TERMINAL ATTACHMENT PROGRAM

SURVEY of SUPPLIERS

DEPARTMENT OF COMMUNICATIONS

GOVERNMENT OF CANADA

PREPARED FOR THE DEPARTMENT OF
COMMUNICATIONS UNDER CONTRACT NO.
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This study was conducted during the winter of 1976-1977 by Telecommunications Research Services, a division of Tele-Connect Ltd. The survey design, implementation, and analysis was done by Donald C. Robinson,BaSc, MBA, P.Eng.

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TABLE OF CONTENTS

EXECUTIVE SUMMARY

This report presents the findings of an independent survey of manufacturers and distributors of terminal telecommunications equipment. Over four hundred suppliers, primarily Canadian, were mailed questionnaires. The stated purpose was to obtain feedback about the impact of the Terminal Attachment Program, and information which can provide guidance to the Department for the development of subsequent phases and future revisions of the Program. No other inducements were offered to recipients to encourage a higher rate of response. Ninety-one responses were received, for a total response rate of twenty-one percent.

Seventy-five percent of respondents are manufacturers and distributors. About one-half of these are large companies with annual gross revenues in excess of one million dollars. Retailers comprise ten percent of the respondents. The remainder are major users, and other miscellaneous categories. Seventy-eight percent of the respondents are identified, and the rest anonymous. Six percent are identified as being of foreign origin. The majority of manufacturers are marketing internationally. The majority of distributors and retailers are selling only in Canada.

The survey results are probably biased in that there is a greater incentive for those recipients who are either enthusiastic about the Program, or highly critical of it, to complete and return the questionnaire. In spite of this, however, the results are largely favourable.

The majority of manufacturers and distributors believe the Department's Program to date is satisfactory. Less than six percent find the Program unacceptable in any way. Eighty-five percent of the suppliers find the Certification Procedures CP-01 generally satisfactory, and more than seventy percent find the Certification Standard CS-01 generally satisfactory.

There is no room for complacency, however. The manufacturers as a group are more critical of the Program than the other respondent groups. Fifty-nine percent said the Standard imposes specific hardships for their product, as compared to fifteen percent for distributors. Twenty-two percent suggested areas for improvement in the Standard, and twenty-one percent suggested areas for improvement in the Procedure.

No particular item was singled out or repeated in the specific suggestions for improvement in either the Standard or the Procedure. However, one common concept repeated in many responses was a concern about the length of time being taken to develop the Program, and the need to expand the Program to include other types of equipment, including automatic and alarm dialers.

The survey revealed that many more suppliers are interested in network addressing peripheral devices, such as automatic and alarm dialers, than they are in major addressing equipment such as key telephone systems and P.A.B.X.'s. The majority of suppliers believe that the Terminal Attachment Program will result in an increase in their terminal equipment sales, and that the cost of certification will have little impact on their product prices. The majority will include reference to DOC certification in their advertising. The manufacturers and distributors are almost equally divided on a change in the fee structure for certification labels.

The suppliers are most interested in marketing automatic dialers, automatic answering and recording machines, alarm devices, modems, and data peripherals. Decorator telephones are low in order of interest.

The survey provides, for the first time, a definitive measurement of how manufacturers and distributors view the Department's Program. In addition, the results include useful input for consideration in developing future Program changes. The information will also be useful during future ongoing Program consultations and meetings with suppliers and carriers, as a supplement to their particular views. The survey data may also be used for further analysis to to help resolve particular future questions arising out of the Program.

The major conclusions derived from this study are that the Program is generally acceptable to Canadian suppliers in its present form, and the Department should proceed as soon as possible to expand the types of equipment included. Dialogue should be continued with the carriers and manufacturers to resolve questions about the technical standards. It would be advantageous to the greatest number of suppliers if automatic dialers and alarm devices are among the first network addressing devices included in the Program.

CONCLUSIONS

1. The majority of both manufacturers and distributors believe the Department's Program to date is satisfactory.

2. Two-thirds of these, however, think the Program should be expanded to include more types of equipment.

3. Very few suppliers (less than 6%) find the Program unacceptable in any way.

4. A few suppliers (less than 15%) believe the Program contains areas where improvement is needed.

5. The most common criticisms relate to the long time interval and the need to expand the Program.

6. A large majority of suppliers (more than 70%) find the technical standards generally satisfactory. However, the manufacturers, as a group, are much more critical of the standards, and 59% said that Certification Standard CS-01 imposes specific hardships for their product, as compared to 15% for distributors.

7. A large majority of suppliers (88%) find the Certification Procedure CP-01 generally satisfactory. One out of five of the manufacturers would, however, suggest areas for improvement in the Procedure.

8. Suppliers' major areas of interest in equipment types are in automatic dialers, followed by automatic answering and recording machines, alarm devices, modems and data peripherals.

9. The least interest is in electrocardiogram equipment, traffic measuring equipment, conferencing devices, and scramblers. Decorator telephones and P.A.B.X.'s were also low in order of interest.

10. Manufacturers and distributors are much more interested in network addressing peripheral devices such as automatic dialers and alarm dialers, than they are in major addressing equipment such as key telephone systems and P.A.B.X.'s.

11. The majority of manufacturers and distributors believe that T.A.P. will eventually result in an increase in sales of terminal equipment as a result of the perceived advantages of the Program.

12. The majority of all suppliers will include reference to DOC certification in their advertising or promotional material for a certified product.

13. The majority of distributors believe their certification costs will be at least balanced, or outweighed, by the marketing advantages of selling a DOC certified product. However, the majority of manufacturers either disagree or are uncertain.

14. The majority of manufacturers will modify their inventory of terminal equipment if necessary to make it acceptable for certification. Fewer distributors would do so.

15. A large majority of both manufacturers and distributors believe their certification costs will have a small impact, or little or no impact, on the price of their product.

16. Suppliers believe that their certified product prices will increase by less than 5% in 50% of the cases, and between 5% to 10% in 40% of the cases.

17. The suppliers are divided on the subject of fees for certification labels. One-half believe the label fee should be maintained as at present, with a portion of the Department's certification costs included in the per label fee of $1.00. The others believe the fee should be reduced to cover only the cost of labels, with a corresponding increase in the initial certification fee.

18. The overall conclusion drawn from this study is that the Terminal Attachment Program in its present form is generally acceptable to Canadian suppliers, but the Department should proceed as soon as possible to include more types of equipment in the Program.

19. Dialogue should be continued with the carriers to resolve questions about the technical standards until the Department, and if possible, the manufacturers, are satisfied that the requirements are reasonable in all respects.

20. It would be advantageous to the greatest number of suppliers if automatic dialers and alarm dialers are among the first network addressing devices to be included in the Program.

OBJECTIVES OF THE SURVEY

1. To determine, by means of an independent survey, how manufacturers, distributors, and suppliers view the Department's Terminal Attachment Program.

2. To determine the cost and other impact of the Department's Program on their manufacturing and marketing activities.

3. To determine what hardships, if any, are imposed by specific requirements in the Certification Standard.

4. To determine what proportion of suppliers want changes to specific parts of the Certification Standard and Procedure.

RESEARCH METHODOLOGY

A draft questionnaire was developed by the consultant to meet the survey objectives. The draft was reviewed individually with selected Department personnel, and then in a Department meeting, with representatives of the Regulatory Service and National Branches. After revisions, the questionnaire was printed in two languages. A total of 432 questionnaires were mailed.

The recipients were everyone who had previously received information about the Terminal Attachment Program from the Department, and who had subsequently indicated by post-card returns to the Department, that they wished to continue to receive information about the Program. Of the total of 432, both French and English questionnaires were mailed to 52 recipients, primarily in the Province of Québec. U.S. recipients received 21, and 4 were sent to other foreign countries. (England and Taiwan).

The questionnaires were mailed to everyone on the updated Department mailing list, but were specifically directed towards manufacturers, distributors and suppliers. Useful responses were also received from retailers, major industrial users, service companies and consultants.

Contrary to the usual marketing research practice, no inducements or gifts were given to recipients to encourage a higher rate of response. Further, the survey results or summaries were not offered to respondents. The only incentive for the response was the idea of helping the Department by providing feedback, which would provide guidance to the Department in the development of subsequent phases and future revisions to the Program.

On receipt of the completed questionnaires, the data was manually compiled, and summarized by types of respondents. A number of questions about the respondents themselves had been included in the questionnaire to facilitate meaningful analysis. A report was prepared, and the original completed questionnaires were given to the Department.

RATE OF RESPONSE

A total of 91 responses were received from the 432 mailed questionnaires, for a total response rate of 21 percent. All responses were received on english language questionnaires. No french language questionnaires were returned. The majority of responses were received during the months of November and December, 1976.

The number of useable responses on each individual question was generally in the range of 60 to 70. This was because some responses were marked not applicable, or were otherwise incomplete, and some respondents did not answer all of the questions.

After the questionnaires had been mailed, a detailed review of the mailing list showed that approximately 70 of the recipients were not suppliers, but were libraries, telephone companies, and others. Eliminating these from the 432 recipients gives a higher effective response rate of 25% from the suppliers.

DEGREE OF CONFIDENCE

The rate of response was more than sufficient, in statistics terms, for a population size of 432, to ensure a .95 confidence level that a randomly selected sample is representative of the population. In other words, we could draw our conclusions with a 95 per cent confidence in their validity.

However, the sample was not randomly selected. A bias arises when members of the population are allowed to decide for themselves whether to belong to the sample or not. All mail surveys exhibit this kind of bias. In this case, we may expect that people with a strong interest in the Program would answer the questions and return the questionnaire. Others would not bother.

Further, we might reasonably expect that the survey would elicit more responses from those who are enthusiastic about the Program, and possibly an even greater rate of response from recipients who dislike the Program for any reason.

An additional complication in determining the degree of confidence is that the 432 recipients do not actually represent the total population of suppliers in the terminal equipment business, but only those who were on the Department's mailing list for information about the Program. The results can only be representative to the extent that this group is representative of the total population of suppliers.

While the survey results with respect to respondents are totally valid, all of the above considerations should be taken into account when considering the degree of confidence that may be placed on conclusions drawn from the survey results for the supplier population as a whole.

