Government of Canada
Department of Communications

Gouvernement du Canada
Ministère des Communications

RADIO FREQUENCY SPECTRUM MANAGEMENT PROGRAM

REVISED DESIGN REPORTS

Background Study

Étude préalable

JUNE, 1988

PROGRAM EVALUATION ∘ DIVISION ∘ DE L'ÉVALUATION DES PROGRAMMES

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Radio Frequency Spectrum Management
Program Evaluation
Revised Design Reports

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This is one of ten Background Studies that form part of the evaluation of Radio Frequency Spectrum Management.

La présente est une des dix études préalables portant sur l'évaluation du programme de gestion du spectre des fréquences.

This study was conducted by Ekos Research Associates Inc. for the Program Evaluation Division of the Department of Communications, Canada.

L'étude a été entreprise par Ekos Research Associates Inc. pour le compte de la Division de l'évaluation des programmes du ministère des Communications.

The views expressed herein are the views of the author and do not necessarily represent the views or policies of the Department of Communications.

Les recommandations concernant les politiques et les programmes ou les points de vue exprimés, ici, sont ceux de l'auteur et ne reflètent pas nécessairement ceux du ministère des Communications ou les politiques du ministère.

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1.0 INTRODUCTION

This report is the second of three primary deliverables of Study #13, Radio Frequency Spectrum (RFS) Management Program Evaluation: "Survey Designs". Specifically, this report outlines the research design for Study #4 of the Evaluation Assessment which calls for a survey of licensed users of the radio frequency spectrum. The survey of licensed users represents an integral part of the evaluation of the Management Program, as vital pieces of information related to a number of key evaluation issues are not stored in existing data bases. This includes information related to regulatory burden, program satisfaction and the possibility of substituting alternative means of communication for the spectrum.

1.1 Purpose of the Study

The use of the Radio Frequency Spectrum is managed by Communications Canada under the authority delegated to it by the Department of Communications Act, the Radio Act and the Broadcasting Act. The Radio Frequency Spectrum (RFS) Management Program has the following three objectives:

1. to accommodate as many users as possible;
2. to encourage as many uses as possible; and
3. to accomplish the above with a minimum of interference.[1]

The Department has decided to undertake an evaluation of the RFS Management Program for a number of reasons including: Cabinet's Regulatory Agenda, a compliance review required by the Department of Justice Federal Statutes Compliance Project, and senior program managers' information requirements.

The Evaluation Assessment Report prepared by the Department outlines seven main evaluation issues:

1. Is any program needed to attain the objectives?
2. Has the program achieved its objectives?
3. What have been the social, public and private costs and benefits of the program?

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[1] Department of Communications, Government of Canada. Annual Report, 1985-86.

4. What is the impact of collecting licence fees from licensed users?
5. What effects does the program have on licensed users?
6. Is the organisational structure of RFS delivery appropriate?
7. Are there alternatives to the existing program?

Thirteen studies have been suggested to address all of these issue areas, 11 of which will be undertaken. The overall purpose of this component of the evaluation (Study #13) is to design sampling strategies, questionnaires and terms of reference for three of the evaluation studies as detailed in the Evaluation Assessment:

1. A survey of licensed users (Study #4);
2. A survey of the general public (Study #5); and
3. A survey of complainants (Study #6).

1.2 Organisation of the Report

This report is the draft research design for the survey of licensed users. The remainder of the report is organised as follows:

- Chapter Two of this report outlines the nature, content and administration of the questionnaire.
- Chapter Three describes the sampling strategy and comments on its validity and reliability.
- Appendix A contains the draft survey instrument.
- Appendix B contains a list of Communications Canada staff contacted as part of the research.
- Appendix C and D contain the licensed users sampling list and the licensed user sampling plan development contact sheet.
- Appendix E contains the Terms of Reference for conducting the survey of licensed users.

2.0 SURVEY OF LICENSED USERS

2.1 Overview

Due to their experience with the licensing process and their dependence on the efficient administration of the program, users play a pivotal role in providing information for an evaluation of the Radio Frequency Spectrum Management Program. Specifically, the survey of licensed users is designed to provide information regarding the following four evaluation issues:

1. Has the program achieved its objectives?
2. What have been the program's social, public and private costs and benefits?
3. What is the impact of collecting license fees from licensed users? and
4. What effects does the program have on licensed users?

According to the evaluation assessment, the information gathered by the survey will be supplemented with information obtained from other evaluation studies, including study five (survey of the general public), study six (survey of interference reports) and study seven (analysis of existing data). Since the time the evaluation assessment was prepared, it has become apparent that study seven, the analysis of existing data, will not be very useful as there is little existing data appropriate for evaluation purposes. Consequently, this present study is even more important than originally anticipated.

Radio frequency spectrum licensed users represent a great variety of users who differ significantly in their reliance on and use of the radio frequency spectrum. The amount of contact users have with Communications Canada also varies greatly. This poses at least three types of problems in the creation of a useful survey instrument. First, the instrument must try to capture the experiences which are common to all licensed users, while allowing the concerns specific to certain groups, such as broadcasters and radio operators, to be identified. Second, the level of experience of the respondent cannot be identified simply by referring to information contained in the data base. For example, within one type of radio service (e.g., public commercial, private commercial, etc.) there is a wide range of user types and sizes. Third, the wide range

and detailed nature of topics to be covered by the survey could potentially place a considerable burden on the respondent.

What follows is an appraisal of the questionnaire items which outlines:

- how each item is linked to the relevant evaluation issues; and
- the internal logic of the items, i.e., the relationship between the items.

The draft instrument (see Appendix A) has been prepared after a review of the evaluation assessment and consultations with a number of Directors General, Regional Directors General and program staff. (For a complete list of people contacted see Appendix B.)

2.2 Nature and Content of the Survey Instrument

Due to licensed users' direct experience with the licensing process and their dependence on the efficient administration of the program, users play a pivotal role in providing the input necessary in determining whether the program is meeting its stated objectives. Sensitivity to the diversity of users and uses of the spectrum suggests that a single data collection instrument can adequately measure the extent of satisfaction among radio users with respect to program delivery. Alternatively, a separate survey could admininstered to radio, television and cable broadcasters as many of the questions in the first section of the questionnaire may not apply to them. The survey data will also be used to create a profile of the range of radio users and their particular uses of the spectrum.

The introduction to this survey has been designed in accordance with the requirements for data collection specified by Treasury Board Circular 1986-19. Due to the varied nature of respondents, instructions for completing the questionnaire should explicitly state who is to fill out the questionnaire, (i.e., in the case of an organisation, the person who is responsible for telecommunications; in the case of an individual, the individual who holds the license(s)). The prompts throughout the questionnaire indicate who is to complete certain sections (i.e., businesses and government, broadcasters), help

to ensure that all components of the questionnaire are completed by those who have the most direct experience with the issue in question. Provision is also made for the respondent to identify him/herself as an independent licensed user or a representative of an organisation. The remainder of the introduction provides information for the respondent (e.g., the sponsoring institution, the nature and purpose of the study and the confidentiality of responses).

The fundamental purpose of the evaluation of licensed radio users is to determine the effects of various spectrum management components on the interests of each type of user, whether they be newcomers to the program or long-standing subscribers. In order to assess the potential impacts on users, it is necessary to create a profile of respondents. Item 1 provides the number of years the users have been involved in the licensing process. This information will be particularly relevant in determining any problems unique to newcomers (e.g., the potential rigidity of the system, the complexity of the process of obtaining a license, etc.).

Information on whether a user owns or leases radio equipment and whether it was obtained through a radio service provider (Items 2 and 3) will be important to consider in the analysis of data related to the economic impacts of radio operation (e.g., satisfaction with license fees, costs of equipment relative to other operating expenditures, etc.).

The data base containing all licenses presently in operation is classified according to the service (e.g., public commercial) and the station type (e.g., land, mobile, ship, coast, earth or space). In Item 4, respondents are asked to indicate how many licenses are held by service and station type. This spectrum usage profile will enable evaluators to assess client satisfaction with management practices as they relate to the complexity and extent of radio usage. Items 5 through 7 cover the classification data necessary for the remainder of the analysis: the number of new and renewed licenses, and the number of assigned frequencies over all licenses. This series of questions serves to complete the profile of the user as well as focus the respondent on the information relevant to ensuing topic areas.

The issue that is most closely linked to the program's goal of accommodating as many uses and users as possible, and thus addresses the broad issue of whether the program is achieving its objectives, is the incidence of sub-optimalities. The notion of free access denotes choice, but choice of frequency and/or band is often limited due to the allocation of certain bands as specified in the international and domestic Table of Frequency Allocations. Within allocations, the assignment of frequency bands may be what the applicant expects. Thus, the series of questions (Items 8 and 9) directed at assessing the extent of sub-optimal band assignments include: whether a choice was made; if a preferred band was accommodated; and if not, what the impact on the quality of the spectrum, the license processing time, radio equipment needed to operate on the band was, and whether there were any other effects that the user would consider sub-optimal. Items 10 and 11 are similar, but refer to specific frequencies that have not been accommodated. The impact of such sub-optimalities on newcomers and major, long-standing users alike can be assessed through correlations with the first year of operations as well as the various indicators of organisation size.

Another one of the key objectives of the management program is to ease access to the spectrum. According to the Evaluation Assessment, access to the spectrum is most often assured. Item 12 has been included to determine the incidence of denial of access, as measured by the number of times during the past year that applications were rejected, and the reasons given by the Department for denying access to the spectrum.

The application process is an important component of the RFS Management Program. Its efficiency will help the licensed user to access the spectrum and thus contribute to his/her satisfaction with the program delivery. Items 13 through 16 attempt to draw out those who have personally applied for a license (either on behalf of themselves or their organisation) and measure their satisfaction with the application process. Part of this satisfaction may be linked to the turn-around time, thus responses to Item 15 may be analysed in relation to the response given for "Time taken to process application" to assess dissatisfaction due to delay. Respondents are also asked to indicate whether or not their application required coordination with other parties, yet another potential factor in the complexity and time involved in the application process.

Both amateurs and professionals are, in certain cases, required to undergo examinations in order to be certified. Item 17 determines the incidence of examinations and the perceived fairness, applicability, intelligibility and overall satisfaction with the certification process. This will be particularly relevant to newcomers.

The sharing and loading of frequencies are other issues to consider in determining user satisfaction with spectrum management. When a frequency is shared, there is the potential for dissatisfaction, particularly if the co-user abuses it in one form or another. Items 18 and 19 were designed to identify whether shared frequencies are problematic to co-users. Excessive loading onto a frequency is yet another potential problem encountered by radio users. Item 20 has been included in order to determine the months of the year, days of the week and times of the day when excessive loading is experienced, as well as the frequencies on which loading is prevalent. Similar questions (Items 21 through 23) identify potential problems associated with shared general bands.

There are a number of possible alternatives to using the spectrum, depending on the particular needs of the user. The costs associated with spectrum usage may be relatively low compared to the costs of alternatives (even including the radio equipment). Part of the user's decision to use radio may involve considering alternative methods. Asking the respondent to assess the practicability of alternatives to the spectrum (Items 24 and 25) can provide information on the user's perception of the costs and benefits of choosing spectrum over spectrum substitutes. The proportion of equipment that could potentially be substituted by other means, the actual consideration of such alternatives, and the reasons for not opting for the alternative methods of communication, all provide an indication of the relative costs and benefits of the spectrum.

The fourth issue described in the evaluation assessment involves the impact of the collection of license fees from licensed users. The perceived fairness of fees can be viewed in relation to other costs incurred through the use of the spectrum. Item 26 specifies the total radio license fees paid during the last year, as well as respondents' perceptions of the fees in relation to other factors, including the benefits obtained from using radio, license fees paid in past years, the value of the radio equipment, the fees

other users pay, the value of other licenses, and what the respondent thinks he/she should pay.

The relative costs and benefits of the spectrum are also gauged through Item 27, which asks the respondent a hypothetical question: whether higher fees and dedicated channels would be desirable over low cost/shared channels spectrum. Responses to this question may shed light on those users who have, for example, shared frequencies and may have experienced lower quality communication. These users may consider paying more in order to have access to dedicated channels. This proportion of users may then be compared to those who perceive their fees to be too high and would consider a shared channel (according to their dependence on radio) in favour of lower fees.

By means of Item 28, respondents are divided according to their use of the spectrum. Business users are asked to indicate their primary area of business and the importance of radio in the conduct of their daily activities; for example, emergency services, safety services, staying in contact with field and base operators, and servicing clients.

Regulations, procedures and practices are an integral part of spectrum management, and knowledge of their effects on licensed users is a very important consideration in light of the study objectives. Awareness of the regulations and the documents in which regulations, rules and procedures are outlined, is measured in Items 29 and 30. Familiarity with the regulations, rules and procedures governing the spectrum (Item 31a) is yet another indicator of the effectiveness of spectrum management. The level of awareness can then be assessed in relation to user satisfaction with regulations, rules and procedures (Item 31b) on various dimensions, i.e., enforcement, consultation prior to changes in regulations, accommodation of technical innovation, and the time dedicated to dealing with the Department.

