting
14 process not establish some form of preference, or
15 some form of reciprocity for Canadian manufactured
16 equipment?

17 A. (Worrall) I do not believe it
18 should be in the standards process. It takes it
19 out of the objective analysis of the technology and
20 puts it into a really GATT situation, and I think
21 that is beyond the mandate of TAPAC. I think TAPAC
22 serves the purpose very well when it addresses the
23 technology standards.

24 A. (Hewat) I am no expert in
25 non-tariff barriers, Mr. Denton, but it seems to me
26 they kind of formulate themselves this way: they
27 come out of the purchasing policies in the European
28 and Japanese milieu, at least, of the telecommunications
29 administration. They come out of the technical
30 requirements in a non-standards way; that is,

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#6

1 Q. Well, we all acknowledge the need
2 for Canadians to set the standards. The question is
3 whether the standards they set are relevant, having
4 regard for our business competition. Again, I ask you:
5 you do not seem to have indicated beyond requirements
6 for perhaps deaf people any particular reason why our
7 standards, in substance, should differ from those of our
8 largest trading partner?

9 A. (Carter) Well, what about any
10 other? It may turn out that the major supplier of
11 telephones is South Korea or something, and they use
12 South Korean standards. It could be anywhere.

13 It happens the U. S. is where most of
14 them are coming from at the moment.

15 I think the point is that the existing
16 standard that has been developed and approved to date,
17 CS-03, is basically very similar to the FCC 68. It
18 has some specific things which are more stringent. It
19 has some things which are not required. Sixty-eight
20 is more stringent, and I think the main area in which
21 the Canadian standards have been felt and agreed to be
22 more stringent than the U. S. is in the necessity of
23 having the call go through. In the U. S. standard
24 there is nothing that requires the bell to ring, as an
25 example.

26 I think the feeling in the Canadian
27 group was that there was a necessity of a standard
28 that the call would go somewhere, that the likelihood
29 of completing the call would be enhanced, and that is
30 part of the standard.



A P P E N D I X H

COMPARISON OF CS-03 TESTS
WITH FCC PART 68 TESTS

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FCC Part 68 requires environmental simulation tests including vibration, shock and temperature/humidity which are not required in CS-03.

CS-03 requires measurements of signalling, that is, dial and pushbutton DTMF generators which are not required in FCC Part 68. CS-03 also requires measurement of sidetone, transmitter and receiver objective loudness ratings which FCC Part 68 does not require.

On balance the overall test time for CS-03 is not much different than that for Part 68. The paperwork required by the FCC with an application for registration is ponderous compared to the corresponding DOC application paperwork. Including the paperwork, a typical FCC registration will probably cost as much or more than a CS-03 certification.

A well equipped test laboratory would normally have general use vibration machinery and climatic chambers required for FCC environmental simulation which costs about \$75,000 to \$100,000.

It is understood that the facilities which the DOC has for measurement of objective loudness ratings required in CS-03 cost about \$75,000. This is highly specialized equipment for which a private laboratory would probably have no other application. It is doubtful if a private laboratory can generate enough revenue from the few loudness tests that will be required in Canada to pay for the equipment.

A difference exists between U.S. and Canadian policy in the applicability of the standards. The FCC made registration of terminal equipment compulsory for the carriers as well as for customer provided equipment, on the basis that to do otherwise would be discriminatory under Section 202 of the Communications Act.

The Canadian Terminal Attachment Program does not require certification of the carrier's terminal equipment. Bell Canada states that it is voluntarily going to purchase only certifiable new equipment in the future. TAPAC minutes, on the other hand, show that compulsory certification of their own equipment has been consistently opposed by the carriers. It has been suggested by CBEMA, that, if the Canadian carriers were under compulsion to have their own equipment certified, the difference between CS-03 and FCC Part 68 standards might quickly disappear.

PT 68/CS-03-2

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