RESPONDENT DATA

TYPE OF BUSINESS (Question 13.)

39% were manufacturers

36% were distributors

10% were retailers

11% were major users

4% were miscellaneous

SIZE OF BUSINESS (Question 14.)

ANNUAL GROSS REVENUE	ALL	MFRS.	DIST.	RET.	USERS
GREATER THAN $1,000,000.	49%	52%	46%	34%	66%
BETWEEN $100,000. AND $1,000,000.	35%	38%	38%	33%	17%
LESS THAN $100,000.	16%	10%	16%	33%	17%

IDENTIFICATION (Question 16.)

78% of respondents were identified

22% were not identified

FOREIGN RESPONDENTS

6% of respondents were identified as foreign

MARKETING AREA (Question 15.)

CATEGORY WHICH BEST DESCRIBES THE GEOGRAPHIC AREA IN WHICH RESPONDENTS' PRODUCTS ARE MARKETED.

	ALL	MFRS.	DIST.	RET.	USERS
ONE CITY	5%	0%	0%	43%	0%
ONE PROVINCE	17%	9%	20%	29%	18%
TWO PROVINCES	8%	9%	4%	14%	10%
THREE OR MORE PROV.	23%	0%	48%	14%	18%
CANADA AND U.S.A.	18%	27%	16%	0%	18%
U.S.A.	3%	0%	0%	0%	18%
INTERNATIONAL	26%	55%	12%	0%	18%
	SUMMARY				
CANADA	53%	18%	72%	100%	46%
CANADA AND U.S.A.	18%	27%	16%	0%	18%
INTERNATIONAL	29%	55%	12%	0%	36%

OBSERVATIONS - MARKETING AREA

1. The majority of manufacturers are marketing internationally as well as in Canada.

2. The majority of distributors are operating mainly in Canada.

3. All of the retailer respondents are operating only in Canada, and the majority are operating only in one city or one Province.

THE FINDINGS

1. IMPRESSIONS OF THE DEPARTMENT'S INITIAL PROGRAM. (QUESTION 1.)

75% OF ALL RESPONDENTS SAID THE DEPARTMENT'S INITIAL PROGRAM WAS GENERALLY SATISFACTORY, OR SATISFACTORY FOR A FIRST STAGE PROGRAM, BUT SHOULD BE EXPANDED TO INCLUDE MORE TYPES OF EQUIPMENT.

75% of the distributor respondents also said the Department's initial program was generally satisfactory, or satisfactory for a first stage program, but should be expanded to include more types of equipment.

For manufacturer respondents, the proportion was 74%. For retailers, it was 71%. For major users, it was 82%.

	All Respondents	Mfrs.	Dist.	Ret.	Users
Generally satisfactory.	26%	26%	30%	29%	18%
Satisfactory for a first stage program, but should be expanded to include more types of equipment.	49%	48%	45%	42%	64%
Generally acceptable, but contains areas where improvement is needed.	15%	17%	11%	29%	9%
Certain features which are definitely unacceptable.	6%	9%	7%	0%	0%
Other.	4%	0%	7%	0%	9%

IMPRESSIONS OF THE INITIAL PROGRAM

WRITTEN COMMENTS (Question 1.)

1. "Although IBM CANADA have actively participated in discussions on this program, we do not have products applicable for certification under the initial phase and so we have no direct experience with the program. However, IBM CANADA does have experience with similar certification programs in a number of countries. Our general comments are that the program has been made technically and administratively more complex than is justified to protect the telephone network, and that the program applies only to carrier specified devices (e.g. network addressing devices are not permitted)."

   IBM CANADA LTD., DON MILLS, ONT.

2. "Suggest it be expanded to include auto-dialers."

   INDUSTRIAL MEASUREMENTS LTD., WILLOWDALE, ONT.

3. "Some parameters cannot even be met by present equipment in use by telco. As usual lack of understanding by government creates another consumer cost."

   ANONYMOUS

4. "We must in the near future work on addressing the network."

   B.W. POSTE, CONSULTANT (responding on behalf of 4 companies)
   BARRIE, Ont.

5. "Offshore labs should be able to certify. Cost of certification is substantial."

DICTAPHONE CORP. LTD., ISLINGTON, ONT.

6. "Not familiar with Stage I, but too slow in undertaking Stages II and III."

60190 ONTARIO LTD., TORONTO, ONT.

7. "Contains equipment which is low volume (e.g. apartment door security) and can not be made available under the high cost of approval. This equipment is approved in the U.S. and for the small market here, the manufacturers are not interested in getting approval under the present extreme costs. Suggest co-operation with U.S. authorities in reducing this cost on certain items of this nature which are built to a high specification."

ROCO DISTRIBUTORS LTD., VANCOUVER, B.C.

8. "At present the program appears not to include equipment capable of dialing out - With the technological developments which have resulted in the production of the cordless extension telephone, the extension of the Program to cover such devices is indicated."

KARRYFONE INTERNATIONAL LTD., TORONTO, Ont.

9. Unacceptable features:

" 1. Requirement that Canadian supplier of imported equipment be responsible for keeping equipment to a standard when manufacturer may insist on doing all repairs at the manufacturer's plant. (CP-01, PARA 1.7.1)

2. Requirement that only DOC do certification, not accepting private independent engineering consultant reports other than Canadian.

3. Does not subject Common Carriers to same certification.

4. Requirement for certification for private line connection when none previously required."

T.E. FIELD ASSOCIATES LTD., SCARBOROUGH, ONT.

10. "Should be expanded to include alarm dialers."

AUTOMATIC SPRINKLER LTD., ALARM & SECURITY DIV., ST. LAURENT, QUE.

11. "Some equipment in the field, identical to units now being sold, are not certifiable by present standards. I also feel that other areas of interconnection should be opened."

FOREST CITY BUSINESS MACHINES, LONDON, ONT.

12. "The responses presented herein are hypothetical as our product line has been dropped mainly due to the restricted requirements previously effected by the carriers. This has obviously had the effect of reduc-

ing sales, etc. While the DOC program appears to be an excellent attempt at reducing the carrier monopoly, it is too late for our business venture."

AUTOMATIC RADIO OF CANADA LTD., WEST HILL, ONT.

13. "Documents (Standards etc.) should be available in separate editions of English and French. With the recent trend to combine the editions, filing space is becoming a factor and the size of the documents is cumbersome."

ADT SECURITY SYSTEMS, TORONTO, ONT.

14. " 1. By now first phase should be completed. Government has had long enough to recognize the viability of full interconnection.
2. Switching installations (PBX, key system, WATS Box equivalents, autodialers) should be in place now to observe experience. Users and others are wasting fortunes as BELL drives monopolistic rates up.
3. Independent labs should be doing this work; (a) faster, (b) cheaper.
4. Whole program still too isolated from users and too much telco influence."

D.M. FERGUSON, TELEDATA LTD., PIERREFONDS, QUE.

15. "I am able to import equipment (identical) at far less cost from my U.S. supplier than that offered by the Canadian distributor, but am unable to get

certification on the identical unit. I have chosen to market the equipment without a certification sticker, and pass on the savings to the client. Limits retailers to certified distributors who are charging excessive amounts for equipment - extra $100.00 per unit - Magnasonic - Sanyo Model TRA 9908."

SENTEL SYSTEMS, OTTAWA, ONT.

16. "Program should be expanded to include all possible items that may connect to the network with a simple, common, uniform, standard, connection. Same for label, instructions -."

JETRONIX RADIO ENG. LABS., PALOS VERDES, CALIFORNIA.

17. "To assist manufacturers, the Program should be standardized, wherever possible, with other similar programs initiated in North America."

INTEL CONSULTANTS LTD., OTTAWA, Ont.

18. "Should provide for conditions under which private mobiles can be connected to the public switched network."

C.P. RAIL, MONTREAL, QUE.

19. "More information is needed by the end users of interconnect equipment."

DATACROWN LTD., WILLOWDALE, ONT.

20. "Suggest factory testing, private (CSA) testing, testing of carrier terminals, no functionality testing, i.e. test for network damage potential."

ANONYMOUS

21. "Our products have Bell Systems approval, and therefore, we have not pursued the DOC program. Your interest in our opinions and position is appreciated."

VICTOR CANADA LTD., DATACOM DIV., GALT, ONT.

22. "There must be a standard for the so-called network addressing devices so that they may be also connected directly."

TRW DATA SYSTEMS, WILLOWDALE, ONT.

2. RATING THE DOC CERTIFICATION STANDARD CS-01 (QUESTION 10.)

70% OF ALL RESPONDENTS WHO WERE SUFFICIENTLY FAMILIAR WITH THE DOCUMENT TO COMMENT, RATED THE STANDARD AS GENERALLY SATISFACTORY.

AN ADDITIONAL 14% OF THESE RESPONDENTS RATED THE STANDARD AS GENERALLY ACCEPTABLE, BUT SUGGESTED AREAS FOR IMPROVEMENT, FOR A TOTAL FAVOURABLE RESPONSE RATE OF 84%.

The total favourable response rate of these respondents was 89% for manufacturers, 73% for distributors, 100% for retailers(see General Observation No.9), and 80% for major users.

	All	Mfrs.	Dist.	Ret.	Users
Generally satisfactory.	43%	48%	38%	43%	44%
Generally acceptable, but contains areas where improvement is necessary.	8%	22%	0%	0%	0%
Contains features which are definitely unacceptable.	7%	8%	5%	0%	11%
Not sufficiently familiar with the Certification Standard document and unable to comment at this time.	38%	22%	48%	57%	45%
Other.	4%	0%	9%	0%	0%

The manufacturers as a group were considerably more familiar with the Standard than the other respondent groups. The manufacturers were the only group to suggest areas for improvement.

3. RATING THE TECHNICAL REQUIREMENTS.

70% OF ALL RESPONDENTS SAID THE TECHNICAL REQUIREMENTS OF THE STANDARD CS-01 DO NOT IMPOSE SPECIFIC HARDSHIPS FOR THEIR PRODUCT. (QUESTION II.)