Item 32 deals specifically with the operation of equipment that has not been type-approved or technically certified for use in Canada. This could be a threatening question, thus particular care has been taken to ensure the wording would not discourage truthful responses. Those who volunteer this information will be able to indicate

whether this non-conformity is due to potential rigidity in the regulations that may, among other things, inhibit technological innovation.

To complete the profile of user satisfaction with program delivery, respondents are asked whether they have contacted Department staff over the last year and if so, to what extent they were satisfied with this interaction (Item 33). The competence of staff in providing technical assistance to radio users will often be of utmost importance to operators, and particularly to newcomers to the program. The courtesy of staff, clarity of advice, amount, timeliness and accuracy of information, location of district offices, and ability to provide information in the preferred official language contribute to overall satisfaction with Departmental contact.

An additional concern of the Department is whether users are in agreement with the disclosure of addresses and license-related technical information contained in the data base. Under Access to Information and Privacy guidelines, such information is released, on occasion, for non-governmental purposes. Responses to Item 34 will identify who is opposed to this practice, as well as isolate those types of information which are normally kept confidential.

Section B is directed to broadcasters only. Like all users, broadcasters have a stake in the regulation of their use of the spectrum. The application process unique to broadcasters involves the Technical Construction and Operating Certificate (TC and OC). Satisfaction with the information provided by the Department to prepare the application, the complexity and time involved in completing and processing the request, and the costs incurred (Item 35) all contribute to the overall satisfaction with the application process.

In its efforts to develop policies in the area of broadcasting regulation, Communications Canada attempts to consult with broadcasters regarding impending modifications to regulations. By way of Item 36, respondents may indicate their appraisal of the effectiveness of this consultation. Background characteristics, such as type of ownership, type of broadcast service (radio or television) and affiliation with professional associations, are included in Item 37 to create a profile of broadcasters licensed with the Canadian Radio and Telecommunications Commission.

Instructions in Section C direct respondents not associated with business or government to answer the questions pertaining to personal characteristics. Information on organisational respondents (Items 38 through 44) include geographic dispersion of operations, primary area of business, type of organisation, total number of employees, employees devoted to the management of radio communications, the approximate value of radio equipment used, total revenues (or budget) for the past year, and the position title of the respondent. These questions will help to further develop the profile of organisational licenses, and aid in the final analysis of responses.

Section D thanks the respondent for his/her participation in the survey, indicates where a summary report of the study findings may be obtained, and re-emphasises the anonymity of responses.

For a schematic representation of the issues, concepts and indicators from which the questionnaire was developed, please refer to Exhibit 2.1.

EXHIBIT 2.1
List of Issues, Concepts and Indicators

Issues	Concepts	Indicators
2) Has the program achieved its objectives?		
a) Has the program eased access to the spectrum?	Incidence of spectrum inaccessibility	o rejection of applications o satisfaction with application process
b) Has the program led to sub-optimial allocations?	Incidence of sub-optimalities	o request for specific frequency/band o denial of choice of frequency/band o reasons for denial of choice o is frequency/general band shared? o problems with sharing frequency/general band

Issues	Concepts	Indicators
c) Has the program increased the number of uses made of the spectrum?	Incidence of rejections of spectrum reassignments	o number of reassignments o satisfaction with reassignments o rejections of reassignments
d) What rigidity does the newcomer face?	Incidence of rejections Incidence of sub-optimal assignments	o see a) and b) above correlated by year of first license o requirement for examination o satisfaction with examination requirement
3) What have been the regulations' social, public and private costs and benefits?		
a) What is the incidence of sub-optimal production factor distribution?	Incidence of sub-optimal production factor distribution	o does spectrum meet users' needs? o alternatives to spectrum
b) What is the cost of low-cost spectrum substitutes?	Value of substitutes	o substitutability of spectrum o advantages of spectrum over substitutes
c) What are the opportunity costs to newcomers?	Value of spectrum to newcomers Incidence of sub-optimal assignments	o see 2a), 2b) and 3b) above, correlated with year of first license.
4) What is the impact of collecting license fees from licensed users?		
a) What proportion of the radio system cost does the license fee represent?	Cost ratio	o ratio of operating costs to licensing costs

Issues	Concepts	Indicators
	Operating costs	o replacement value of radio plant equipment o number of full-time & part-time employees allotted to management of communications
	License costs	o money spent on licensing for the past year
b) How fair are the current license fees for diverse licensed users?	Perceived fairness of fees	o user reported measure of fairness
c) What is the price elasticity of spectrum demand?	Price elasticity	o additional amount user could afford to pay for licenses
5) What effect does the regulation have on licensed users?		
a) What is the attitude of licensed users towards the regulations?	Satisfaction with regulations	o user reported level of satisfaction
	Perceived adequacy of of regulations	
b) How aware are licensed users of regulations?	Awareness of regulations	o level of awareness of regulations o source of awareness of regulations o familiarity with regulations
c) How are licensed users informed about changes in regulations, rules and procedures?	Information provision	o adequacy of information provided o timeliness of information provided

Issues	Concepts	Indicators
d) How satisfied are licensed users with consultation on regulations, rules and procedures?	Satisfaction with consultation	o type of consultation o satisfaction with consultation process
	Perceived consistency of enforcement of regulations	o self-reported measure of consistency
e) What is the burden imposed on the licensed users by the regulations?	Perceived difficulties of application process	o level of difficulty o perceived level of paper burden
	Problems encountered due to regulations	o reported use of non type-approved equipment
f) Satisfaction with program delivery	Level of satisfaction with staff	o self-reported levels of satisfaction
	Level of satisfaction with aspects of information provided	
	Level of satisfaction with location of district offices	
Other Information		
Licensed User	Type of business	
	Size of business	o number of part-time employees o number of full-time employees o annual revenues o annual expenditures
	Location	o city o province
	Dispersion	o regional o national o international

Issues	Concepts	Indicators
Amount of frequency assigned	Type of license(s)	o land, mobile, ship, coast earth, space
	Annual license fees	o amount paid in the past fiscal year
	Number of license(s) Bandwidth	
	Type of service	o private o commercial
	Size of user	o operating costs o number of employees o book value of radio equipment o number of people employed in managing radio operations
Background characteristics of broadcasters	Type of ownership	o type of ownership
	Type of broadcaster	o type of broadcaster by radio station and television station
	Affiliation with interest groups	o membership in associations
Attitudes towards the consultation process	Timeliness	o satisfaction with time given to provide input
	Usefulness	o self-reported ratings of usefulness
	Burden	o attitude towards time spent consulting
Burden imposed on broadcasters by the regulations	Satisfaction with the application process	o perceived levels of application on a variety of aspects of the application process

2.3 Survey Administration

As suggested in the Terms of Reference, we recommend that the survey of licensed users be administered by mail. First, the number of questions for which information is desired will result in a relatively long questionnaire. To gather the information over the telephone would be expensive relative to the costs of a mail-back survey. Second, in some instances respondents will be required to look up information contained in company records. A mail-back survey allows respondents to refer to documentation at their leisure and may allow them to consult more knowledgeable individuals. One of the difficulties with a mail survey is ensuring that the appropriate person receives the questionnaire -- this will be particularly difficult in larger organisations where a number of people are involved in the management of the radio plant. To overcome this problem we suggest that, after the sample is chosen, telephone contact be made with the particular license holder to identify the most appropriate respondent. While this will increase the costs associated with the survey, it will likely result in a higher response rate. At the same time, addresses used for survey purposes in the data base may be updated.

3.0 SAMPLING

3.1 Overview

There are currently over one million radio frequency licenses issued by The Minister of Communications. About 3,000 Technical Certificates and Operating Certificates are issued by Broadcasting Regulations Branch, and kept in their own data base. The licenses issued by Broadcasting Regulations Branch include those held by AM or FM radio stations, television stations, or cable television companies. The remainder include about 300,000 General Radio Service licenses (for citizen's band or CB radios) which are kept in their own data base, and about 800,000 licenses classified under other service types which are kept in the main departmental data base called SMS.

All of the license data bases are kept in Ottawa at the Department's offices. Information kept on each license includes: class of license (e.g., Land, Mobile, etc.); service category (e.g., Public Commercial, Amateur Service, etc.); district company code (applying to all licenses held by a given company or organisation in one district); licensee address, license number (which includes district office number); and, technical information.

Licenses will have to be drawn from all three data bases (i.e., Broadcasting Regulations, General Radio Service and the main departmental license data base). The Department will draw the sample from these according to specifications supplied by the researchers.

Information in the data base is maintained on licenses and accounts. In reviewing the study issues and the specifications of the data bases, and through discussions with Mr. Jean-Claude Domien of RFS Automated Applications Directorate, it was determined that it was inappropriate to sample by "account". Although a given organisation may hold more than one license in a district, each license will be listed *separately* in the data base, not together under one "account", as originally thought. In some organisations all licenses may be administrated by one individual, but this is not

always the case nor is it indicated in the data base. Also, all the necessary respondent information (e.g., address) is held by license.

License holder, not "user", was determined to be the appropriate unit of analysis. While it is true that in many cases there are several users for a given license, this relationship does not always exist and/or is not always clear. Therefore, the "users-per-license" relationship does not provide a sound basis on which to design a sampling strategy. Furthermore, of the 14 major questions with which this study is concerned, as detailed in the evaluation assessment, only one (concerning interference) is really best answered by an operator (see Exhibit 2.1). The remaining questions are aimed at the holder of the license itself. Thus it would be inappropriate to attempt to identify a "user" other than the individual most responsible for applying for and administrating his/her company's license.

3.2 Sampling Plan Development

In order to obtain a better understanding of how best to develop the sampling plan of licensed users (including the amount of work required to assemble the sample), a preliminary survey was conducted. A selection of 81 licensees was provided by Communications Canada. These were chosen to be relatively representative of the entire population of licensees. A list of these licensees is shown in Appendix C.

Contact was attempted with all 81 licensees to obtain information relevant to the sampling problem. The contact sheet which was used for this exercise can be seen in Appendix D. In addition to the main purpose of the preliminary survey, which was to provide information on identifying the difficulties associated with *who* the mail-out survey should be sent to, a series of five questions was administered to obtain additional relevant information about the licensees (e.g., approximate number of licenses, number of users/licenses).

Out of the beginning sample of 81 licensees, it was possible to identify the person in charge of administering the license in 67 cases (84 per cent). Six of the 14 remaining licensees appeared more than once in the sample (e.g., a company holding

more than one class of license), while phone numbers were not available or the company no longer existed in eight cases. The entire process of obtaining phone numbers and contacting 67 licensees required 25 person hours (i.e., 2.7 successful contacts per hour). However, this rate provides time for administering five questions which will not be asked in the actual study sampling exercise. Thus, a production rate of about three successful contacts per hour is probably a reasonable estimate for the sampling.

The frequency of calls required to obtain the crucial sampling information-- i.e., the name of the appropriate survey respondent -- per license can be seen in Exhibit 3.1. Over half of the licensees required only one phone call to obtain the pertinent information. This ranged up to a maximum of ten calls made to one licensee. On average, each licensee was called 2.1 times. Not surprisingly, interviewers were often referred to several people before the correct individual was identified.

EXHIBIT 3.1
Number of Calls Required for Each Licensee

Number of Calls	Frequency
1	38
2	10
3	9
4	7
5	-
6	-
7	1
8	1
9	-
10	1
	67

Average calls per licensees = 2.1

Because of the varying types of organisations holding licenses in different classes, obtaining information about some classes of licensees will be more difficult and

time consuming than others. Contacts with public commercial, private commercial and provincial government licensees (for both land and mobile services) were the most difficult to obtain. Although requiring only a slightly higher than average number of calls per licensee (2.3, 2.6 and 2.2 calls respectively) the contact time per licensee was somewhat higher than the average of 4.6 minutes (at 9.5, 5.6 and 7.3 minutes, respectively). Other licensees are actually listed by an individual name (e.g., amateur service). In these cases we recommend a telephone call to confirm the persons' status and address since we found some inconsistencies in these areas in our calling.

A brief summary of the responses to our questions is shown in Exhibits 3.2 to 3.6. Because they did not have the time, did not know the answers, or did not feel the questions applied well to their situation (as in the case of a small local operation), over one third of the licensees contacted did not take part in this portion of the survey. In total, 41 licensees answered some or all of these questions.

EXHIBIT 3.2
Number of Employees in Organisation

Number of Employees	Frequencies (n = 38)
0 - 10	9
11 - 100	7
101 - 500	12
501 - 1,000	4
Over 1,000	6

EXHIBIT 3.3
Total Number of Licenses held by Licensee

Number of Licenses	Frequencies (n = 36)
1	6
2 - 10	7
11 - 50	8
51 - 250	9
Over 250	6

EXHIBIT 3.4
Geographic Distribution of Organisation

	Frequencies (n = 36)
One district	24
More than one district	13

EXHIBIT 3.5
Where Licenses are Administered

	Frequencies (n = 41)
All in licenses one office	38
Some in other offices	3

EXHIBIT 3.6
Number of Users per License

Number of Users	Frequencies (n = 21)
1	6
2	7
3 - 10	5
Over 10	3

Licensees surveyed ranged from individual licensees (with no employees) to an organisation with 4,000 employees. The range of licenses held was also large, from single license holders to a licensee with 1,000 licenses. Approximately two thirds of the organisations were confined to one geographic area while the remaining third had offices in more than one district. In nearly all the cases, all the licenses held by the organisation were administered from one office.

The final question, asking about the number of users per license, was the most difficult for respondents to answer. Many respondents found the question confusing or felt it was not applicable to their situation. The 21 licensees who did respond gave answers ranging from one to sixty-five users per license.

It will require an average of 20 minutes of staff time and about five minutes of long distance calling to obtain each survey respondent's name. Since a very high proportion of organisations hold more than one license, and in nearly all cases these are administrated by the same individual (or at least out of the same location) there will be a very high proportion of *duplicate* licensees in the RFS data base. Based on our initial sample, it may be estimated that over 80 per cent of licensees hold more than one license, and that the average number of licenses held by those organisations holding more than one license is approximately 145. (Note that this is based on a very small sample; the true figures may differ from these to a fairly significant extent.) Also, about ten per cent of the licensee information in the data base is apparently out of date, i.e., the address or company name is incorrect making contact impossible.

3.3 Sampling Plan

For later analysis it is desirable to breakdown and sample the license holder population by sub-group. We recommend a regional breakdown to ensure an adequately sized sub-sample in each region (Atlantic, Quebec, Ontario, Central and Pacific). This will allow analyses to be conducted by region (in addition to by the nation) to identify regional differences. We also recommend sampling by license class since, as indicated in the list of 81 licensed users (Appendix C), licenses appear to be more homogeneous within class (e.g., Land, Mobile, etc.) than within service (e.g., Public Commercial, Private Commercial, etc.) which would be the alternative stratification variable. License classes include: Land, Mobile, Ship, Coast, Earth, Space, Broadcast and General Radio Service. We recommend excluding General Radio Service since these licenses are very different from the other classes requiring much less in the way of maintenance and having much more limited use (i.e., C.B. radios only). We also recommend combining the licence class Space (in which there are only five licenses) with Earth which is the most similar class to Space in terms of the types of organisations holding licenses.

This would leave six classes and five regions. To maximise statistical inferential power in all region and classes, numbers of licenses should be randomly drawn from each region/class "cell" such that approximately equal sampling error within each cell are ensured. Licenses can be drawn from service categories within each class in proportion to the size of the service category, although the client may wish to over or under sample licenses from certain service categories. For example, Public Commercial licenses represent about 0.4 per cent of the total population of licenses. Strict proportional random sampling would provide a total of fewer than 15 licenses in this category. Yet the large telephone utilities are represented in this category; thus we may want a substantially higher number than 15.

Estimating costs for this survey, approximately $27,600 may be considered fixed or independent of sample size. This cost includes project orientation, instrument refinement and pre-testing, analysis and reporting. Using a target total budget of $80,000, this leaves $52,400 for sampling and field work. If we estimate a response rate of 50 per cent, and add together sampling (including telephoning to obtain names), printing, postage, mailing, coding and data entry costs (totalling $12.50 per sampling unit), the budget will permit a sample of 4,200 licensees. Allowing for approximately ten per cent invalid license holder names and/or addresses, 4,600 licenses in total would be requested from Broadcasting Regulations and RFS Management Database according to the specifications outlined above; that is, 153[1] randomly selected licenses would be requested from each region-class category. The exception to this would be in cases when the number 153 exceeded the total number of licenses in a given region-class or when the

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[1] 4,600/5 regions/6 classes. For the larger region/class categories the worst case sampling error will be +/- 7.9 per cent.

size of the region/class is small enough that sampling error is significantly reduced[1]. In such case, all licenses would be drawn, and the other classes for that region would receive equal numbers of additional licenses to maintain the regional total of 920 (i.e., 4,600 - 5).

This sampling approach is designed to ensure as large as possible sample sizes in each category. However, it will *not* result in a proportionally representative sample of the total licensee population nor of license class sub-populations. Thus any statistical inferences to the population as a whole, or to a given class must involve statistical weighting of the cases to correct for biases introduced in sampling.

The final sample size of 2,100 will allow inferences to be made to the population (i.e., all licensees) within confidence intervals of between +/- 1.28 per cent and +/- 2.14 per cent (for sample proportions of ten per cent vs. 90 per cent and 50 per cent vs. 50 per cent on dichotomous variables, respectively), 19 times out of 20[2] when statistics are calculated using the entire sample. Statistics by region (n ~ 420) will have associated confidence intervals of between +/- 2.86 per cent and +/- 4.79 per cent. Statistics by class (n ~ 350) will have associated confidence intervals of between +/- 3.14 per cent and +/- 5.24 per cent.

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[1] One hundred and fifty-three will probably only exceed the cell total in the case of the Coast class, which has a national total of only 195 licenses. Other national totals are much larger, thus region-class figures should remain above 153. The other class totals (as of October 31, 1987) are as follows: Land -- 125,452; Mobile -- 611,310; Ship -- 43,056; Earth and Space -- 1,400; Broadcast -- approximately 3,000. In the cases of Earth and Space, and Broadcast, the small population sizes will significantly decrease the sampling error. (For example if a region has, say, 280 Earth and Space licenses the worst case sampling error for 153 cases will be +/- 5.3 per cent.) In these groups the sample may be reduced from 153, distributing the extra cases within the same region.

[2] Applying the formula

$$+/- 1.96 \quad \frac{p(1-p)}{n}$$

The sample of 4,600 licenses will need to be drawn from two data bases, i.e., the Broadcast data base and SMS. Since licenses may be drawn from SMS according to any procedures desired, we suggest a randomised quota sampling approach be used. Essentially, licenses are picked one at a time until a quota is reached. Each license has an equal probability of being selected each time. It will need to be specified that when a district company code is drawn, the data base be searched for all other licenses with that code. The number of licenses with that code must be recorded and, to avoid duplicates, the remaining licenses with the code be made ineligible for further selection.

Broadcast regulations will need to provide to the consultant the number of licenses held in each region and SMS will need to provide the number of licenses held in each region/class. This will allow quotas to be established (i.e., when not 153) and, ultimately, sampling errors to be computed.

Keeping track of the numbers of licenses held by individual companies will allow later weighting (should the client desire) by "size", in terms of number of licenses. Our initial survey shows that by far the greatest number of licensees hold *one* license (i.e., about 20 per cent or 160,000 of the licenses are held by one licensee). The remaining approximately 640,000 licenses are held by relatively few organisations (possibly as few as 4,000 to 5,000 according to our figures). Thus, while the sampling may proportionally represent the license-holder population, it will not be representative of *licenses*. If this is a concern to the client, a weighting strategy should be developed to correct this bias.

Once the 4,600 licenses are drawn, the researchers will have to (a) get the telephone number through the telephone directories, directory assistance or Bell Canada's number service, and (b) telephone each license holder to determine the name of the individual to whom the survey should be sent. This information is not on the data base. From our preliminary survey we found that for license holders which are organisations, the appropriate survey respondent will typically be the general manager or accountant (for small to medium sized organisations) or a technical person such as the engineering manager (for medium to large sized organisations). The respondent should be responsible for applying for, and maintaining or complying with the license. A contact sheet similar

to that used to develop this sampling plan should be used in this exercise -- see Appendix D (although paragraph #4 of the script should be excluded while space for new address information should be added).

3.4 Sample Quality

In general, since the population (i.e., all licenses) is comprehensively and accurately represented in the two data bases, the sample should be relatively free of bias. There remains one issue, in addition to those discussed above, which may introduce bias and will therefore require attention. This concerns systematic bias in return rate. We know from our telephoning exercise that large organisations, for example, may be more difficult to contact than smaller organisations. Response rate should therefore be kept track of by license class and service, and by region. Any systematic biases which occur in returns can then be corrected through weighting.

APPENDIX A
RFS Licenced User Questionnaire

Communications Canada
300 Slater Street
Journal Tower North
Ottawa, Ontario

Date

Dear Sir/Madam

Communications Canada is conducting a study to determine how satisfied licenced users are with the management of the radio frequency spectrum. To this end, the Department has commissioned _____ to conduct a survey of licenced users. The ultimate purpose of this survey is to improve the way in which the radio frequency spectrum is managed.

Your name has been randomly selected from a list of licences maintained by the Department. The list includes independent radio operators as well as representatives of commercial and governmental communications users. In order that the results will represent the opinions of all licenced users, it is important that each questionnaire be completed and returned.

Your opinions and the information you provide are extremely important in terms of identifying the concerns of yourself or your organisation and ways in which the Department could better serve your organisation. Participation in this effort is entirely voluntary, but we urge you to please complete the following questionnaire (and return it in the attached postage-paid envelope). All completed questionnaires will be **strictly confidential and anonymous**, and your name or that of your organisation will not be associated with your responses.

The questionnaire is divided into several sections which should take you about 30 minutes to complete. The questionnaire should be completed by either the addressee or else someone who is involved with applying for licences, complying with radio regulations or managing or using radio operations.

When you have completed the questionnaire, please mail it in the enclosed return envelope. Thank you very much for your assistance.

GUIDELINES FOR COMPLETING THIS QUESTIONNAIRE
EXAMPLE -- DO NOT COMPLETE

On the following pages you will find 44 questions divided into four sections. Some of these concern factual information. Other questions concern your opinions. Examples of the types of questions you will find are as follows:

1. Many of our questions require that you choose a category. For these items, please circle the number corresponding to the category which best fits your answer. In each question circle only one number unless specified otherwise. For example:

   Do you own or lease your radio equipment?

   Own 1
   Lease 2

2. Many of the questions ask you to enter numbers. Please enter only one digit in each box. For example:

   In what year did you first apply for a radio licence?

   YEAR |1|9|__|__|

   Approximately how many licences have been renewed during the past year?

   NUMBER OF RENEWED LICENCES |__|,|__|__|__| DON'T KNOW |__|

3. Some of the questions are posed as seven point scales in which we are asking you to rate the strength or "quality" of a concept. For these questions, please circle the number corresponding to the answer that best fits your response. For example:

   Over the past 12 months, how satisfied were you with the contact you have had with Communications Canada staff?

Extremely Dissatisfied		Neither				Extremely Satisfied
1	2	3	4	5	6	7

This survey is being sent to individuals as well as representatives of organisations. If you are in the latter category, for the purposes of this survey, for any reference to "you", please answer on behalf of your organisation.

I'm answering on behalf of:

Myself 1
My organisation .. 2

SECTION A

In this section we are asking you to provide information dealing with your present use of the radio frequency spectrum.

1.a) **In what year did you first apply for a radio licence?**

|1|9|__|__|

b) **In what year did you last apply for a new licence?**

|1|9|__|__|

2. **Do you lease or own your radio equipment?** Please circle the appropriate number.

a) Lease..... 1
b) Own..... 2
c) Combination of above..... 3

3.a) **Do you subscribe to a radio service provider?** Please circle the appropriate number.

Yes..... 1
No..... 2 --- SKIP TO QUESTION 4

b) **Of the radio equipment you now operate, what percentage was obtained from a radio service provider?** Please circle the appropriate number.

a) 0 to 24 percent..... 1
b) 25 to 49 percent..... 2
c) 50 to 74 percent..... 3
d) 75 to 100 percent..... 4

4. What type of radio licence(s) do you (your organisation) currently hold under each of the following services. Read through the list (continued on the next page) first to determine which of the services best applies. Then, for each service, please indicate how many licences assigned to you are of the following types: land, mobile, ship, coast, earth or space.

Services	Station type: Land	Mobile	Ship	Coast	Earth	Space
a) Public commercial	|_|_|_|_|	|_|_|_|_|	|_|_|_|_|	|_|_|_|	|_|_|_|_|	|_|
b) Restricted public commercial	|_|_|_|_|	|_|_|_|_|	|_|_|_|_|	|_|_|_|	|_|_|_|_|	|_|
c) Public commercial automatic repeater	|_|_|_|_|	|_|_|_|_|	|_|_|_|_|	|_|_|_|	|_|_|_|_|	|_|
d) Public commercial receiving	|_|_|_|_|	|_|_|_|_|	|_|_|_|_|	|_|_|_|	|_|_|_|_|	|_|
e) Private commercial	|_|_|_|_|	|_|_|_|_|	|_|_|_|_|	|_|_|_|	|_|_|_|_|	|_|
f) Private commercial receiving	|_|_|_|_|	|_|_|_|_|	|_|_|_|_|	|_|_|_|	|_|_|_|_|	|_|
g) Private commercial automatic repeater	|_|_|_|_|	|_|_|_|_|	|_|_|_|_|	|_|_|_|	|_|_|_|_|	|_|
h) Military USA	|_|_|_|_|	|_|_|_|_|	|_|_|_|_|	|_|_|_|	|_|_|_|_|	|_|
i) Municipal	|_|_|_|_|	|_|_|_|_|	|_|_|_|_|	|_|_|_|	|_|_|_|_|	|_|
j) Experimental	|_|_|_|_|	|_|_|_|_|	|_|_|_|_|	|_|_|_|	|_|_|_|_|	|_|

4. Continued.

Services	Station type: Land	Mobile	Ship	Coast	Earth	Space
k) Amateur service	|_|_|_|_|	|_|_|_|_|	|_|_|_|_|	|_|_|_|	|_|_|_|_|	|__|
l) Amateur service repeater	|_|_|_|_|	|_|_|_|_|	|_|_|_|_|	|_|_|_|	|_|_|_|_|	|__|
m) Aeronautical service repeater	|_|_|_|_|	|_|_|_|_|	|_|_|_|_|	|_|_|_|	|_|_|_|_|	|__|
n) Aeronautical mobile	|_|_|_|_|	|_|_|_|_|	|_|_|_|_|	|_|_|_|	|_|_|_|_|	|__|
o) Aircraft navigational	|_|_|_|_|	|_|_|_|_|	|_|_|_|_|	|_|_|_|	|_|_|_|_|	|__|
p) Ships - transmit and receive	|_|_|_|_|	|_|_|_|_|	|_|_|_|_|	|_|_|_|	|_|_|_|_|	|__|
q) Ships - receive	|_|_|_|_|	|_|_|_|_|	|_|_|_|_|	|_|_|_|	|_|_|_|_|	|__|
r) Limited maritime mobile	|_|_|_|_|	|_|_|_|_|	|_|_|_|_|	|_|_|_|	|_|_|_|_|	|__|
s) Private maritime mobile	|_|_|_|_|	|_|_|_|_|	|_|_|_|_|	|_|_|_|	|_|_|_|_|	|__|
t) Earth stations	|_|_|_|_|	|_|_|_|_|	|_|_|_|_|	|_|_|_|	|_|_|_|_|	|__|
[redacted]u) S[redacted]stat[redacted]...[redacted]....[redacted].	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

5. **Thinking of the past year, approximately how many new licences have you applied for?** Please enter the number of new licences applied for. If you are unsure of the number, please check the "Don't Know" box.