	All	Mfrs.	Dist.	Ret.	Users
Do not impose specific hardships.	70%	41%	85%	86%	N/A
Do impose specific hardships.	30%	59%	15%	14%	N/A

59% of manufacturers said the Standard does impose specific hardships for their product.

85% of distributors (and retailers) said the Standard does not impose specific hardships.

CERTIFICATION STANDARD CS-01

WRITTEN COMMENTS (Question 10.)

1. "The document has been well-written. However, we feel that while the specifications have been carefully developed and documented as sufficient for network protection, neither the DOC nor the carriers have established that they are all necessary for network protection. To our knowledge, the specification includes more tests, under more adverse conditions, with stricter requirements than any comparable program in other countries. While these specifications can be met, this is obviously an associated cost which must be borne by the consumer."

IBM CANADA LTD., DON MILLS, ONT.

2. "Unrealistic with regard to longitudinal noise rejection.

ANONYMOUS

3. "On-hook terminal impedance should not be restricted to a value so high that 5 units can be connected to the line. Section 5.1.3. Off-hook terminal resistance range should be extended to 300 ohms. The FCC method of measuring longitudinal balance assures network protection and is less concerned with consumer protection."

NORTHERN TELECOM LTD., LONDON, ONT.

4. "Dielectric leakage test eliminates the possibility of protecting a machine against lightning induced damage."

DICTAPHONE CORP., NORWALK, CONN.

5. "Standards set should be comparable with Ma Bell's own standards as far as electrical parameters. The market place, however, should decide on standards as far as appearance and physical strength, cosmetics, etc.

HANS DAS ELECTRONICS, SARNIA, ONT.

6. "Amount of test equipment required imposes some financial hardship."

R.H. MERCER COMMUNICATIONS REG'D., ST. LAURENT, QUE.

7. "A list of suppliers of test equipment should have been included in CS-01. Information should have been included on how one might obtain Bell Laboratories Specification KS-20501."

SELECTROTEL MANUFACTURING CO. LTD., BURNABY, B.C.

8. Unacceptable features: "Requirement for certification on private line services where not previously required. Banning of network addressing when a perfectly useable arrangement (the CBS/CBT DAR) is available and has been used throughout North America. 1.3. Acoustic couplers were never intended for certification. 2.7."

T.E. FIELD ASSOC. LTD., SCARBOROUGH, ONT.

9. "It is time the DOC wrote the specifications to aid the communications field instead of allowing BELL CANADA to write the certifications for the DOC approval blocking out all other communications firms from the market."

ANONYMOUS (RETAILER)

10. "The tests and testing methods need revision. Some of the tests are unduly restrictive to manufacturers of terminal equipment, whilst some are not adequate from the carriers viewpoint."

INTEL CONSULTANTS LTD., OTTAWA, ONT.

11. "Phase II is of concern to us."

ANONYMOUS

12. "I don't accept the need for telco interface or government acceptance. FCC/Carterphone decision should be used as model."

P. LANCASTER, TORONTO, ONT.

13. "In testing for DOC Certification (CS-01) we have found two sections which we believe should be modified. The test methods used for these two sections have caused us to make a number of equipment changes which have reduced our customers satisfaction with the equipment (Section 3.3) or resulted in a substantial increase in cost (Section 3.5).

In all other areas, while we have occasionally had to make changes to the equipment to meet the DOC requirements the changes made have been minor and have improved the equipment. These changes have been incorporated in the units sold in the U.S., as well as those sold in Canada.

Section 3.3 poses a particularly frustrating problem in that a machine modified to meet the DOC requirement based on the test method used in CS-01 will no longer meet the requirements imposed by specifications of Western Electric and other independent Telephone companies for the same equipment. Therefore, we must market two different units to meet the same requirement (-9 dBm averaged over any 3 second interval).

SECTION 3.3, TRANSMITTED SIGNAL POWER, HAS AS ITS LIMIT -9 dBm AVERAGED OVER ANY 3 SECOND INTERVAL.

Ford Industries has met this exact limit for many years with both AT&T and independent telephone companies without modification to the machines. Ford Industries has found that the tones, used in Appendix 'A', generate much greater signals delivered to T and R. Ford Industries therefore recommends that the tones listed in Appendix 'A' be deleted from the test method and that loud speech or some other alternative be substituted.

SECTION 3.5, TERMINATING LONGITUDINAL BALANCE.

Ford industries suggests that the method and the limits be reviewed in light of recent standards recommended by AT&T and accepted in the U.S. for longitudinal balance

testing of terminal equipment. The Bell System Companies' reply (dated January 22, 1976) to FCC Docket 19528 states on page 18, paragraph G, subpart 33, that "IEEE Standard 455-76 cannot be used to measure the metallic to longitudinal balance coefficient since it was intended and expressly developed for measuring the longitudinal to metallic balance coefficient". A copy of the circuit suggested by Bell and ultimately incorporated into Section 68.310 of the FCC Rules Part 68, and a copy of the balance requirements are enclosed". (See Appendix)

FORD INDUSTRIES INC., PORTLAND, OREGON

4. RATING THE DOC CERTIFICATION PROCEDURE CP-01 (Question 8.)

74% OF ALL RESPONDENTS WHO WERE SUFFICIENTLY FAMILIAR WITH THE DOCUMENT TO COMMENT RATED THE PROCEDURE AS GENERALLY SATISFACTORY.

AN ADDITIONAL 14% OF THESE RESPONDENTS RATED THE PROCEDURE AS GENERALLY ACCEPTABLE, BUT SUGGESTED AREAS FOR IMPROVEMENT, FOR A TOTAL FAVOURABLE RESPONSE RATE OF 88%.

The total favourable response rate for these respondents was 85% for manufacturers, 85% for distributors, 100% for retailers*, and 80% for major users.
* See General Observation No. 9.

	ALL	MFRS.	DIST.	RET.	USERS
Generally satisfactory.	50%	50%	50%	57%	44%
Generally acceptable, but contains areas where improvement is necessary.	10%	21%	0%	0%	12%
Contains features which are definitely unacceptable.	7%	12%	5%	0%	0%
Not sufficiently familiar with the Certification Procedure document, and unable to comment at this time.	32%	17%	41%	43%	44%
Other.	1%	0%	4%	0%	0%

Again, the manufacturers indicated significantly more familiarity with the document than the other respondent groups.

The manufacturers were the major originators of suggestions for improvement, and had the highest "unacceptable" rating.

CERTIFICATION PROCEDURE CP-01

WRITTEN COMMENTS (Question 10.)

1. "The philosophy appears to be one of not trusting industry and applying extensive government controls to ensure compliance. We believe procedures should be based on trust but with adequate policing by DOC. For example, we believe it should be acceptable, as it is in many countries, for a manufacturer to submit evidence that his product meets the requirements. DOC could then police these products by random checks or by checks on consumers of telephone company complaints."
   A reduced label fee could reduce other administration costs by making it feasible to label all production of an approved unit, independent of the province of installation.

   IBM CANADA LTD., DON MILLS, ONT.

2. "We make only auto dialers which at present do not qualify for certification. We therefore have no experience on which to base replies to these questions."

   INDUSTRIAL MEASUREMENTS LTD., WILLOWDALE, Ont.

3. "See CBEMA brief." ANONYMOUS

4. "1. Suggest a time schedule for the certification process within DOC.
   2. Presently two labels are required for each item of terminal equipment. These are awkward and non-permanent. The manufacturer should be permitted to apply permanent designation as presently allowed by CSA, U.L. etc."

   NORTHERN TELECOM LTD., LONDON, ONT.

5. "Ref. #12: Equip. merrily replaces human, initiating a call for "help". We find the requirements in CS-01 an exercise in bureaucratic idiocy."

ANONYMOUS. (manufacturer)

6. "The administration costs for certification (application and certification) fees are excessive. The application fee and certification fee should total $150.00 or less."

3M CANADA LTD., LONDON, ONT.

7. "The procedure at present is not applicable to our unit. If it were extended, the procedures available would generally be satisfactory provided the implementation were such that time delays were avoided and applicants were advised initially as to the probable time schedule for approval."

KARRYFONE INTERNATIONAL LTD., TORONTO, ONT.

8. "1.4.11 Should allow individual provincial approval as well.
1.7.1 Supplier should have the option of repairing or returning to original manufacturer.
1.10.3 Should accept foreign testing for foreign products.
1.10.5 Should accept foreign equivalent to Canadian P.Eng.
2.5.1 See 1.7.1."

T.E. FIELD ASSOC. LTD., SCARBOROUGH, ONT.

9. "Have not yet submitted equipment and can't really comment. Appear OK in principle. The real test is in applying them - and we haven't seen how this works out. Generally, phasing of certification much too slow. Indicates strong phoneco lobby."

D.M. FERGUSON, TELEDATA LTD., PIERREFONDS, Qué.

5. MAJOR AREAS OF INTEREST IN EQUIPMENT TYPES (QUESTION 12.)

MORE RESPONDENTS SELECTED AUTOMATIC DIALERS THAN ANY OTHER CATEGORY. NEXT IN RANK WERE AUTOMATIC ANSWERING AND RECORDING DEVICES, FOLLOWED IN ORDER BY ALARM DEVICES, MODEMS, AND DATA PERIPHERALS.

The least overall interest was for electrocardiogram equipment, then traffic measuring equipment, conferencing devices and scramblers. Decorator telephones and P.A.B.X.'s were also low on the list.