NUMBER OF NEW LICENCES |__|,|__|__|__| DON'T KNOW |__|

6. **Approximately how many licences have been renewed during the past year?**

NUMBER OF RENEWED LICENCES |__|,|__|__|__| DON'T KNOW |__|

7. **Over all licences, how many radio frequencies are you currently assigned?**

NUMBER OF ASSIGNED FREQUENCIES |__|,|__|__|__| DON'T KNOW |__|

This next series of questions deals with the process involved in applying for a radio licence.

8.a) **Have you ever requested a specific frequency band when making an application for a licence?**

Yes 1
No ..... 2 -- SKIP TO QUESTION 10
Don't Know 9

b) **Have any requests for a specific frequency band ever been rejected by the Department?**

Yes 1
No ..... 2 -- SKIP TO QUESTION 10
Don't Know 9

c) **In what year was your preferred frequency band first rejected?** If you have not kept records, please give the approximate year in which your preferred band was first rejected. If you are unsure, please check the "Don't Know" box.

19 |__|__| Don't Know |__|

d) **In what year was your preferred frequency band most recently rejected?**

19 |__|__| Don't Know |__|

9. **Thinking of the most recent occasion when your preferred frequency band was not accommodated, what was the extent of the inconvenience you experienced as a result.** Please respond on a scale of 1 to 7 where 1 indicates a minor inconvenience, 7 indicates a major inconvenience and 4 indicates a moderate inconvenience. Please circle 8 if the assignment of a non-preferred band had no negative effects.

	Minor Inconvenience		Moderate Inconvenience				Major Inconvenience	No Effect
a) Quality of spectrum	1	2	3	4	5	6	7	8
b) Licence processing time	1	2	3	4	5	6	7	8
c) Equipment needed to operate in band	1	2	3	4	5	6	7	8
d) Other (please specify) _____ .	1	2	3	4	5	6	7	8

10.a) **Have you ever requested a specific <u>frequency</u> when making an application for a licence?**

Yes 1
No ..... 2 -- SKIP TO QUESTION 12
Don't know 3

b) **Have any requests for a specific frequency ever been rejected by the Department?**

Yes 1
No ..... 2 -- SKIP TO QUESTION 12
Don't know 3

c) **In what year was your preferred frequency <u>first</u> rejected?** If you have not kept records, please give the approximate year in which your preferred frequency was first rejected. If you are unsure, please check the "Don't Know" box.

|1|9|_|_| Don't Know |_|

d) **In what year was your preferred frequency <u>most recently</u> rejected?**

|1|9|_|_| Don't Know |_|

11. **In the most recent case, why were you refused your first choice of frequency?**

a) Frequency was already assigned 1
b) Usage of chosen frequency would cause interference 2
c) Regulations do not permit usage of frequency by my type of service 3
d) Other (please specify) 4

_____

_____

e) No reasons given 9

12.a) **Have any of your applications for a radio licence ever been rejected by the Department?**

Yes 1
No ..... 2 -- SKIP TO QUESTION 13
Don't know 3

b) **In the past last year, how many times has this occurred?**

NUMBER OF REJECTIONS |__|__|

c) **What were the main reasons given by the Department for rejecting any applications?**

a) No frequencies available on desired band 1
b) Present frequencies were judged by Department as not at maximum use 2
c) Other (please specify) _____

_____.. 3

13. **Within the last year, have you been personally involved in applying for any new licences for yourself or your organisation?**

Yes 1
No ..... 2 -- SKIP TO QUESTION 17

14.a) **We would like to determine how satisfied you were with the following aspects of the authorisation process.** Please rate your answers on a scale from 1 to 7 where 1 is extremely dissatisfied, 7 is extremely satisfied and 4 indicates that you were neither satisfied nor dissatisfied. Please circle 8 is any of the statements do not apply to your experience with the authorisation process.

	Extremely Dissatisfied			Neither			Extremely Satisfied	Not Applicable
a) Information provided by the Department in making the application	1	2	3	4	5	6	7	8
b) Complexity of application process ..	1	2	3	4	5	6	7	8
c) Availability of information needed to complete application	1	2	3	4	5	6	7	8
d) Time taken to complete application .	1	2	3	4	5	6	7	8
e) Time taken to process application ..	1	2	3	4	5	6	7	8
f) Overall satisfaction with application process	1	2	3	4	5	6	7	8

15. **How long did it take from the time you applied for your most recent new licence until it was delivered?** Please enter the number of days, weeks or months.

|__|__| Days OR |__|__| Weeks OR |__|__| Months

16. **Did your application(s) for any radio licences within the last year require coordination with any of the following?** Please circle the appropriate number.

a) The United States 1
b) Other parties (please specify)

_____

_____ .. 2

c) No coordination 3
d) Don't Know 9

17.a) **In the last year, have you been required to take an examination in order to be certified as a radio operator?**

Yes 1
No ..... 2 -- SKIP TO QUESTION 18

b) **To what extent would you agree or disagree with the following statements as they apply to the radio operator certification process?** Please rate your response on the 7 point scale where 1 means strongly disagree, 7 means strongly agree, and 4 means neither agree nor disagree. Please circle 8 if any of the statements do not apply to your experience with the process.

	Strongly Disagree			Neither			Strongly Agree	Not Applicable
a) The examination was fair	1	2	3	4	5	6	7	8
b) The examination was useful in the operation of my equipment	1	2	3	4	5	6	7	8
c) The exam was too complex	1	2	3	4	5	6	7	8
d) The information given by the Department regarding the examination requirements was inadequate	1	2	3	4	5	6	7	8
e) Overall, I'm satisfied with the certification process	1	2	3	4	5	6	7	8
g) Other (please specify) _____ _____..	1	2	3	4	5	6	7	8

Now, the next series of questions concern eventual problems related to the sharing and loading of frequencies.

18.a) **Do you currently share any frequencies with other radio users?**

Yes 1
No ..... 2 -- SKIP TO QUESTION 20
Don't Know 9

18.b) **Do you share a specific frequency with other radio users outside your organisation?**

Yes 1
No ..... 2 -- SKIP TO QUESTION 15
I do not represent an organisation . 3

19. **To what extent does sharing frequencies with others present the following problems?** Please rate your answer on a scale from 1 to 7 where 1 indicates a very minor problem, 7 indicates a very major problem and 4 indicates a moderate problem. Please circle 8 if the statement is not a problem at all.

	Very Minor Problem			Moderate Problem			Very Major Problem	No Problem
a) Co-users use frequency during non-designated time period	1	2	3	4	5	6	7	8
b) Co-users waste air time	1	2	3	4	5	6	7	8
c) Co-users use offensive language on air	1	2	3	4	5	6	7	8
d) Co-users create interference on the frequency	1	2	3	4	5	6	7	8
e) There is a lack of access to the channel	1	2	3	4	5	6	7	8
f) I question the security of the messages I send	1	2	3	4	5	6	7	8
g) I don't get enough air time	1	2	3	4	5	6	7	8
h) Other (please specify) _____ .	1	2	3	4	5	6	7	8

20.a) **Is loading ever a problem on the frequencies assigned to you?** By loading, we mean the level of use on your assigned frequency at a particular point in time.

Yes 1
No ..... 2 -- SKIP TO QUESTION 21

20.b) **On average, how great a problem is loading as experienced on the frequency(ies) assigned to you?** Please rate your response on a scale from 1 to 7 where 1 is a very major problem, 7 is a very minor problem and 4 is a moderate problem.

Very Minor Problem		Moderate Problem			Very Major Problem	
1	2	3	4	5	6	7

c) **During what times is loading on the frequenc(ies) you use at a level that you consider excessive?** Please enter in the blanks the months, days and times of the day when loading is excessive. If there are no outstanding time periods, please check the box N/A (not applicable).

a) Month(s) of year (please specify) _____ N/A |__|

b) Day(s) of week (please specify) _____ N/A |__|

c) Time(s) of day From _____ To _____ N/A |__|

_____ _____

d) **On what frequency(ies) or bandwidth is excessive loading most serious?** Please specify the frequency and band.

(For example: |__|__|,|1|4|3|.|6|__| MHz to |__|__|,|__|__|__|.|__|__|__)

|__|__|,|__|__|__|.|__|__|__ to |__|__|,|__|__|__|.|__|__|__

|__|__|,|__|__|__|.|__|__|__ to |__|__|,|__|__|__|.|__|__|__

|__|__|,|__|__|__|.|__|__|__ to |__|__|,|__|__|__|.|__|__|__

21. **Do you share any general band(s) with other radio users (e.g., maritime, aeronautical, amateur bands, etc.)?**

Yes 1
No ..... 2 -- SKIP TO QUESTION 24
Don't Know .. 9

22. **To what extent does sharing general bands with others present the following problems?** Please rate your answer on a scale from 1 to 7 where 1 indicates a very minor problem, 7 indicates a very major problem and 4 indicates a moderate problem. Please circle 8 if the statement does not present a problem at all.

	Very Minor Problem			Moderate Problem			Very Major Problem	No Problem
a) Co-users use general band during non-designated time period	1	2	3	4	5	6	7	8
b) Co-users waste air time	1	2	3	4	5	6	7	8
c) Co-users use offensive language on air	1	2	3	4	5	6	7	8
d) Co-users create interference on the frequency	1	2	3	4	5	6	7	8
e) There is a lack of access to the channel	1	2	3	4	5	6	7	8
f) I question the security of the messages I send	1	2	3	4	5	6	7	8
g) I don't get enough air time	1	2	3	4	5	6	7	8
h) Other (please specify) _____ .	1	2	3	4	5	6	7	8

23.a) **Is loading ever a problem on the general bands you share with other users?**

Yes 1
No ..... 2 -- SKIP TO QUESTION 24

b) **On average, how great a problem is loading as experienced on general bands?** Please rate your response on a scale from 1 to 7 where 1 is a very major problem, 7 is a very minor problem and 4 is a moderate problem.

Very Minor Problem		Moderate Problem				Very Major Problem
1	2	3	4	5	6	7

Technically, there are a number of alternatives to using the radio to communicate; for example, wire cables, more vehicles and/or people. This next section of the questionnaire deals with alternatives to using the radio.

24.a) **Thinking about the variety of ways in which you use radio, for approximately what percentage of total uses could other methods be used?**

No other means can be used ... 1 --- SKIP TO QUESTION 25
1 - 20% 2
21 - 40% 3
41 - 60% 4
61 - 80% 5
81 - 100% 6
Don't know 9

b) **In your opinion, approximately how much money are you saving by using the spectrum?** Please indicate the dollar value by filling in the boxes below.

Money saved annually $|__|__|__|,|__|__|__|,|__|__|__|.00

25.a) **In the past year, have you purchased any new radio equipment?** Please circle the appropriate number.

Yes..... 1
No..... 2 -- GO TO QUESTION 26
Don't know.....9

b) **Before considering purchasing radio equipment, have other methods been seriously considered?** For example, computer modems, mail, etc.. Please circle the appropriate number.

Yes 1
No ..... 2 -- GO TO QUESTION 26
Don't know 9

c) **When radio was chosen over other methods, why was this done?** Please circle all that apply.

a) Low cost relative to other methods..... 1
b) Speed of communication 2
c) Quality of communication 3

d) Other (please specify) _____

_____. 4

This next section of the questionnaire concerns the value of and your perceptions of the licence fees you pay to support the management of the radio frequency spectrum.

26.a) **In the last year for which you have records, what were the <u>total</u> licence fees paid by you or your organisation?** Please enter one digit per box.

$ |__|,|__|__|__|,|__|__|__|.00

b) **In your opinion, what is the cost of your radio licence fees relative to the factors listed below?** Please circle your response on a seven-point scale where 1 indicates not at all costly, 7 indicates much too costly and 4 indicates just the right cost.

	Not at all costly			Just Right			Much Too Costly
a) Benefits obtained from radio use.....	1	2	3	4	5	6	7
b) Past radio licence fees	1	2	3	4	5	6	7
c) Value of radio equipment	1	2	3	4	5	6	7
d) What other radio users pay ..	1	2	3	4	5	6	7
e) Value of other licences (i.e. motor vehicle, etc.) ..	1	2	3	4	5	6	7
f) What I think I should pay ...	1	2	3	4	5	6	7

27. **This question is purely hypothetical. Considering the costs and benefits of using the radio frequency spectrum, given the choice, would you rather have access to a dedicated frequency that experienced <u>less</u> interference and loading at a <u>higher</u> licence fee, or would you rather choose to pay <u>lower</u> licence fees on a shared frequency?** On the scale below, please circle the appropriate number.

Lower Fees/ Shared Channels		Current Trade-off is Fine				Higher Fees/ Dedicated Channels
1	2	3	4	5	6	7

28.a) **How is your radio equipment used?**

a) Pleasure purposes only ..... 1 -- SKIP TO QUESTION 29
b) Business purposes only 2
c) Both business and pleasure 3

b) **Please indicate your organisation's primary areas of business.** Please circle all that apply.

Emergency Services.....01
Safety Services.....02
Recreation/Culture.....03
Community/Social Service..04
Public Utility.....05
Agriculture 06
Forestry 07
Fishing, Trapping 08
Mining 09
Construction 10
Trucking..... 11
Paging..... 12
Delivery..... 13
Courier..... 14
Finance, Insurance, Real Estate 15
Other (please specify)

_____. 16

28.c) **How important is your radio equipment to carrying out the following activities?** Please rate the importance of each use by cirling one number on each 1 to 7 scale where 1 means extremely unimportant, 7 means extremely important and 4 means neither important nor unimportant. Please circle 8 if any questions do not apply to you.

	Extremely Unimportant			Neither			Extremely Important	Not Applicable
a) Emergency services.....	1	2	3	4	5	6	7	8
b) Safety services.....	1	2	3	4	5	6	7	8
c) Staying in contact with field operators...	1	2	3	4	5	6	7	8
d) Staying in contact with base operators....	1	2	3	4	5	6	7	8
e) Servicing clients	1	2	3	4	5	6	7	8
f) Other (please specify) _____....	1	2	3	4	5	6	7	8

This section of the questionnaire deals with your awareness and perceptions of the regulations, rules and procedures which govern the use of the radio frequency spectrum.

29.a) **Have you ever experienced radio interference on any of the frequencies you use?**

Yes.....1
No.....2 --> SKIP TO QUESTION 30

b) **Did you make a report of the situation to Communications Canada?**

Yes.....1
No.....2

30.a) **As far as you know, does Communications Canada have an active role in the management of radio interference?**

Yes.....1
No.....2 -- SKIP TO QUESTION 30
Don't Know 3

b) **Would you agree or disagree that Communications Canada ought to have an active role in the management of radio intereference?** Please rate your response on the 7 point scale where 1 means strongly disagree, 7 means strongly agree, and 4 means neither agree nor disagree.

Strongly Disagree			Neither			Strongly Agree
1	2	3	4	5	6	7

31.a) **As far as you know, is the radio frequency spectrum managed by regulations established by Parliament?** Please circle the appropriate number.

Yes.....1
No.....2 -- SKIP TO QUESTION 32
Don't Know 9

b) **Where did you learn that the radio frequency spectrum is managed by regulation?** Please circle all that apply.

a) Communications Canada
published information.....1

b) Communications Canada
District Office.....2

c) Radio/television.....3

d) Newspapers.....4

e) Trade magazines.....5

f) Other (please specify)
_____.....6

32. **To your knowledge, how many documents apply to radio use in Canada?** Please circle the appropriate number from the selection below.

a) 1 to 25 1
b) 26 to 50..... 2
c) 51 to 75..... 3
d) 76 to 100..... 4
e) 101 to 125..... 5
f) Over 125..... 6
g) Don't Know 7

33.a) **How familiar do you consider yourself to be with the regulations, rules and procedures which apply to your use of the radio frequency spectrum?** Please rate your answer on a scale from 1 to 7 where 1 means not at all familiar, 7 means completely familiar and 4 means fairly familiar.

Not at all Familiar			Fairly Familiar			Completely Familiar
1	2	3	4	5	6	7

33.b) **Below is a list of statements regarding rules, regulations and procedures.** Please rate your agreement on each 1 to 7 scale where 1 is strongly disagree, 7 is strongly agree and 4 is neither agree nor disagree.

	Strongly Disagree			Neither			Strongly Agree
a) Regulations, rules and procedures are consistently enforced	1	2	3	4	5	6	7
b) Adequate notice of changes to regulations, rules and procedures is provided	1	2	3	4	5	6	7
c) There are too many regulations, rules and procedures	1	2	3	4	5	6	7
d) There is ample opportunity to provide input prior to changes in regulations	1	2	3	4	5	6	7
e) Technological innovation is restricted due to present regulations, rules and procedures	1	2	3	4	5	6	7
f) Too much time is devoted to dealing with the Department with regards to regulations, rules and procedures	1	2	3	4	5	6	7
g) Other (please specify) _____ _____.	1	2	3	4	5	6	7

34.a) **Have you or your organisation ever used equipment which has not been certified by Communications Canada for use in Canada.** Please circle the appropriate response.

Yes 1
No ..... 2 -- SKIP TO QUESTION 35
Don't Know .. 9

b) **Why did you use equipment which was not type-approved or technically certified?** Please circle all that apply.

a) Regulations do not keep up with technological innovations 1
b) Was not aware that equipment was not according to standards ... 2
c) Non type-approved equipment is cheaper 3
d) Non type-approved equipment is the only equipment available ... 4
e) Other (please specify) _____... 5

The next section of the questionnaire concerns your overall satisfaction with the services offered by Communications Canada.

35.a) **Over the last 12 months, have you had any contact, whether it be in person or on the telephone, with staff at Communications Canada?**

Yes 1
No ..... 2 -- SKIP TO QUESTION 36

b) **How much contact, whether it be in person or on the telephone, have you had with staff at Communications Canada?** Please circle the appropriate number.

Minimal Contact			Some Contact			Extensive Contact
1	2	3	4	5	6	7

c) **Overall, how satisfied were you with these contacts with Department staff?** Please rate your satisfaction on a seven-point scale where 1 means extremely dissatisfied, 7 means extremely satisfied and 4 means neither satisfied nor dissatisfied. Please circle 8 if the statement does not apply to you.

	Extremely Dissatisfied			Neither			Extremely Satisfied	Not Applicable
a) Competence of staff	1	2	3	4	5	6	7	8
b) Courtesy of staff	1	2	3	4	5	6	7	8
c) Clarity of advice	1	2	3	4	5	6	7	8
d) Amount of information provided	1	2	3	4	5	6	7	8
e) Timeliness of information	1	2	3	4	5	6	7	8
f) Appropriateness of information provided	1	2	3	4	5	6	7	8
g) Availability of assistance	1	2	3	4	5	6	7	8
h) Location of district offices	1	2	3	4	5	6	7	8
i) Ability to communicate in either official language.....	1	2	3	4	5	6	7	8

SECTION B

The purpose of this section is to identify concerns specific to broadcasters. The questions deal with the application and consulting process.

37. **First, we would like to know how satisfied you are with the following aspects of the Technical Construction and Operating Certificate (TC and OC) application process.** Please rate your response on a seven-point scale where 1 indicates you were extremely dissatisfied, 7 indicates you were extremely satisfied and 4 means you were neither satisfied nor dissatisfied.

	Extremely Dissatisfied			Neither			Extremely Satisfied	Not Applicable	Don't Know
a) Information provided by the Department when you prepared the application.	1	2	3	4	5	6	7	8	9
b) Complexity of application process ..	1	2	3	4	5	6	7	8	9
c) Time taken to complete application .	1	2	3	4	5	6	7	8	9
d) Time taken to process application ..	1	2	3	4	5	6	7	8	9
e) Availability of information needed to complete application	1	2	3	4	5	6	7	8	9
f) Financial cost of preparing the application	1	2	3	4	5	6	7	8	9
g) Overall satisfaction with application process	1	2	3	4	5	6	7	8	9

38. **Communications Canada tries to consult with broadcasters as part of its policy making process. In this section, we are interested in your attitudes towards the consultation process.** Please indicate your agreement with the following statements which relate to the consultation process by circling the appropriate number for each scale.

	Strongly Disagree			Neither			Strongly Agree
a) There is ample opportunity to provide input prior to changes in regulations	1	2	3	4	5	6	7
b) I understand clearly the radio regulations, rules and procedures.....	1	2	3	4	5	6	7

39. **Communications Canada tries to consult with broadcasters as part of its policy making process. In this section, we are interested in your attitudes towards the consultation process.** Please indicate your agreement with the following statements which relate to the consultation process by circling the appropriate number for each scale.

	Strongly Disagree			Neither			Strongly Agree	Don't Know
c) Adequate notice of changes to regulations, rules and procedures is received	1	2	3	4	5	6	7	9
d) Too much time is devoted to consulting with the Department	1	2	3	4	5	6	7	9
e) The consultation process is useful	1	2	3	4	5	6	7	9
f) I cannot provide input into the consultation process as it is presently organised	1	2	3	4	5	6	7	9
g) I am regularly consulted by the Department.	1	2	3	4	5	6	7	9
h) Other (please specify) _____ _____..	1	2	3	4	5	6	7	9

We would also like some basic information about your organisation.

40.a) **Please indicate what type of broadcaster your firm is by circling the appropriate number.**

a) AM radio 1
b) FM radio 2
c) Television 3
d) Cable 4

b) **Please indicate your type of ownership.**

Public 1
Private 2

41.c) **Are you a member of any of the following organisations?** Please circle all that apply.

a) Advanced Broadcast Systems Committee..... 1
b) Radio Advisory Board of Canada 2
c) Broadcast Advisory Committee..... 3
d) Cable Advisory Committee 4
e) Other (please specify)
_____ 5
f) None of the above 6

SECTION C -- FOR COMPANIES OR GOVERNMENT ONLY

IF YOU REPRESENT YOURSELF, PLEASE PROCEED TO SECTION D (PAGE 24)

To complete this questionnaire we would like you to provide some basic information about yourself and your organisation.

42. **Please indicate at which of the following levels your organisation operates.** Please circle all that apply.

a) Local 1
b) Provincial 2
c) National 3
d) International 4

43. **Please indicate what type of organisation you represent.** Please circle the appropriate number.

a) Private sector 1
b) Public utility 2
c) Private utility 3
d) Municipal government 4
e) Provincial government ... 5
f) Federal government 6
g) Other (please specify)
_____ . 7

44. **Approximately how many staff are currently employed by your organisation.** Please enter the appropriate number in the boxes below.

Full time staff |__|__|__|,|__|__|__|

Part time staff |__|__|,|__|__|__|

35.c) **Overall, how satisfied were you with these contacts with Department staff?** Please rate your satisfaction on a seven-point scale where 1 means extremely dissatisfied, 7 means extremely satisfied and 4 means neither satisfied nor dissatisfied. Please circle 8 if the statement does not apply to you.

	Extremely Dissatisfied			Neither			Extremely Satisfied	Not Applicable
j) Overall level of satisfaction with the Department's services	1	2	3	4	5	6	7	8
k) Other (please specify) _____ _____ .	1	2	3	4	5	6	7	8

36.a) **Communications Canada maintains a computerised list of all licences, including addresses and all licence-related technical information. This information can sometimes be released for non-governmental purposes under Access to Information rules. For example, a private company may request addresses for marketing its products. Do you agree or disagree that this information should be made available for non-governmental purposes?** Please rate your agreement by circling one number on the 1 to 7 scale below.

Strongly Disagree			Neither			Strongly Agree
1	2	3	4	5	6	7

b) **Is there any information submitted to Communications Canada which you normally protect, keep confidential, or which would give a competitor an advantage over you?**

Yes 1
No ..... 2 -- SKIP TO SECTION C, QUESTION 42
Don't Know . 9

c) **If yes, what types of information does this include?**

_____

_____

_____

THE NEXT SECTION IS TO BE COMPLETED BY RADIO, TELEVISION AND CABLE BROADCASTERS ONLY. IF YOU ARE NOT A REPRESENTATIVE OF ANY OF THESE ORGANISATIONS, PLEASE PROCEED TO SECTION C (PAGE 23).

45. **Approximately how many staff are involved in the management of the radio communications system of your organisation.** Please enter the appropriate number in the boxes below.

Full time staff |__|__|,|__|__|__|

46. **What is the approximate replacement value of the radio equipment owned or leased by your organisation?** Please enter one number in each box provided.

Total value of
radio equipment $|__|,|__|__|__|,|__|__|__|,|__|__|__|.00

47. **What was the total gross revenue of your organisation in the past year for which you have complete information?** **For government operations, please indicate your total budget.** Please enter one digit in each box provided.