EQUIPMENT TYPES RANKED ACCORDING TO ALL RESPONDENTS' MAJOR AREAS OF INTEREST

RANK	EQUIPMENT TYPE	TIMES MENTIONED
1.	Automatic dialers	31
2.	Automatic answering & rec.	28
3.	Alarm devices	23
4.	Modems	21
5.	Data peripherals	20
6.	Paging	18
	Intercoms	18
7.	Call diverters	16
8.	Acoustic devices	15
9.	Dial speakerphones	14
10.	Facsimile	13
11.	Dictation equipment	12
	Speakerphones (non dial)	12
	Key telephone equipment	12
12.	Plugs, jacks, cords	11
13.	P.A.B.X.'s	10
14.	Other (radio, multiplexors processors,etc.)	9
15.	Decorator telephones	8
16.	Scramblers	7
	Conferencing devices	7
	Traffic measuring equipment	7
17.	Electrocardiogram equipment	1

EQUIPMENT TYPES RANKED ACCORDING TO
MANUFACTURERS' MAJOR AREAS OF INTEREST

RANK	EQUIPMENT TYPE	TIMES MENTIONED
1.	Automatic dialers	9
	Alarm devices	9
2.	Data peripherals	7
3.	Automatic answering & rec.	6
4.	Paging	5
	Modems	5
	Key telephone	5
	Other	5
5.	Intercoms	4
	Dial speakerphones	4
6.	Acoustic devices	3
	Facsimile	3
	Non dial speakerphones	3
	P.A.B.X.'s	3
	Decorator telephones	3
7.	Plugs, jacks, cords	2
	Dictation	2
	Call diverters	2
8.	Scramblers	1
	Electrocardiogram	1
9.	Conferencing	0
	Traffic measuring	0

EQUIPMENT TYPES RANKED ACCORDING TO
DISTRIBUTORS' MAJOR AREAS OF INTEREST

RANK	EQUIPMENT TYPE	TIMES MENTIONED
1.	Automatic dialers	14
2.	Automatic answering & rec.	11
3.	Paging	9
4.	Intercoms	7
	Alarm devices	7
	Modems	7
	Call diverters	7
5.	Acoustic devices	6
	Data peripherals	6
	Speakerphones (non dial)	6
6.	Plugs, jacks, cords	5
	Dial speakerphones	5
7.	Facsimile	4
	Conferencing	4
8.	Dictation	3
	Scramblers	3
	Key telephone	3
	P.A.B.X.'s	3
9.	Decorator telephones	2
	Traffic measuring	2
	Other	2
10.	Electrocardiogram	0

EQUIPMENT TYPES RANKED ACCORDING TO
RETAILERS' MAJOR AREAS OF INTEREST

RANK	EQUIPMENT TYPES	TIMES MENTIONED
1.	Automatic answering & rec.	6
2.	Dictation	4
	Call diverters	4
3.	Intercoms	3
	Alarm devices	3
	Automatic dialers	3
	Decorator telephones	3
4.	Acoustic devices	2
	Plugs, jacks, cords	2
	Modems	2
	Data peripherals	2
	Dial speakerphones	2
5.	Paging	1
	Conferencing	1
	Scramblers	1
	Speakerphones (non dial)	1
6.	Facsimile	0
	Electrocardiogram	o
	Key telephones	0
	P.A.B.X.'s	0
	Traffic measuring	0
	Other	0

EQUIPMENT TYPES RANKED ACCORDING TO
MAJOR USERS' MAJOR AREAS OF INTEREST

RANK	EQUIPMENT TYPES	TIMES MENTIONED
1.	Modems	7
2.	Facsimile	6
3.	Automatic answering & rec.	5
	Data peripherals	5
	Automatic dialers	5
	Traffic measuring	5
4.	Acoustic devices	4
	Intercoms	4
	Alarms	4
	Key telephones	4
	P.A.B.X.'s	4
5.	Paging	3
	Dictation	3
	Dial speakerphones	3
	Call diverters	3
6.	Plugs, jacks, cords	2
	Conferencing devices	2
	Scramblers	2
	Speakerphones (non dial)	2
	Other	2
7.	Electrocardiogram	0
	Decorator telephones	0

6. PERCEIVED ADVANTAGES OF TERMINAL ATTACHMENT PROGRAM (Question 7.)

A. 76% OF ALL RESPONDENTS AGREED THAT T.A.P. SHOULD EVENTUALLY RESULT IN AN INCREASE IN SALES OF TERMINAL EQUIPMENT SINCE USERS WILL NO LONGER HAVE TO PAY AN ADDITIONAL MONTHLY CHARGE TO TELEPHONE COMPANIES FOR A PROTECTIVE COUPLER. (7b)

	ALL	DIST.	MFRS.	RET.	USERS
AGREED	76%	76%	73%	72%	89%
DISAGREED	16%	16%	18%	14%	11%
UNDECIDED	8%	8%	9%	14%	0%

The major user respondents showed a greater tendency to agree (89%) than the other respondent groups.

B. 68% OF ALL RESPONDENTS AGREED THAT T.A.P. SHOULD EVENTUALLY RESULT IN AN INCREASE IN SALES OF TERMINAL EQUIPMENT, SINCE USERS CAN PLUG IN THE EQUIPMENT THEMSELVES, RATHER THAN INCUR AN INSTALLER SERVICE CALL, OR TRY TO CONNECT IT THEMSELVES. (7c)

	ALL	DIST.	MFRS.	RET.	USERS
AGREED	68%	78%	62%	43%	78%
DISAGREED	18%	13%	17%	43%	11%
UNDECIDED	14%	9%	21%	14%	11%

Distributors and major users had the highest proportion who agreed (78%), while retailers had the lowest (43%).

C. 59% OF ALL RESPONDENTS AGREED THAT T.A.P. SHOULD EVENTUALLY RESULT IN AN INCREASE IN SALES OF TERMINAL EQUIPMENT SINCE CONSUMERS WILL HAVE MORE CONFIDENCE THAT A DOC APPROVED (AND LABELLED) PRODUCT WILL PERFORM PROPERLY WHEN CONNECTED TO TELECOMMUNICATIONS COMPANY NETWORKS. (7a)

	ALL	DIST.	MFRS.	RET.	USERS
AGREED	59%	75%	35%	72%	67%
DISAGREED	25%	17%	43%	14%	11%
UNDECIDED	16%	8%	22%	14%	22%

Distributors and retailers had the highest proportion in agreement. Manufacturers had the lowest. (35%)

D. 73% OF ALL RESPONDENTS SAID THEIR FIRM'S ADVERTISING OR PROMOTIONAL MATERIAL WILL INCLUDE REFERENCE TO DOC CERTIFICATION, ASSUMING THEIR PRODUCT IS (OR WILL BECOME) CERTIFIED. (7d)

	ALL	DIST.	MFRS.	RET.	USERS
YES	73%	78%	70%	71%	67%
NO	18%	18%	13%	29%	33%
DON'T KNOW	9%	4%	17%	0%	0%

A significantly higher proportion of manufacturers than distributors were in the "don't know" category.

7. MODIFICATION OF EQUIPMENT INVENTORIES (Question 9.)

49% OF ALL RESPONDENTS SAID THEY ARE MODIFYING (OR WOULD MODIFY) THEIR INVENTORY OF TERMINAL EQUIPMENT IF THIS IS NECESSARY TO MAKE IT ACCEPTABLE FOR CERTIFICATION.

27% SAID THEY WOULD NOT MODIFY; AND 24% DID NOT KNOW.

	ALL	DIST.	MFRS.	RET.	USERS
WOULD MODIFY	49%	46%	61%	33%	N/A
WOULD NOT	27%	27%	22%	50%	N/A
DON'T KNOW	24%	27%	17%	17%	N/A

MAKING THE ASSUMPTION THAT THE "DON'T KNOW" RESPONDENTS WOULD SPLIT IN THE SAME PROPORTION AS THE OTHERS, THEN 64% OF ALL RESPONDENTS WOULD MODIFY THEIR EQUIPMENT, AND 36% WOULD NOT.

The manufacturer respondents contained a significantly higher proportion who would modify. (61%)

8. COST IMPACTS

A. 51% OF ALL RESPONDENTS BELIEVE THE COST OF HAVING THEIR PRODUCT CERTIFIED IS (OR WILL BE) AT LEAST BALANCED, OR OUTWEIGHED, BY THE MARKETING ADVANTAGES OR OTHER BENEFITS THEIR BUSINESS WOULD RECEIVE AS A RESULT OF OFFERING A PRODUCT CERTIFIED BY DOC FOR DIRECT CONNECTION TO TELECOMMUNICATIONS NETWORKS. (Question 2.)

	ALL	DIST.	MFRS.	RET.	USERS
AGREE	51%	60%	32%	57%	N/A
DISAGREE	19%	16%	23%	29%	N/A
DON'T KNOW	30%	24%	45%	14%	N/A

60% of the distributors agreed, but only 32% of the manufacturers agreed.

A large proportion of the manufacturers were in the "don't know" category. (45%)

B. 60% OF ALL RESPONDENTS SAID THE COST OF CERTIFICATION WILL HAVE A LOW OR MEDIUM IMPACT ON THEIR MANUFACTURING, DISTRIBUTION, OR OTHER PRODUCT COSTS.
12% SAID THE COST OF CERTIFICATION WILL HAVE A HIGH IMPACT.
23% DID NOT KNOW. (Question 3.)

	ALL	DIST.	MFRS.	RET.	USERS
HIGH IMPACT	12%	16%	9%	14%	N/A
MEDIUM IMPACT	27%	16%	43%	14%	N/A
LOW IMPACT	33%	36%	31%	29%	N/A
NO IMPACT	5%	4%	0%	14%	N/A
DON'T KNOW	23%	28%	17%	29%	N/A

c. 91% OF ALL RESPONDENTS SAID THE COST OF HAVING THEIR PRODUCT CERTIFIED WOULD HAVE A SMALL IMPACT, OR LITTLE OR NO IMPACT, ON THE PRICE THEY WOULD CHARGE FOR THEIR CERTIFIED PRODUCT. (Question 4.)

9% said the result would be a large increase in price.

	ALL	DIST.	MFRS.	RET.	USERS
PRICE REDUCTION	4%	0%	9%	0%	N/A
LITTLE IMPACT	33%	39%	23%	43%	N/A
SMALL PRICE INCREASE	54%	48%	64%	43%	N/A
LARGE PRICE INCREASE	9%	13%	4%	14%	N/A

More manufacturers than distributors said the impact would be a small price increase, but fewer indicated a large price increase. (4% versus 13% for distributors.)

D. 90% OF ALL RESPONDENTS SAID THE PRICE OF THEIR CERTIFIED PRODUCT HAS INCREASED SINCE CERTIFICATION (OR WOULD INCREASE) BY LESS THAN 10%. (Question 5.) 48% OF THESE SAID THE PRICE INCREASE WAS (OR WOULD BE) LESS THAN 5%.