Total gross
revenue/budget $|__|__|,|__|__|__|,|__|__|__|,|__|__|__|.00

48. **Could you please indicate your position within the organisation.**

President or CEO 1
Senior Management/Executive Officer 2
Communications Manager 3
Manager other than communications 4
Professional or technical staff 5
Owner (sole proprietor or partner) 6

Other (please specify) _____

_____ . 7

SECTION D -- FOR ALL RESPONDENTS

Since this survey is anonymous, we cannot ask you if you would like a copy of the results. However, upon written request, a summary report will be sent to you when it becomes available. For a summary report, please write:

Mr. Benoît Gauthier
Senior Program Evaluation Manager
Program Evaluation Division
Communications Canada
19th Floor, Journal Tower North
300 Slater Street
Ottawa, Ontario

PLEASE MAIL THE COMPLETED QUESTIONNNAIRE IN THE ENCLOSED SELF-ADDRESSED ENVELOPE.

THANK YOU VERY MUCH FOR YOUR COOPERATION.

APPENDIX B

Contact List

RADIO FREQUENCY SPECTRUM - STUDY #4
LIST OF COMMUNCICATIONS CANADA STAFF CONSULTED

Director Generals

Broadcasting Regulation
Ronald Begley

Radio Regulation
Robert Jones

Engineering Programs
Nissar Ahmed

Regional Director Generals

Atlantic
Deputy Director General
George Richard

Quebec
Jean Marc Pellerin

Ontario
Dave Lyon

Deputy Director General
Gerry Brushett

Central
Jan Scora

Pacific
Bruce Drake

Spectrum Management -Ottawa

Spectrum Mangagement, Regulatory Policy and Planning
Alan Collier

Director, Regulatory Policy and Planning
Ed Ducharme

Spectrum Control
Maurice Nunas

Accounts/Licences database
Jean Claude Domien

APPENDIX C

Sampling Plan Development
List of Licensees

X - BILINGUAL.

√ - COMPLETED.

LAND LICENSEES

A - PUBLIC COMMERCIAL

√ X CANTEL INC. 1-514-340-2060 ✓ 49-090001349
6315 COTE DE LIESSE
VILLE SAINT-LAURENT QUEBEC H4T 1E5

√ BELL CELLULAR INC. 49-090001565
10 CARLSON COURT STE 800
REXDALE ONTARIO M9W 6L2 1-800-387-4869

B - RESTRICTED PUBLIC COMMERCIAL

√ TIME COMMUNICATIONS 49-090000281
1600 LAPERRIERE AVENUE
OTTAWA ONTARIO K1Z 8P5 725-9111

√ CHRISTIE & WALTHERS ELECTRONICS LTD. 49-090000199
1536 SCOTT STREET
OTTAWA ONTARIO K1Y 2N2 725-3636

√ BELL CANADA 49-090000074
NETWORK EQUIPMENT DESIGN ENG.
FLOOR 7 "R" 100 DUNDAS ST.
LONDON ONTARIO N6A 4L6 1-519-663 4793
663-4615
663-8121

C - PRIVATE COMMERCIAL

√ CONSUMERS GAS CO. 1-416-447-4911 49-080003820
P.O. BOX 650
SCARBOROUGH ONTARIO M1K 5E3

√ BLUE LINE TAXI CO. LTD. 49-080021785
455 COVENTRY RD. 746-8740
OTTAWA ONTARIO K1K 2C5

√ RJ NICOL CONSTRUCTION LTD. 49-080035928
1755 COURTWOOD CRES. 225-9041
OTTAWA ONTARIO K2C 3J2

√ OTTAWA BOARD OF EDUCATION 49-080039554
330 GILMOUR ST. 239-2211
OTTAWA ONTARIO K2P 0P9

√ X MIRON INC. 49-080001219
2201 BOUL CREMAZIE EST
MONTREAL QUEBEC H1Z 2C1

√ X HOTEL MERIDIEN MONTREAL 52-080001268
4 COMPLEXE DESJARDINS
MONTREAL QUEBEC H5B 1E5

√ X MORRISSETTE ASPHALTE INC. 52-080007767
179 BOUL. PROVIDENCE
LACHUTE QUEBEC J8H 3L9 (514) 562-5636 ✓

D - MILITARY U.S.A.

NIL

E - PROVINCIAL GOVERNMENT

MINISTRY OF HEALTH 49-080027944
AMBULANCE SERVICE BRANCH
7 OVERLEA BLVD, 7TH FLOOR 1-416-965-3101
TORONTO ONTARIO M4H 1A8

TRANSPORTATION & COMMUNICATIONS 49-080002355
7TH FLOOR, 1201 WILSON AVE
DOWNSVIEW ONTARIO M3M 1J8 1-416-235-2771

F - MUNICIPAL

CITY OF NEPEAN 49-080025210
3825 RICHMOND RD 829-1510
OTTAWA ONTARIO K2H 5C2

OTTAWA CARLETON REGIONAL TRANSIT 49-080052110
COMMISSION
1500 ST. LAURENT BLVD. 741-6440
OTTAWA ONTARIO K1G 0Z8

G - EXPERIMENTAL

N/A BELL CANADA See 1st page 49-100000180
100 DUNDAS ST. FLOOR 7P B-RPC-
LONDON ONTARIO N6A 5C6

ALDONICS LTD. 49-100002749
BOX 2980, STATION D 592-4313
OTTAWA ONTARIO K1P 5W9

H - AMATEUR SERVICE

RICHARD BUSHNELL 49-020019469
895 MAPLEWOOD AVE 828-2834
OTTAWA ONTARIO K2B 5V6

DAVID ROBERTSON 49-020026784
161 MULVIHILL AVE 722-0105
OTTAWA ONTARIO K1Z 6Y3

I - PUBLIC COMMERCIAL RECEIVING

DEPT. OF ENVIRONMENT 997-2860 997-6792 42-080006804
N/A 562 BOOTH ST
OTTAWA ONTARIO K1A 0E7 See DOE (A-Ships)

J - PRIVATE COMMERCIAL RECEIVING

UNIVERSAL INVESTIGATIONS SERVICE LTD. 49-080012292
44 BYWARD SQUARE
OTTAWA ONTARIO K1N 7A2 237-7760

NATIONAL CAPITAL COMMISSION 49-080499219
161 LAURIER AVE WEST
OTTAWA ONTARIO K1P 6J6 996-1811

K - PUBLIC COMMERCIAL AUTOMATIC RPTR

APC COMMUNICATIONS LTD. 48-090000666
1156 HIGH STREET
PETERBOROUGH ONTARIO K9J 5R9 1-705-748-5110

Comp C.T.C

L - PRIVATE COMMERCIAL AUTOMATIC RPTR

CANADA TRANSPORT LTD. 1-966-3311 49-080030636
BOX 1450
BELLEVILLE ONTARIO K8N 5J1

ESF LIMITED 49-080033269
S & CS COMMUNICATIONS
NA 237 - 4TH AVENUE SW
CALGARY ALBERTA T2P 0H6 1-403- NO NUMBER AVAILABL

N - AERONAUTICAL MOBILE

BRADLEY AIR SERVICES LTD. 834-3340 49-080004470
CARP AIRPORT
CARP ONTARIO K0A 1L0

AIR ATONABEE LTD. D.B.A. 49-080409722
CITY EXPRESS
545 LAKESHORE BLVD. WEST
TORONTO ONTARIO M5V 1A3 1-416-977-7770

P - AMATEUR SERVICE REPEATER

EJ GILCHRIST ON BEHALF OF 49-020022261
THE CHAMPLAIN REG. RPTR ASSOC.
2556 HANLON AVENUE
OTTAWA ONTARIO K2B 7X4 820-2703

HARRIE F.C. JONES 49-020028393
2 - 147 ARLINGTON AVENUE
OTTAWA ONTARIO K1R 5S6 237-6427

MOBILE LICENSEES

A - PUBLIC COMMERCIAL

NORTHERN TELEPHONE LTD. 46-090000111
BOX H 1-705-647-7311
NEW LISKEARD ONTARIO P0J 1P0

B - PRIVATE COMMERCIAL

CANADIAN PACIFIC LTD. 49-080000121
BOX 6042, STN A, RM 409 1-514-395-5151 -5240 -5225
WINDSOR STATION
MONTREAL QUEBEC H3C 3E4

AIR CANADA 49-080000488
AIR CANADA BASE 23 1-514-393-3333 ~~[illegible]~~ 779-7000
P.O. BOX 9000, MONTREAL INT'L AIRPORT
MONTREAL QUEBEC K1V 9B4

DIAMOND TAXI (OTTAWA) LTD. 49-080002216
257 CUMBERLAND See Blue Line Taxi
OTTAWA ONTARIO K1N 8W6

TAGGART CONSTRUCTION LTD. 49-080003728
3187 ALBION ROAD SOUTH 521-3000
OTTAWA ONTARIO K1V 8Y3

TNT COURIER SERVICES LTD. 42-080075260
1889 BRITANNIA ROAD EAST 1-416-677-2540
MISSISSAUGA ONTARIO L4W 3C3 ~~625-7500~~ NOT AVAILABLE

442714 ONTARIO LTD. 42-080075923
22 ELROSE AVENUE
WESTON ONTARIO M9M 2H6 1-416- NO NUMBER AVAIL

HOTEL ADMIRAL 42-080108847
AT HARBOURFRONT INC.
249 QUEENS QUAY W.
TORONTO ONTARIO M5J 2N5 1-416-364-5444

LA NANCY CARPINELLI 52-080017397
POUR LA SUCCESSION LORENZO CARPINELLI
8941 DE BRETAGNE
ANJOU QUEBEC H1J 1W1 1-514- NO NUMBER AVAILA

LAIDLAW QUEBEC LTEE 52-080020090
DIV. METROPOLE
3035 JARRY EST 1-514-374-3881
MONTREAL QUEBEC H1Z 2C2

TREVOR OWEN HEAD 52-080022417
27 BURTON 1-514-
GREENFIELD PARK QUEBEC J4V 2Y6 NO NUMBER AVAILABL

W & D LOGGING CO. LTD. 12-080453548
2575 BOWEN ROAD 1-604-758-1535
NANAIMO B.C. V9T 3L4

G.T. EXPRESS LTD. 12-080453936
2851 SIMPSON ROAD 1-604-
RICHMOND B.C. V6X 2R2 NO NUMBER A

CANADA - WIDE COMMUNICATIONS 12-080461997
(1981) LTD.
314 - 260 WEST ESPLANADE
NORTH VANCOUVER B.C. V7M 3G7
1-604-980-9071

(CMP)

ABITIBI - PRICE INC. 1-204-367-2422 32-080021166
P.O. BOX 10
PINE FALLS MANITOBA R0E 1M0

WESTEEL - ROBCO LIMITED 1-204-233-7133 32-080029866
P.O. BOX 792
WINNIPEG MANITOBA R3C 2N5

PRAIRIEVIEW FARMS LTD. 1-204-673-2448 32-080032261
BOX 85
WASKADA MANITOBA R0M 2E0

STORA FOREST INDUSTRIES 1-902-625-2460 63-080016122
P.O. BOX 59
PORT HAWKSBURY N.S. B0E 2V0

CAPE BRETON DEVELOPMENT LTD. 63-080018342
P.O. BOX 2500
SYDNEY N.S. B1P 6K9 1-902-564-2848

W. ARSENAULTS AMBULANCE 63-080020432
SERVICE CO. LTD.
P.O. BOX 206 1-902-865-4205
LOWER SACKVILLE N.S. B4C 2S9

D - PROVINCIAL GOVERNMENT

CO-ORDINATED LAW ENFORCEMENT UNIT 12-080072387
C/O B.C. GOVT TELECOMMUNICATIONS
PARLIAMENT BUILDINGS
VICTORIA B.C. V8V 1X4 1-604-598-4545

PROVINCE OF MANITOBA 32-080090767
DEPT. OF CORRECTIVE &
REHABILITATION SVC. 1-204-945-7804 Comm + Youth Corr
NA
151 PRINCESS ST. NOT AVAILABLE
WINNIPEG MANITOBA R3B 1L1

CENTENNIAL CENTRE OF SCIENCE 42-080042645
AND TECHNOLOGY
770 DON MILLS ROAD 1-416-429-~~3600~~ 4100 (HERITAGE RESTAURANTS)
DON MILLS ONTARIO M3C 1T3

BUREAU DE LA PROTECTION CIVILE (QC) 52-080005208
A/S MIN. COMMUNICATIONS DU QUEBEC
675 ST - AMABLE
QUEBEC QUEBEC G1R 2G5 1-418-643-2356 French X

ATLANTIC PROVINCE RESOURCE CTR 63-080061873
FOR HEARING HANDICAPPED
BOX 308
AMHERST N.S. B3H 2R6 1-902-667-3808

E - MUNICIPAL

CITY OF OTTAWA 564-1414 49-080000618
DEPT OF PHYSICAL ENVIRONMENT
7 BAYVIEW ROAD
OTTAWA ONTARIO K1Y 2C5

TOWN OF HAWKESBURY 49-080003579
610 HIGGINSON STREET
HAWKESBURY ONTARIO K6A 1H1 1-632-0105

MUNICIPALITY OF GLOUCESTER 49-080006347
POLICE DEPT
P.O. BOX 333, RR 4 748-4100
OTTAWA ONTARIO K1G 3N2

CORP. OF THE TWP OF RIDEAU 49-080015630
FIRE DEPT. 489-3818
P.O. BOX 310
NORTH GOWER ONTARIO K0A 2T0

CITY OF NEPEAN 49-080020423
POLICE DEPT. See City of Nepean
N/A 245 GREENBANK ROAD
NEPEAN ONTARIO K2H 8W9

F - EXPERIMENTAL

COAST OPERATIONS OF CANADA LTD. 49-100001030
1150 LOLA STREET
OTTAWA ONTARIO K1K 3W9 744-2485

G - PUBLIC COMMERCIAL RECEIVING

NIL

H - PRIVATE COMMERCIAL RECEIVING

CANADIAN GENERAL ELECTRIC CO. LTD. 42-080001700
(MOBILE RADIO SALES & SERVICE) CELLULAR MOBILE CO
720 ARROW ROAD 1-416-746-7320 746-732
WESTON ONTARIO M9M 2M1

LAKE ONTARIO STEEL CO. LTD. 42-080004099
HOPKINS STREET SOUTH
WHITBY ONTARIO L1N 5T1 1-416-668-8811

J - AIRCRAFT NAVIGATIONAL

NIL

K - AERONAUTICAL MOBILE

TERRA SURVEYS LTD. 731-9571 49-520000238
2060 WALKLEY ROAD
OTTAWA ONTARIO K1G 3P5

DEPARTMENT OF TRANSPORT 990-2309 49-520000062
FLIGHT DIRECTORATE 998-3316
58 SERVICE ROAD
OTTAWA ONTARIO K1V 9G2

A - SHIPS - TRANSMIT & RECEIVE

1280 SHOREVIEW DR. ENGLEWOOD FL 34223

HAROLD NORMAN BEACH (DR.) 728-5369 49-560004959
312 FAIRMONT AVENUE ~~726-5414~~ ~~292-0359~~
OTTAWA ONTARIO K1Y 1Y8

DEPT OF ENVIRONMENT 997-2601 49-560001829
INLAND WATERS DIRECTORATE
OTTAWA ONTARIO K1E 0E7

ROBERT D. ACHESON 49-560062905
13 BOWHOOR AVENUE 224-6095
NEPEAN ONTARIO K2E 6H5

GILLES LEO J. LAFRANCE 49-560079052
705 ALMA
CORNWALL ONTARIO K6J 5C8 1-932-6957

B - PRIVATE MARITIME MOBILE

CANADIAN COAST GUARD 49-560002813
TELECOMM. & ELECTRONICS
1 YONGE ST, 20TH FLOOR
TORONTO ONTARIO M5E 1E5 1-416-973-2162

A - COAST STATIONS

CANADIAN COAST GUARD 49-120000052
TELECOMM. & ELECTRONICS
1 YONGE ST, 20TH FLOOR
TORONTO ONTARIO M5E 1E5 See above.

N/A

B - COAST STATIONS

ATLANTIC PILOTAGE AUTHORITY 66-120000053
BANK OF MONTREAL TOWER
SUITE 1203
HALIFAX N.S. B3J 1M5 1-902-426-2550

PACIFIC PILOTAGE AUTHORITY 12-120000037
300 - 1199 WEST HASTINGS ST.
VANCOUVER B.C. V6E 4G9 1-604-666-6771

- EARTH STATION

TELESAT CANADA 07-150000006
333 RIVER ROAD 746-5920
OTTAWA ONTARIO K1L 8B9

French TELEGLOBE CANADA INC. 07-150000007
680 SHERBROOKE ST. WEST
MONTREAL QUEBEC H3A 2S4 1-514-289-7272

- SPACE STATION

TELESAT CANADA 07-150000005
(SPACE STATIONS) See above
333 RIVER ROAD
N/A OTTAWA ONTARIO K1L 8B9

- GENERAL RADIO SERVICE

CB's.

BERNARD C. DUFFEN 1-283-7790 49-XM49025
RR 6
SMITHS FALLS ONTARIO K7A 4S7

N/A LIONEL LEVESQUE The only Lionel in the book was 49-XM496587
20 - 10 ORLEANS at 298 McKay in Ottawa and
PTE GATINEAU QUEBEC J8T 5V1 there was no answer.

French JEAN-PIERRE PROULX 52-XM52314
2307 DE GRAMMONT 1-514-663-0056
AUTEUIL, LAVAL QUEBEC H7K 2R6

French HORMIDAS MARSOLAIS 52-XM52365
96 PETITE LIGNE 1-514-839-2878
ST ALEXIS DE MONTCALM QUEBEC J0K 1T0

FRED J. HUNTER 32-XM325908
44 BYRD AVENUE
WINNIPEG MANITOBA R3K 0W1 1-204-837-3738

LIST OF DISTRICT OFFICES

07 - HEADQUARTERS (OTTAWA)

12 - VANCOUVER

32 - WINNIPEG

42 - TORONTO

46 - SAULT STE-MARIE

48 - BELLEVILLE

49 - OTTAWA

52 - MONTREAL

63 - HALIFAX

66 - ST JOHN'S NFLD

APPENDIX D

Sampling Plan Development: Contact Sheet

RFS Licensed User Sampling Plan Development: Contact Sheet

Licensee Name: _____ Location: _____ Class: _____ Service: _____

Telephone: _____ (city) (province)

Record of Contact

Call No.	Telephone No.	Contact Person	No. of Calls	Contact Time	Comments
1					
2					
3					
4					
5					
6					
7					

Script:

1. Hello, my name is _____ and I am with Ekos Research. I am calling on behalf of Communications Canada with respect to your organisation's radio license. (Describe license if necessary.) May I speak to the individual in charge of the license?

2. We are developing a survey for Communications Canada to study the Radio Frequency Spectrum Management Program. Right now, we are calling organisations holding radio licenses to determine who it is in organisations such as yours that applies for, administers and maintains the license. Can you tell me who this person would be? _____ What is his/her title? _____.

3. Our survey asks questions about the number of licenses held by an organisation, the license application process, problems with frequencies, equipment maintainance, knowledge about regulations, and satisfaction with dealings with Communications Canada. Ideally we would want one person to answer all questions. Is this reasonable in your organisation? (Who? Name and/or title?) _____.

4. Can you please answer a few simple questions? This is not the full survey, we are simply trying to develop a research strategy and this information will be helpful in doing so.

   a) Approximate number of employees in organisation? _____
   b) Geographic distribution? _____
   c) Approximate number of licenses? _____
   d) All your organisation's licenses administered by our office? _____ If not, how many other offices? _____
   e) Approximate number of users/license? _____

Thank You.

APPENDIX E

Terms of Reference

TERMS OF REFERENCE
RADIO FREQUENCY SPECTRUM MANAGEMENT PROGRAM EVALUATION
STUDY #4: SURVEY OF LICENSED USERS

BACKGROUND:

The Program Evaluation Division of Communications Canada is currently conducting an evaluation of the Radio Frequency Spectrum Management Program (RFS). Spectrum Management is the largest program of the Department in terms of person-years allocated ted and the one with the greatest interaction with the public. The program is also decentralized across Canada to regional and district offices. Each region is different from the others in terms of client base, client needs and program operation. The assessment report for this evaluation is attached.

A survey of Licensed Users is one of 13 background studies necessary to the evaluation of the Radio Frequency Spectrum Management Program. Due to their experience with the licencing process and dependence on the efficient administration of the program, users play a pivotal role in providing information for an evaluation of the Radio Frequency Management Program.

OBJECTIVES OF THIS STUDY:

The survey of licensed users represents an integral part of the evaluation as it addresses a wide range of evaluation issues. These issues include: regulatory burden; program satisfaction; and the possible substitutability of the spectrum. A survey design report has been prepared which includes the following:

- a thorough analysis of the available sampling base;
- a description of the work required to draw reliable samples;
- a judgement on the quality of the sample and an analysis of the reliability of the results obtainable for these samples; and
- a questionnaire to be administered to licensed users.

It is anticipated that the survey will be conducted as a mail-back questionnaire. The final, completed sample size desired is 3500 licensed users. More details on the nature of the study can be found in the survey design report attached to this Terms of Reference.

CONTRACTOR'S TASKS

The contractors tasks are to:

1. Establish the sampling frame according to the procedures outlined in the research design.
2. Prepare an interim report on the sampling strategy.
3. Pretest the instruments.

4. Prepare a pretest report, including revised instruments.

5. Administer the questionnaire.

6. Submit a progress report including the number of completed interviews and noting specific problems encountered.

7. Analyses the data, using descriptive and explanatory statistics, according to the issues raised in the evaluation assessment and the research design report.

8. Prepare a draft report including the research methodology, field report and analysis of the data. The questionnaire should include survey marginals.

9. Revise the report and present the findings to the Management Committee.

DELIVERABLES AND DEADLINES:

The contractor will deliver the following products at the stated times:

DELIVERABLE	DEADLINE
1. A precise schedule of activities for the project, including a statement of clear understanding of the problem	Week 1
2. A pretest report with revised questionnaire	Week 7
3. Interim report on sampling strategy	Week 8
4. Progress report	Week 15
5. Draft final report (15 copies) for comments within the Department	Week 23
6. Final report (10 copies) to be delivered both in hard copy and WordPerfect format. The final report will also be delivered in French and English. The raw survey data in SAS format should also be included	Week 25

BUDGET:

The budget for this project is $80,000. This is a fixed price bid.

SCHEDULE OF PAYMENTS:

EVENT	PORTION	DATE (1988)
Deliverable #1	10%	Week 1

Deliverable #2	20%	Week 7
Deliverable #3	20%	Week 8
Deliverable #4	40%	Week 15
Deliverable #5	5%	Week 23
Deliverable #6	5%	Week25

CRITERIA FOR EVALUATING THE PROPOSALS:

The following criteria will be used in evaluating the proposals and selecting the winning firm. Bidders are urged to address each of these points in their proposal.

CRITERION	POINTS
Demonstrated understanding of the problem	10
Demonstrated familiarity with the data collection methods	20
Demonstrated familiarity with sampling techniques	20
Creativity in the treatment of the proposed approach	10
Capacity to fulfill the work requirements within deadlines	20
Level of skills of team members	20
Total budget where proposals are of equal merit	--

Radio Frequency Spectrum Management
Program Evaluation
Revised Design Report
Survey of the General Public
Study #5

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APPENDICES

APPENDIX A General Public Survey
APPENDIX B List of Communications Canada Staff Contacted

1.0 INTRODUCTION

This report is the third of three primary deliverables of Study #13, Radio Frequency Spectrum (RFS) Management Program Evaluation: "Survey Designs". Specifically, this report includes the design of the survey instrument and sampling plan for Study #5 of the Evaluation Assessment which calls for a survey of the general public.

1.1 Purpose of the Survey Design Study

The use of the Radio Frequency Spectrum is managed by Communications Canada under the authority delegated to it by the Department of Communications Act, the Radio Act and the Broadcasting Act. The Radio Frequency Spectrum (RFS) Management Program has the following three objectives:

1. to accommodate as many users as possible;
2. to encourage as many uses as possible; and
3. to accomplish the above with a minimum of interference.[1]

The Department has decided to undertake an evaluation of the RFS Management Program for a number of reasons including: Cabinet's Regulatory Agenda, a compliance review required by the Department of Justice Federal Statutes Compliance Project, and senior program managers' information requirements.

The Evaluation Assessment Report prepared by the Department outlines seven main evaluation issues:

1. Is any program needed to attain the objectives?
2. Has the program achieved its objectives?
3. What have been the social, public and private costs and benefits of the program?

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[1] Department of Communications, Government of Canada. Annual Report, 1985-86.

4. What is the impact of gathering license fees from licensed users?
5. What effects does the program have on licensed users?
6. Is the organisational structure of RFS delivery appropriate?
7. Are there alternatives to the existing program?

Thirteen studies have been suggested to address all of these issue areas, 11 of which will be undertaken. The overall purpose of this component of the evaluation (Study #13) is to design sampling strategies, questionnaires and terms of reference for three of the evaluation studies as detailed in the Evaluation Assessment:

1. A survey of licensed users (Study #4);
2. A survey of the general public (Study #5); and
3. A survey of complainants (Study #6).

1.2 Organisation of the Report

This report is the draft research design for the survey of general public. The remainder of the report is organised as follows:

- Chapter Two of this report outlines the nature, content and administration of the general public survey instrument.

- Chapter Three describes the sampling strategy and comments on its validity and reliability.

- Appendix A contains the draft survey instrument.

- Appendix B contains the list of Communications Canada staff contacted as part of the design work.

2.0 SURVEY OF THE GENERAL PUBLIC

2.1 Overview

The survey of the general public is designed to provide information about evaluation issues #1 and #5 of the Evaluation Assessment. With regards to evaluation issue #1, "Has the program achieved its objectives?", the specific question is "Has interference been reduced through program effort?" There are a number of questions related to evaluation issue #5, "What effects does the regulation have on licenced users?", including "How satisfied is the general public with program delivery?", "What is the perceived importance of radio?" and "What is the degree of compliance with the regulation?". The survey of the general public will supplement the data obtained from ten other evaluation studies.