PRICE INCREASE	ALL	DIST.	MFRS.	RET.	USERS
LESS THAN 5%	48%	44%	50%	43%	N/A
5% TO 10%	42%	44%	40%	43%	N/A
10% TO 20%	6%	6%	5%	14%	N/A
20% TO 30%	4%	6%	5%	0%	N/A
MORE THAN 30%	0%	0%	0%	0%	N/A

There were no significant differences between manufacturers and distributors.

9. LABEL FEES

53% OF ALL RESPONDENTS SAID THE FEE FOR CERTIFIED TERMINAL EQUIPMENT LABELS SHOULD BE CONTINUED AS AT PRESENT, WITH A PORTION OF THE DEPARTMENT'S CERTIFICATION COSTS INCLUDED IN THE PER LABEL FEE OF $1.00. (QUESTION 6.)

47% SAID THE PER LABEL FEE SHOULD BE REDUCED TO COVER ONLY THE COST OF LABELS, WITH A CORRESPONDING INCREASE IN THE INITIAL CERTIFICATION FEE.

LABEL FEE	ALL	DIST.	MFRS.	RET.	USERS
MAINTAIN	53%	48%	53%	71%	N/A
REDUCE	47%	52%	47%	29%	N/A

Manufacturers were slightly more in favour of maintaining the current per label fee.

GENERAL OBSERVATIONS

1. The retailers and major users were not as familiar with the documents CS-01, and CP-01, as were the manufacturer and supplier respondents.

2. The percentage of respondents who were identified as foreign was 6%, the same percentage exactly as the proportion of foreign recipients of the questionnaire. 25, or 6%, were mailed to foreign recipients. It is possible that some of the anonymous respondents were also foreign.

3. The 11% of respondents that were major users were almost all very large companies or government departments such as the R.C.M.P., Transport Canada, C.P. Rail, Newfoundland Light & Power, Metropolitan Toronto Police, Ontario Hydro.

4. The 10% of respondents who were retailers were all Canadian, ranging from small to large business volume.

5. Of the 39% of respondents who identified themselves as manufacturers, 11% were identified as foreign, 57% as Canadian, and 32% anonymous. Many of the manufacturers were small businesses, but a number ranged up to large size, such as IBM and Northern Telecom.

6. The majority of respondents represent medium or large size businesses. One-half had annual gross revenues greater than $1,000,000. An additional third had revenues between $100,000 and $1,000,000.

7. There were almost equal numbers of manufacturers and distributors in the respondents. Of the manufacturers

who were identified, 84% were Canadian.

8. In evaluating the overall Program (Finding 1.), there were few discernible differences between the responses of manufacturers and distributors. However, in evaluating the Standard CS-01, there was a significant difference. A much higher proportion of distributors were not familiar enough with the document to comment, and none selected category 2 (generally acceptable, but contains areas for improvement), whereas 22% of manufacturers selected this category. This seems to indicate that the manufacturers as a group are more knowledgeable about CS-01. This may explain the higher favourable response rate (89%) for manufacturers, as compared to 73% for distributors.

9. The 100% favourable response rates for retailers in rating the Standard and Procedure documents were a result of the fact that a very small number of retailers responded (7), and all their responses were grouped in either category 1 or category 4. Thus eliminating category 4 in the calculations provided a 100% rate for category 1. The responses for both retailers and major users must be considered in the light that the number of respondents was very small, and therefore the results can not necessarily be considered representative. The survey was not aimed at retailers or major users.

LETTERS FROM RESPONDENTS

A number of letters were received during the survey. Many were simply requests for more information and documents. These were sent. These letters are not included in this report, but are filed with the completed questionnaires. Some letters contained information relevant to the Program. All of these are reproduced on the following pages.

U-7

DATACROWN LIMITED
650 McNicoll Avenue, Willowdale, Ontario M2H 2E1 · 499-1012

November 18, 1976

Telecommunications Research Services
c/o Tele-Connect Limited
340 Laurier Avenue West
Ottawa, Ontario
K1P 5W3

Dear Sirs

I acknowledge receipt of your questionnaire for the Terminal Attachment Program Survey. Datacrown has requested information regarding the Terminal Attachment Program in order that we may monitor it as an end user of interconnect equipment. As an end user, your questionnaire is not directly applicable to us, although I have attempted to answer it.

To qualify our interest in interconnection; Datacrown has installed over $80,000 of interconnect equipment in 1976. This equipment is used under telephone company tariffs which require the use of data access arrangements provided by the common carrier. Nevertheless, this equipment will pay for itself within twelve months. Additionally, it has reduced our floor space requirements by over 75%, and improved our operating environment. Datacrown is currently evaluating additional interconnect equipment for which expenditures may exceed $100,000 within the next year.

I trust the above information will aid you in evaluating the Terminal Attachment Program.

Yours truly

M. L. Duke/mel
Technical Analyst

Attachment

IBM IBM Canada Ltd.

1150 Eglinton Ave. E., Don Mills, Ont. M3C 1H7

Office of the Director of Commercial Relations

December 23, 1976

Mr. D.C. Robinson
Program Consultant
Telecommunications Research Services
55 Midland Avenue
Beaconsfield 870, Quebec

Dear Mr. Robinson

Subject: Terminal Attachment Program Survey

Attached is a completed questionnaire for the Terminal Attachment Program Survey. We have not yet had direct experience by certifying products under Phase I of the program, and cannot answer questions specifically about the cost of complying with the program. It is obvious, however, that there are costs to obtaining certification, and a continuing objective of the program should be to minimize these costs.

The devices covered by Phase I are relatively simple. However, we are apprehensive that if the same standards and procedures are applied to more complex devices in Phase II of the program that the costs will increase by an unreasonable amount.

A summary of our position on Phase II of the program is, therefore, that the technical standards should be restricted to those essential for network protection and that the administrative requirements be restricted to those necessary for reasonable control and audit of the program. From our discussions with the Department of Communications, we understand that we will be given an opportunity to meet with them and to discuss our positions as Phase II of the program is developed.

I hope our response will be of assistance in the study you are making for the Department of Communications.

Sincerely

J.E. Tapsell:ec
Attach.

intel CONSULTANTS LTD.

56 Sparks Street — Ottawa — Canada — K1P 5A9
Tel : 613-236-2311 Telex : 053-4533

Ottawa, November 19, 1976
Our Ref: A70/1131

Mr. Donald C. Robinson
Program Consultant
Telecommunications Research Services
55 Midland Avenue,
Beaconsfield 870,
Québec, Canada

Mr. D. C. Robinson,

We thank you for your letter dated the 5th November 1976, which enclosed a questionnaire.

As a consultant you are aware that some of the technical requirements specified in CS01 are unsatisfactory, from both the operating companies' considerations and those of the manufacturers of terminal attachment. Action has been taken to standardise the best methods and the first proposal has been agreed between Canada and the USA; this proposal has been submitted to the CCITT and their acceptance in principle is likely. It is important for the sales of Canadian manufactured equipment that the standards set are equivalent or identical to those being set abroad.

Regarding question 7, the terminal attachment program has been introduced to enable subscribers to have a better selection of the features and facilities available than would be possible, for practical reasons, through the operating companies. The sales of terminal equipment should increase but not for the reasons outlined in your questionnaire. If the sales do not increase then the stipulations of the program must be at fault. Also, as the certification program is intended only to ensure that the terminal equipment interfaces satisfactorily with the public network, it is difficult to understand how labelling can be interpreted as a confidence level of equipment.

This matter is to be aired at the forthcoming NTC where the foremost experts in N. America have been invited to take part in a panel discussion. It is proposed that, as a result of the discussion, a group of engineers be entrusted with the specification of testing methods suitable for adoption throughout N. America and by the C.C.I.T.T. No doubt you will be attending this meeting - either as a interested expert or as the consultant to the D. O. C. - to express the Canadian viewpoint.

We trust that this letter will be of assistance to you. Your questionnaire is attached.

Yours truly,

George Buchanan, P. Eng.

Canadian
Telecommunications
Carriers Association

J. L. Wilson
Director of Engineering

November 19, 1976

File: 6A10

Mr. D.C. Robinson
Program Consultant
Telecommunications Research Services
55 Midland Avenue
Beaconsfield 870, Quebec

Dear Mr. Robinson:

This is in response to the Terminal Attachment Programme Survey that we received recently from you. Our Association is, in fact, interested in this topic as you suggest in your covering letter. You must appreciate however that only the federally regulated carriers are affected by the programme and we represent many others who are not federally regulated.

Given these circumstances, our activity on this matter has been restricted to maintaining a watching brief and keeping all our members informed. Since we cannot speak for all our members on Terminal Attachment we have refrained from assuming any official position and therefore, would be unable to complete your questionnaire.

Yours truly,

1 Nicholas St., Suite 700, Ottawa, Ontario K1N 7B7 / Telephone (613) 238-3080 / TWX 610 562-1910 / Telex 053-3310

Canadian Standards Association
178 Rexdale Boulevard, Rexdale, Ontario, Canada, M9W 1R3
Association Canadienne de Normalisation

November 16, 1976

Mr. D.C. Robinson,
Telecommunications Research Services,
55 Midland Ave.
Beaconsfield 870,
Quebec.

Dear Don,

I have your questionnaire on DOC's Terminal Attachment Program. Since CSA is not a supplier, nearly all of the questions do not apply. However, we have always identified with the program since our traditional role is to manage standards and product certification programs and we have felt that our experience in both could be of value to both government and industry.

I believe this has been borne out, more or less, with both sectors. We are well aware of the problems facing a certification agency, be it government or otherwise. Many of these problems are of a totally unexpected nature.

If the results of the survey are to be published or will be discussed at some future date, I would appreciate being kept informed.

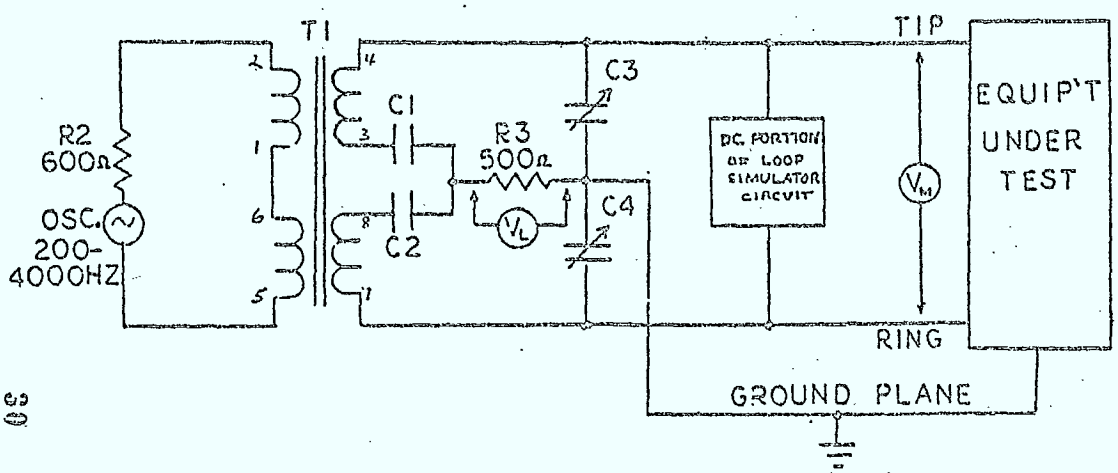
Yours very truly,

J. Quail
Manager,
Special Projects

FJQ:hc

Appendix To Ford Industries Inc. Suggestions for CS-01

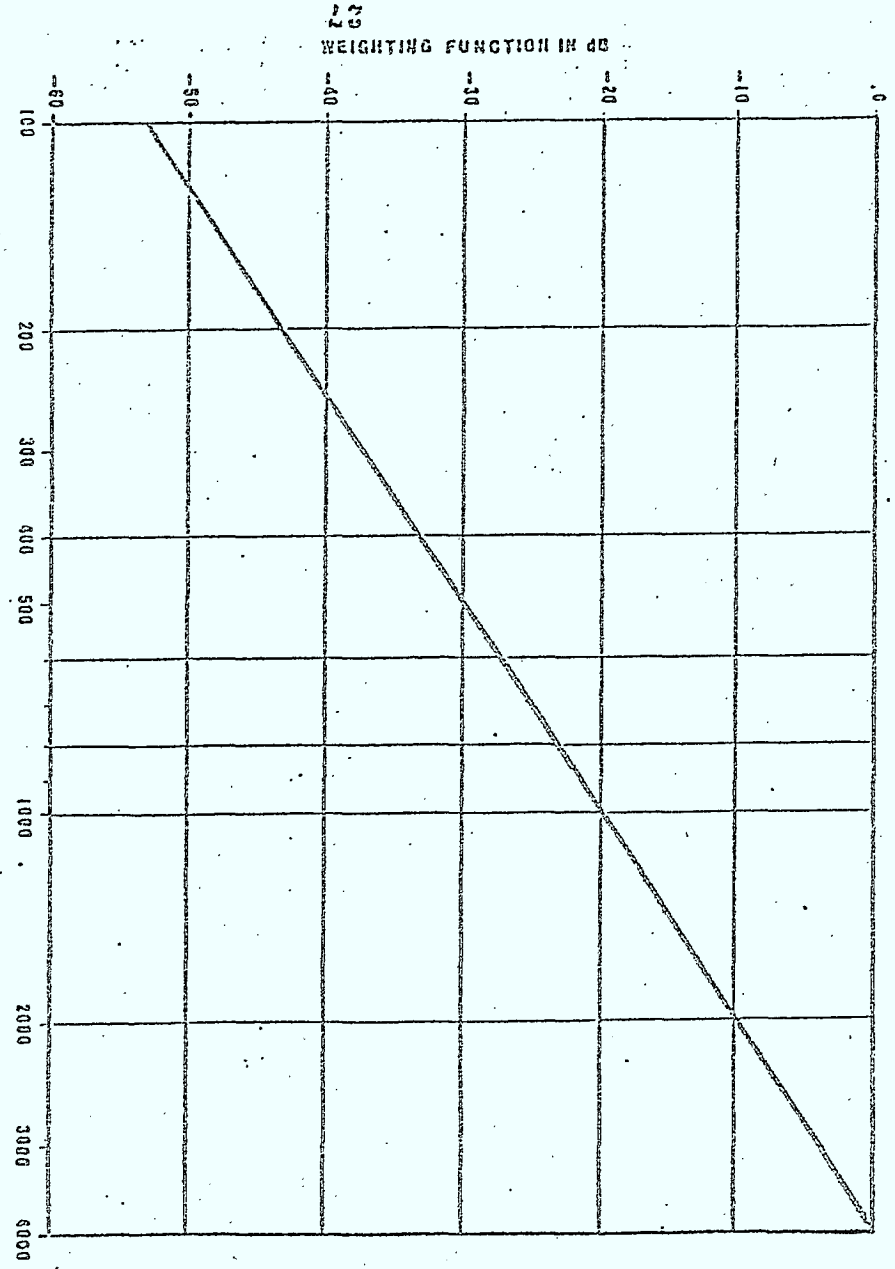
A recommended test apparatus which complies with Section 68.310(a):



T_1 - W.E.Co. 120H or 120C, or A.D.C. 109B or 109F, or equivalent.
C_1, C_2 - 8 microfarad, 400 WVDC, matched to within 0.1%.
C_3, C_4 - 100 to 500 picofarad adjustable trimmer capacitor

NOTE: Use trimmer capacitors to balance test circuit using a 600 ohm resistor in place of the equipment under test. Balance should be 20 dB greater than the equipment standard for all frequencies. Exposed conductive surfaces on the exterior of the equipment under test should be connected to the ground plane for this test.

Figure 68.310(a)



WEIGHTING FUNCTION RESPONSE

Figure 68.308

Section 68.310 Longitudinal Balance Limitations

(a) Technical Description and Application. The metallic-to-longitudinal balance coefficient, $BALANCE_{m-l}$, is expressed as:

$$BALANCE_{m-l} = 20 \log_{10} \left| \frac{e_M}{e_L} \right|$$

where e_L is the longitudinal voltage produced across a 500-ohm longitudinal termination and e_M is the metallic voltage across the tip-ring interface of the input port when a voltage (at any frequency $200 \leq f \leq 4000$ Hertz) is applied from a balanced 600-ohm metallic source. The source voltage should be set such that e_M = 0.775 volts rms (0 dBm) when a 600-ohm termination is substituted for the terminal equipment. The minimum balance coefficient shall be equalled or exceeded at all values of dc loop current that the port under test of the registered equipment is capable of drawing when attached to the loop simulator circuit specified in these Rules. A test circuit that satisfies the above conditions and may be used for measuring the metallic-to-longitudinal balance coefficient is shown in Figure 68.310(a).

The minimum balance requirements specified below shall be equalled or exceeded under all reasonable conditions of the application of earth ground to the registered equipment:

Sub-paragraph	Equipment state	Minimum balance requirement	Frequency range (Hertz)
(b)	Both on-hook and off-hook.	60 dB 40 dB	200 to 1000 1000 to 4000
(c)	on-hook	60 dB 40 dB	200 to 1000 1000 to 4000
	off-hook	40 dB	200 to 4000
(d)	off-hook	40 dB	200 to 4000
(e) voice equipment	Both on-hook and off-hook	60 dB 40 dB	200 to 1000 1000 to 4000
(e) data equipment	on-hook	60 dB 40 dB	200 to 1000 1000 to 4000
	off-hook	40 dB	200 to 4000
(f)	off-hook	40 dB	200 to 4000
(g)	Both on-hook and off-hook	60 dB 40 dB	200 to 1000 1000 to 4000
(h)	off-hook	40 dB	200 to 4000

APPENDIX

1. THE QUESTIONNAIRE
2. NUMERICAL RESPONSE MATRICES
3. DETAILED TABULATION OF RESPONSES

NOTE: The Appendix contains sufficient detailed information to reproduce the results given in the first part of this report, or to do further analysis if required. The actual completed questionnaires from which this data has been compiled, and other background data, have been provided to the Department in a separate package.

APPENDIX 1.

TELECOMMUNICATIONS
RESEARCH SERVICES
55 MIDLAND AVENUE, BEACONSFIELD 870, QUE. CANADA
TELEPHONE (514) 697-7643

5 November, 1976.

TERMINAL ATTACHMENT PROGRAM SURVEY

Telecommunications Research Services, a division of Tele-Connect Ltd., is conducting an independent survey on behalf of the federal Department of Communications. The purpose of the survey is to provide feedback to the Department on the effectiveness of the Terminal Attachment Program.

The questionnaire is being mailed to a limited number of firms - only those manufacturers, distributers and suppliers who have previously received information from the Department about the Terminal Attachment Program, and who have subsequently indicated by post-card returns that they wish to continue to receive information on the Program.

As an interested firm, your answers to the questions will be most helpful to us by providing important feedback about the impact of the Program on your firm. The information will provide guidance to the Department in the development of subsequent phases and future revisions to the Program.

You can do this by taking a few minutes to complete the attached questionnaire. The questionnaire can be completed by any person who is familiar with Department's documents, Certification Procedure CP-01, and Certification Standard CS-01, and who has a general understanding of the impact of these requirements on your business.

It would be appreciated if you could return the completed questionnaire within ten days after you receive it. A postage paid return envelope is enclosed for your convenience. If you wish, the questionnaire may be returned anonymously.

Your assistance in this survey is greatly appreciated. Thank you for your help.

Yours sincerely,

Donald C. Robinson

Donald C. Robinson
Program Consultant

TERMINAL ATTACHMENT PROGRAM SURVEY

1. What are your impressions of the Department's initial Program ? Please check one.

☐ Generally satisfactory.

☐ Satisfactory for a first stage program, but should be expanded to include more types of equipment.

☐ Generally acceptable, but contains areas where improvement is needed. Note: If you check this item, please list your suggestions for improvement below.

_____

_____

_____

_____

_____

☐ Contains features which are definitely unacceptable. Please specify.

_____

_____

_____

_____

_____

☐ Other. Please specify.

_____

_____

2. Do you believe the cost of having your product certified is (or will be) at least balanced, or outweighed, by the marketing advantages or other benefits your business would receive as a result of offering a product certified by DOC for direct connection to telecommunications networks ?

☐ Yes ☐ No ☐ Don't know

3. How does (or will) the cost of certification impact on your manufacturing, distribution, or other product costs ? Check one.

☐ High ☐ Medium ☐ Low ☐ No impact ☐ Don't know

4. What impact has (or would) the cost of having your product certified have on the price you would charge for your certified product ? Check one.

☐ Reduction ☐ Little impact ☐ Small increase ☐ Large increase

5. By how much has the price of your certified product increased since certification (or how much would it change in your opinion) ?

☐ Less than 5% ☐ Between 5% and 10% ☐ Between 10% and 20%

☐ Between 20% and 30% ☐ More than 30%

6. In your opinion, should the fee for certified terminal equipment labels be continued as at present, with a portion of the Department's certification costs included in the per label fee ($1.00), or should the per label fee be reduced to cover only the cost of labels, with a corresponding increase in the initial certification fee ? Check one.

☐ Maintain as at present ☐ Reduced per label fee

7. Please indicate whether or not you agree with the following perceived advantages of the Terminal Attachment Program ?

(a) The Terminal Attachment Program should eventually result in an increase in sales of terminal equipment since consumers will have more confidence that a DOC approved (and labelled) product will perform properly when connected to telecommunications company networks .

☐ Agree ☐ Disagree ☐ Undecided

(b) The Terminal Attachment Program should eventually result in an increase in sales of terminal equipment since users will no longer have to pay an additional monthly charge to telephone companies for a protective coupler.

☐ Agree ☐ Disagree ☐ Undecided

(c) The Terminal Attachment Program should eventually result in an increase in sales of terminal equipment since users can plug in the equipment themselves, rather than incur an installer service call, or try to connect it themselves.

☐ Agree ☐ Disagree ☐ Undecided

(d) Will your firm's advertising or promotional material include reference to DOC certification, assuming your product is (or will become) certified ?

☐ Yes ☐ No ☐ Don't know

8. Please rate the DOC Certification Procedures CP-01 document by checking one of the following categories.

☐ Generally satisfactory

☐ Generally acceptable, but contains areas where improvement is necessary. Note: Please list your suggestions for improvement.

_____

_____

_____

_____

_____

☐ Contains features which are definately unacceptable. Please specify.

_____

_____

_____

_____

_____

☐ I am not sufficiently familiar with the Certification Procedures document, and am unable to comment at this time.

☐ Other. Please specify. _____

_____

_____

_____

_____

9. Are you modifying (or would you modify) your inventory of terminal equipment if this is necessary to make it acceptable for certification ?

☐ Yes ☐ No ☐ Don't know

10. Please rate the DOC Certification Standard CS-01 document by checking one of the following categories.

☐ Generally satisfactory

☐ Generally acceptable, but contains areas where improvement is necessary. Note: Please list your suggestions for improvement.

_____

_____

_____

_____

_____

☐ Contains features which are definitely unacceptable. Please specify.

_____

_____

_____

_____

_____

☐ I am not sufficiently familiar with the Certification Standard document, and am unable to comment at this time.

☐ Other. Please specify. _____

_____

_____

_____

_____

11. Do the technical requirements of the Standard impose specific hardships for your product ?

☐ Yes ☐ No

12. Please check one or more of the following categories which best describe your major areas of interest in terminal telecommunications equipment.

- ☐ (a) Automatic answering and recording devices
- ☐ (b) Acoustically connected devices
- ☐ (c) Facsimile
- ☐ (d) Plugs, jacks and cords
- ☐ (e) Paging equipment
- ☐ (f) Dictation equipment
- ☐ (g) Intercoms
- ☐ (h) Alarm devices
- ☐ (i) Conferencing devices
- ☐ (j) Scramblers (voice or data)
- ☐ (k) Modems
- ☐ (l) Data peripherals
- ☐ (m) Electrocardiogram equipment
- ☐ (n) Speakerphones (non dial)
- ☐ (o) Dial speakerphones
- ☐ (p) Automatic dialers
- ☐ (q) Call diverters
- ☐ (r) Key telephone equipment
- ☐ (s) P.A.B.X.'s
- ☐ (t) Decorator telephones
- ☐ (u) Traffic measuring equipment
- ☐ (v) Other (Please specify). _____

_____

_____

_____

13. Please check one of the following categories which best describes your type of business.

- ☐ Manufacturer
- ☐ Distributer / Wholesaler
- ☐ Retailer
- ☐ Supplier Association
- ☐ Other (Please specify) _____

14. Please check one of the following categories which best describes the size of your total business operations in Canada.

- ☐ Annual gross revenues greater than $ 1,000,000.
- ☐ Annual gross revenues between $ 100,000. and $ 1,000,000.
- ☐ Annual gross revenues less than $ 100,000.

15. Please check one of the following categories which best describes the geographic area in which you market your products .

- ☐ One city
- ☐ One Province
- ☐ Two Provinces
- ☐ Three or more Provinces
- ☐ Canada and U.S.A.
- ☐ U.S.A.
- ☐ International

16. Name and company of person completing the questionnaire. Note: This section may be left blank if preferred.

NAME _____

COMPANY _____

ADDRESS _____

_____

TELEPHONE _____

Note: If space is insufficient, or if any answer requires further elaboration, attach additional pages as required.

APPENDIX 2

NUMERICAL RESPONSE MATRIX - QUESTION 1

CATEGORY	ALL	DIST.	MFRS.	RET.	USERS
1	18	8	6	2	2
2	33	12	11	3	7
3	10	3	4	2	1
4	4	2	2	0	0
5	3	2	0	0	1
TOTAL	68	27	23	7	11

NUMERICAL RESPONSE MATRIX - QUESTION 2

CATEGORY	ALL	DIST.	MFRS.	RET.	USERS
1	29	15	7	4	3
2	11	4	5	2	0
3	17	6	10	1	0
TOTAL	57	25	22	7	3

NUMERICAL RESPONSE MATRIX - QUESTION 3

CATEGORY	ALL	DIST.	MFRS.	RET.	USERS
1	7	4	2	1	0
2	16	4	10	1	1
3	20	9	7	2	2
4	3	1	0	1	1
5	14	7	4	2	1
Total	60	25	23	7	5

NUMERICAL RESPONSE MATRIX - QUESTION 4

CATEGORY	ALL	DIST.	MFRS.	RET.	USERS
1	2	0	2	0	0
2	18	9	5	3	1
3	30	11	14	3	2
4	5	3	1	1	0
TOTAL	55	23	22	7	3

NUMERICAL RESPONSE MATRIX - QUESTION 5

CATEGORY	ALL	DIST.	MFRS.	RET.	USERS
1	23	8	10	3	2
2	20	8	8	3	1
3	3	1	1	1	0
4	2	1	1	0	0
5	0	0	0	0	0
TOTAL	48	18	20	7	3

NUMERICAL RESPONSE MATRIX - QUESTION 6

CATEGORY	ALL	DIST.	MFRS.	RET.	USERS
1	29	11	10	5	3
2	26	12	9	2	3
TOTAL	55	23	19	7	6

NUMERICAL RESPONSE MATRIX - QUESTION 7(a)

CATEGORY	ALL	DIST.	MFRS.	RET.	USERS
1	37	18	8	5	6
2	16	4	10	1	1
3	10	2	5	1	2
TOTAL	63	24	23	7	9

NUMERICAL RESPONSE MATRIX - QUESTION 7(b)

CATEGORY	ALL	DIST.	MFRS.	RET.	USERS
1	48	19	16	5	8
2	10	4	4	1	1
3	5	2	2	1	0
TOTAL	63	25	22	7	9

NUMERICAL RESPONSE MATRIX - QUESTION 7(c)

CATEGORY	ALL	DIST.	MFRS.	RET.	USERS
1	43	18	15	3	7
2	11	3	4	3	1
3	9	2	5	1	1
TOTAL	63	23	24	7	9

NUMERICAL RESPONSE MATRIX - QUESTION 7(d)

CATEGORY	ALL	DIST.	MFRS.	RET.	USERS
1	41	18	16	5	2
2	10	4	3	2	1
3	5	1	4	0	0
TOTAL	56	23	23	7	3

NUMERICAL RESPONSE MATRIX - QUESTION 8

CATEGORY	ALL	DIST.	MFRS.	RET.	USERS
1	31	11	12	4	4
2	6	0	5	0	1
3	4	1	3	0	0
4	20	9	4	3	4
5	1	1	0	0	0
TOTAL	62	22	24	7	9

NUMERICAL RESPONSE MATRIX - QUESTION 9

CATEGORY	ALL	DIST.	MFRS.	RET.	USERS
1	27	10	14	2	1
2	15	6	5	3	1
3	13	6	4	1	2
TOTAL	55	22	23	6	4

NUMERICAL RESPONSE MATRIX - QUESTION 10

CATEGORY	ALL	DIST.	MFRS.	RET.	USERS
1	26	8	11	3	4
2	5	0	5	0	0
3	4	1	2	0	1
4	23	10	5	4	4
5	2	2	0	0	0
TOTAL	60	21	23	7	9

NUMERICAL RESPONSE MATRIX - QUESTION 11

CATEGORY	ALL	DIST.	MFRS.	RET.	USERS
YES	14	3	10	1	0
NO	33	17	7	6	3
TOTAL	47	20	17	7	3

NUMERICAL RESPONSE MATRIX - QUESTION 12

CATEGORY	ALL	DIST.	MFRS.	RET.	USERS
A	28	11	6	6	5
B	15	6	3	2	4
C	13	4	3	0	6
D	11	5	2	2	2
E	18	9	5	1	3
F	12	3	2	4	3
G	18	7	4	3	4
H	23	7	9	3	4
I	7	4	0	1	2
J	7	3	1	1	2
K	21	7	5	2	7
L	20	6	7	2	5
M	1	0	1	0	0
N	12	6	3	1	2
O	14	5	4	2	3
P	31	14	9	3	5
Q	16	7	2	4	3
R	12	3	5	0	4
S	10	3	3	0	4
T	8	2	3	3	0
U	7	2	0	0	5
V	9	2	5	0	2

NUMERICAL RESPONSE MATRIX - QUESTION 13

CATEGORY	NUMBER
1	28
2	26
3	7
4	0
5	11
TOTAL	72

NUMERICAL RESPONSE MATRIX - QUESTION 14

CATEGORY	ALL	DIST.	MFRS.	RET.	USERS
1	28	11	11	2	4
2	20	9	8	2	1
3	9	4	2	2	1
TOTAL	57	24	21	6	6

NUMERICAL RESPONSE MATRIX - QUESTION 15

CATEGORY	ALL	DIST.	MFRS.	RET.	USERS
1	3	0	0	3	0
2	11	5	2	2	2
3	5	1	2	1	1
4	15	12	0	1	2
5	12	4	6	0	2
6	2	0	0	0	2
7	17	3	12	0	2
TOTAL	65	25	22	7	11

TERMINAL ATTACHMENT PROGRAM SURVEY

M&D T-50 All T-68

1. What are your impressions of the Department's initial Program ? Please check one.

28.0% 26.4% [1] Generally satisfactory.

16.0% 48.5% [2] Satisfactory for a first stage program, but should be expanded to include more types of equipment.

14.0% 14.7% [3] Generally acceptable, but contains areas where improvement is needed.
Note: If you check this item, please list your suggestions for improvement below.

3.0% 5.8% [4] Contains features which are definitely unacceptable. Please specify.

4.0% 4.4% [5] Other. Please specify.

100% 99.8%

M&D T-57 All

2. Do you believe the cost of having your product certified is (or will be) at least balanced, or outweighed, by the marketing advantages or other benefits your business would receive as a result of offering a product certified by DOC for direct connection to telecommunications networks ?

	M&D – 46.8% All – 50.8%	M&D – 19.1% All – 19.2%	M&D – 34.0% All – 29.8% Total 99.8%
[1] Yes			
[2] No			
[3] Don't know			

3. How does (or will) the cost of certification impact on your manufacturing, distribution, or other product costs ? Check one.

	[1] High	[2] Medium	[3] Low	[4] No impact	[5] Don't know	
M&D	6/48 = 12.5% (T = 48)	14/48 = 29.1%	16/48 = 33.3%	1/48 = 2.0%	11/48 = 22.9%	T = 99.8%
All	11.6% (T = 60)	16/60 = 26.6%	20/60 = 33.3%	3/60 = 5.0%	14/60 = 23.3%	T = 99.8%

4. What impact has (or would) the cost of having your product certified have on the price you would charge for your certified product ? Check one.

[1] Reduction	[2] Little impact	[3] Small increase	[4] Large increase
3.6%	32.7%	54.5%	9.0%

Total 99.8%

5. By how much has the price of your certified product increased since certification (or how much would it change in your opinion) ?

[1] Less than 5%	[2] Between 5% and 10%	[3] Between 10% and 20%
47.9%	41.6%	6.2%

[4] Between 20% and 30%	[5] More than 30%
4.1%	0%

Total 99.8%

6. In your opinion, should the fee for certified terminal equipment labels be continued as at present, with a portion of the Department's certification costs included in the per label fee ($1.00), or should the per label fee be reduced to cover only the cost of labels, with a corresponding increase in the initial certification fee ? Check one.

[1] Maintain as at present	[2] Reduced per label fee
50.0%	50.0%

7. Please indicate whether or not you agree with the following perceived advantages of the Terminal Attachment Program ?

(a) The Terminal Attachment Program should eventually result in an increase in sales of terminal equipment since consumers will have more confidence that a DOC approved (and labelled) product will perform properly when connected to telecommunications company networks .

[1] Agree	[2] Disagree	[3] Undecided
M&O-T 47 26/47 = 55.3%	14/47 = 29.7%	7/47 = 14.8%
All T 63 37/63 = 58.7%	16/63 = 25.3%	10/63 = 15.8%

T = 99.8%

(b) The Terminal Attachment Program should eventually result in an increase in sales of terminal equipment since users will no longer have to pay an additional monthly charge to telephone companies for a protective coupler.

[1] Agree	[2] Disagree	[3] Undecided
48 = 76.1%	10/63 = 15.8%	5/63 = 7.9%

Total 99.8%

(c) The Terminal Attachment Program should eventually result in an increase in sales of terminal equipment since users can plug in the equipment themselves, rather than incur an installer service call, or try to connect it themselves.

[1] Agree	[2] Disagree	[3] Undecided
43/63 = 68.2%	11/63 = 17.4%	9/63 = 14.2%

Total 99.8%

(d) Will your firm's advertising or promotional material include reference to DOC certification, assuming your product is (or will become) certified ?

[1] Yes	[2] No	[3] Don't know
		5/56 = 8.9%

Total 99.9%

8. Please rate the DOC Certification Procedures CP-01 document by checking one of the following categories.

All T-62

[1] Generally satisfactory

[2] Generally acceptable, but contains areas where improvement is necessary. Note: Please list your suggestions for improvement.

[3] Contains features which are definately unacceptable. Please specify.

Results eliminating category 4. (-13) (-20) intotals T=42

[4] I am not sufficiently familiar with the Certification Procedures document, and am unable to comment at this time.

[5] Other. Please specify.

9. Are you modifying (or would you modify) your inventory of terminal equipment if this is necessary to make it acceptable for certification ?

[1] Yes

[2] No

[3] Don't know

M+O 24/45 = 53.3%

All 22/45 = 48.9%

18/45 = 24.4%

19/45 = 22.2%

T = 99.9%

T = 99.8%

10. Please rate the DOC Certification Standard CS-01 document by checking one of the following categories.

M&D ALL

1/44 = 43% 65.5% 26/60 = 43.3% 70.2%

[1] Generally satisfactory

5/44 11.3% 17.2% 5/60 = 8.3% 13.5%

[2] Generally acceptable, but contains areas where improvement is necessary. Note: Please list your suggestions for improvement.

TOTAL 54.5% 82.7% 51.6% 83.7%

Results eliminating category 4 (-23) into totals.

3/44 6.8% 10.3% 4/60 = 6.6% 10.8%

[3] Contains features which are definitely unacceptable. Please specify.

15/44 34.0% 28/60 = 38.3%

[4] I am not sufficiently familiar with the Certification Standard document, and am unable to comment at this time.

2/44 4.5% 6.8% 2/60 = 3.3% 5.4%.

[5] Other. Please specify. Wants network addressing.

11. Do the technical requirements of the Standard impose specific hardships for your product ?

[1] Yes

M&D 13/37 = 35%

All 14/47 = 29.7%

[2] No

M&D 24/37 = 65% Total 100%

All 33/47 = 70.2% Total 99.9%.

12. Please check one or more of the following categories which best describe your major areas of interest in terminal telecommunications equipment.

All Rank	Mid Rank	Mid	All		
2.	2	17	28	☐	(a) Automatic answering and recording devices
		9	16	☐	(b) Acoustically connected devices
		7	13	☐	(c) Facsimile
		7	11	☐	(d) Plugs, jacks and cords
	4	14	18	☐	(e) Paging equipment
		5	12	☐	(f) Dictation equipment
		11	18	☐	(g) Intercoms
3.	3	16	23	☐	(h) Alarm devices
		4 *	7	☐	(i) Conferencing devices
		4 *	7	☐	(j) Scramblers (voice or data)
		12	21	☐	(k) Modems
	5<	13	20	☐	(l) Data peripherals
lowest.	(* tied for next lowest)	1	1	☐	(m) Electrocardiogram equipment
		9	12	☐	(n) Speakerphones (non dial)
		9	14	☐	(o) Dial speakerphones
1		23	31	☐	(p) Automatic dialers
		9	16	☐	(q) Call diverters
		5	12	☐	(r) Key telephone equipment
		6	10	☐	(s) P.A.B.X.'s
		5 *	8	☐	(t) Decorator telephones
		2 *	7	☐	(u) Traffic measuring equipment
		7.	9	☐	(v) Other (Please specify).

Digital speech processors, message limiting, routing equipt., emergency recorders, multi-channel decoders, remote testers for inter-office trunks, radio, radio-telephone with direct dial from user, time division multiplexors, network processing, carrier to carrier interconnection.

13. Please check one of the following categories which best describes your type of business.

52%	38.5%	28	[1]	Manufacturer
48%	36.1%	26	[2]	Distributer / Wholesaler
100.0%	9.7%	7	[3]	Retailer
			[4]	Supplier Association
99.80%	15.2%	11	[5]	Other (Please specify) USERS, CONSULTANTS, SERVICE COMPANIES
		72		

14. Please check one of the following categories which best describes the size of your total business operations in Canada.

%			
41.1	28	[1]	Annual gross revenues greater than $ 1,000,000
55.0	20	[2]	Annual gross revenues between $ 100,000. and $ 1,000,000.
13.7	9	[3]	Annual gross revenues less than $ 100,000.
99.8	57		

15. Please check one of the following categories which best describes the geographic area in which you market your products .

%			
4.6	3	[1]	One city
16.9	11	[2]	One Province
7.6	5	[3]	Two Provinces
23.0	15	[4]	Three or more Provinces
18.4	12	[5]	Canada and U.S.A.
3.0	2	[6]	U.S.A.
26.1	17	[7]	International
99.6	65		

16. Name and company of person completing the questionnaire. Note: This section may be left blank if preferred.

NAME 15 out of 68 were anonymous or 22.0%

COMPANY

ADDRESS 4 were foreign (3 USA) identified:

9 Manufacturers were anonymous (32.1%)

3 were foreign — 10.7%

16 were Canadian 57%.

TELEPHONE

of identified manufacturers, 16/19 or 84% were Canadian.

— Retailers.

— Major Users, miscellaneous.

Manufacturers. Distributors

Note: If space is insufficient, or if any answer requires further elaboration, attach additional pages as required.

SURVEY OF SUPPLIERS