For little additional cost, the survey of the general public provides the opportunity for Communications Canada to broaden the scope of the survey beyond the issues specific to the radio frequency spectrum. The supplementary information desired addresses a wider range of concerns including the public's knowledge of the Minister of Communications, the Communication's portfolio, and the Department's programs and policy agenda. Also addressed are public attitudes toward a variety of issues relating to the role of Communications Canada in culture and technology.

The following section serves as a guide for the nature and content of the "Survey of the General Public", noting particularly how the broad and specific evaluation issues are addressed. The draft questionnaire can be found in Appendix A.

2.2 Nature and Content of the Survey

The Survey of the General Public incorporates a variety of opinion and awareness items surrounding issues in the evaluation of the RFS Management Program as well as determining Canadian awareness of the Department and perceptions of the quality and availability of communications and culture in Canada. Since one of the issues is focussed on <u>awareness</u>, the introduction to the survey cannot reveal the sponsoring

institution without defeating the purpose of some of the survey items; for example, awareness that Flora MacDonald is the Minister responsible for Communications. In order to comply with the standards governing information collected as outlined in Treasury Board Circular 1986-19, the provision allowing for the sponsoring institution to be identified "at the earliest possible time during the collection; and the opportunity to refuse to allow the responses already given to be used" (refer to Section .2 of the Circular), has been included immediately preceeding the section devoted to demographic information.

Following the introduction is a screening item determining whether or not the respondent is an employee of Communications Canada. When such a case arises, the interviewer is instructed to thank the respondent and terminate the interview. Department employees are excluded from the sample so as to avoid any bias in the results.

The questionnaire leads off with an opinion-type question, designed to be both interesting to the respondent and useful in the analysis. Areas such as the arts and broadcasting are matched with other services in order to determine attitudes towards the importance of government funding.

The next series of questions (Items 2 through 6) deals specifically with public awareness of the Minister, the portfolio, the Department, and particular areas of responsibility. Item 3 indicates the extent of actual awareness of the Department as well as by what means the individual became aware. The degree of awareness can also be measured by the extent of contact with the Department and for what purposes the contact served (Item 4). By these two items, evaluators will be able to assess what the general public knows and how they came to know it, thus determining the effectiveness of vehicles used to enhance public awareness of the importance and scope of Department activities (such as site signs, Expo '86, etc.).

Recognition of the Department as overseeing activities both technical and cultural in nature is assessed in Item 5, where a sample of both communications and culture policy areas are listed. With respect to the Minister's portfolio, the nine

agencies and Crown corporations under the responsibility of the Minister of Communications are listed in Item 6 along with other industries and corporations beyond the Communications portfolio. Responses to this question will indicate to what extent cultural facilities are identified with the portfolio, such as the National Arts Centre, as opposed to the more apparent connection between communications and organisations such as the CBC.

Item 7 is a multidimensional question dealing with Canadians' perceptions of the quality and availability of communications and culture. Issues such as the importance and availability of Canadian content in programming, the perceived position of Canada in terms of communications technology, the availability of culture and heritage facilities, the adequacy of financial support of artists, and the quality of Canadian films are addressed in this item.

Section B deals with the issues originally contained in the RFS Management Program Evaluation Assessment. Evaluation Issue #5 seeks to answer the question "What effects does the regulation have on licensed users?". A sub-issue which assesses the public's perception of program delivery is the perceived importance of radio. One indicator of the importance of radio involves the number of households that own and operate apparatus that make use of the radio frequency spectrum (Item 8). Within the list, most of which do use the spectrum, C.B. and ham radio equipment users are asked whether or not this equipment is licenced. The possibility of capturing the small segment of the population that is not in comformity with regulations governing the use of the spectrum is remote, but is included in Item 8b). Awareness of frequency spectrum usage is an indicator of public perception of radio and the scope of its effects on everyday life. Determining degree of public awareness of the RFS is particularly relevant to future efforts in promoting the importance of compliance with regulations as well as awareness of the sources of interference that affect many household appliances.

Item 10 measures the degree of awareness of the licencing requirement for most equipment and services. Further to this, Item 11 assesses public opinion directed at those services that should not be obliged to pay fees for spectrum use. Although in most cases the fee is nominal in relation to the costs involved in the actual radio

equipment, it will be interesting to the evaluators to assess this indicator of satisfaction with program delivery.

Section C is devoted to collecting information on any instances of interference, and whether or not any complaints were registered with the Department. Data gathered on interference that is not reported may indicate the types of interference problems that are not generally identified with sources beyond the equipment itself.

Preceding the background characteristics, respondents are informed of the sponsorship of the survey and the importance of participation in the study. Demographic data is collected by Items 17 through 23 in Section D for classification purposes. The information gathered by this survey instrument will serve to create a profile of the attitudes and perceptions of Canadians regarding the state of communications and culture, the activities and services governed by the Minister and developed by the Department, as well as the initial objective of evaluating those aspects of the RFS Management Program pertinent to the experiences of the general public. This profile will ultimately serve the Department in its quest to further understand potential clients and their attitudes towards and awareness of Communications Canada.

2.3 Survey Administration

In the Evaluation Assessment and the Terms of Reference, it is suggested that the survey of the general public piggy-back an existing omnibus survey. When those documents were prepared, the survey of the general public was concerned with issues specific to the evaluation of the Radio Frequency Spectrum Management Program. Under certain circumstance an omnibus survey is efficient and cost-effective, primarily if the survey includes relatively few questions. As previously noted, subsequent discussions with program managers and program evaluation officers have identified a wide range of issues to be included in the survey, requiring a longer, more comprehensive survey.

Alternatives to the omnibus include mail-back and telephone surveys. While a mail-back survey is generally believed to be more "respondent-friendly", a telephone

approach is suggested as it will elicit a higher response rate, and allow the study to be completed in less time.

3.0 SAMPLING

3.1 Overview

A large unbiased sample is required to generalise survey findings to the study population. The population is defined as all permanent residents over 18 years of age. We suggest developing a telephone sample based on a hybrid frame constructed from telephone directories and random digit dialing. Sampling of households will be randomised through the selection of residential exchanges and by randomising the last digits of the number to ensure that unlisted numbers and more transient respondents (e.g., tenants, lower socio-economic groups, bill skippers and upper socio-economic unlisted respondents) are represented in the sample. Sampling will also take into consideration the question of statistically significant breakdowns by region/province. The following chapter outlines the size of the sample, procedures to be followed to develop the sample and resulting confidence intervals.

3.2 Procedure

A final sample of 2000 respondents is required. It should contain 400 units per regions (i.e., Pacific, Central, Ontario, Quebec and Atlantic), with no province being represented by fewer than 100 respondents. The procedure to obtain the random sample, broken down by region/province is as follows:

1. For each region (of 400 units), determine the number of respondents to be selected from each province by identifying the provincial population proportions relative to the population of the region.[1]

---

[1] This must be done maintaining the requirement for fewer than 100 final respondents from any one province. For this procedure, we suggest including the territories with British Columbia.

2. Randomly select eight census areas (CMA's or CA's) within each region, with selection probability being in direct proportion to census area size.[1]

3. Randomly draw 50 residential phone numbers from the telephone directories of each selected area.

4. Assuming a one in three response rate, create three new telephone numbers from each drawn number by adding three different, randomly selected single digit numbers to the telephone number.

5. Discard the original[2] number.

This process will produce 150 randomly telephone numbers per area, 1200 per region, and 6000 for the country.

If the response rate is about one in three, a final sample of 2000 will result. (If the response rate is worse than one in three, more numbers can be drawn using a similar randomization procedure). This procedure ensures the every member of the population has an equal probability of being selected -- a crucial criterion of representativeness.

The only problem with this sample will appear if non-response is systematic. Therefore, non-response needs to be recorded, including information on location, and sex of respondent (the only easily identifiable characteristics in cases of non-response). Subsequent weighting can remove bias in terms of location (either across regions or within region) and sex of respondent.

A sample size of 2000 will allow inferences to be made to the population within confidence intervals of between +/- 1.31 per cent and +/- 2.19 per cent (for

---

[1] This allows adequate representation of cities within each region.

[2] By creating new numbers which are close to existing residential numbers we can be fairly confident that most created numbers will be valid, active, residential exchanges. We cannot simply use the originally drawn numbers because they do not include unlisted numbers.

sample proportions of 10 per cent vs. 90 per cent and 50 per cent on dichotomous variables, respectively), 19 times out of 20[1] when statistics are calculated using the entire sample. Statistics by region (n = 400) will have associated confidence intervals of between +/- 2.94 per cent and +/- 4.90 per cent. Statistics by province ($n \geq 100$) will have at worst, associated confidence intervals of between ± 5.88 per cent and ± 9.80 per cent. Obviously when moving to these finer levels of analysis only fairly gross analyses will be possible.

---

[1] Applying the formula

$$+/- \ 1.96 \sqrt{\frac{p\,(1 - p)}{n}}$$

APPENDIX A
Survey of the General Public

Record of Contact

Call No.	Result No.	Comments
1		
2		
3		
4		

Result Codes

01 Respondent Contacted - Interview completed
02 Respondent Contacted - Refused
03 Respondent Contacted - In Person appointment scheduled
04 Respondent Contacted - Telephone appointment scheduled
05 Respondent Contacted - Not interviewed - other problem, e.g., language, illness
06 Respondent Not Contacted - No answer
07 Respondent Not Contacted - Absent, e.g., vacation
08 Number Disconnected
09 Invalid Number
10 Other

	APPOINTMENT RECORD		
	APPT. 1	APPT. 2	APPT. 3
APPOINTMENT DATE/TIME			

Survey of the General Public

Hello, I'm _____ from _____.
We're doing a survey of Canadians in order to get an understanding of public opinion toward a variety topics.

This survey should take no more than 10 minutes of your time. Shall I begin?
(If no: Or would you rather I called back when it is more convenient)

Date: _____ Time: _____

First of all, are you employed with the Federal government?

Yes 1
No 2

IF YES: Which department? [If Communications Canada, thank respondent and terminate interview]

Radio Frequency Spectrum Survey -- General Public

SECTION A

First of all, we would like to ask you some questions about the importance of financial support provided by the federal government to various services and organisations.

1. **In general, how important do you feel it is for the federal government to financially support the following areas?** Please rate the importance of financial support on a scale from 1 to 7 where 1 is not at all important, 7 is extremely important and 4 is moderately important.

	NOT AT ALL IMPORTANT			MODERATELY IMPORTANT			EXTREMELY IMPORTANT
Performing arts (such as dance, theatre and music) ..	1	2	3	4	5	6	7
Visual arts (such as painting and photography)	1	2	3	4	5	6	7
Amateur sports	1	2	3	4	5	6	7
Broadcasting	1	2	3	4	5	6	7
Legal services	1	2	3	4	5	6	7
Recording industry	1	2	3	4	5	6	7
Health care	1	2	3	4	5	6	7
Movie industry	1	2	3	4	5	6	7
Book publishing	1	2	3	4	5	6	7
Public housing	1	2	3	4	5	6	7
Magazine publishing	1	2	3	4	5	6	7

2. **Have you heard of Flora MacDonald?**

Yes..... 1
No 2

Who is she? [If respondent says "cabinet minister" or similar title, ask: What is she responsible for?]

[First response] Minister of Communications 1
Other (specify) _____ ... 2

Within the federal government there is a department called Communications Canada. Formerly, it was called the Department of Communications. We'd like to ask you some questions concerning the responsibilities of this Department.

3.a) Have you ever heard of Communications Canada?

Yes 1
No ..... 2 GO TO Q.5

b) Where have you heard of Communications Canada?

Site signs 1
Radio/television advertisement 2
Newspaper 3
Radio/television news 4
Expo '86 5
Referred when experienced interference 6
Through licencing radio equipment 7
Family/friend employed by Department 8
Other (specify) _____

_____ . 9

4.a) Have you ever contacted the Department for any reason?

Yes 1
No ..... 2 GO TO Q. 5

b) Why have you contacted the Department?

Registering an interference complaint 1
Obtaining/renewing licence for radio equipment 2
Obtaining information on Department programs. 3
Other (specify) _____ ... 4

Now I'd like to ask you some questions about Communications Canada.

5. Which of the following activities are the responsibility of Communications Canada?

	YES	NO	DK
Cultural funding	1	2	8
Broadcasting policy and regulations	1	2	8
Space technologies	1	2	8
Film, video and sound recording policy and programs	1	2	8
Telecommunications research	1	2	8
Publishing and periodicals	1	2	8
Museums and heritage programs	1	2	8
Cultural policies	1	2	8

The primary means for federal government involvement in communications and culture is through a number of agencies.

6. Could you tell me which of the following federal government agencies would be under the responsibility of the Communications Minister?

	YES	NO	DK
The Canada Council	1	2	8
The Canadian Broadcasting Corporation (CBC)	1	2	8
Canada Post	1	2	8
The National Arts Centre in Ottawa	1	2	8
Public Archives Canada	1	2	8
Telefilm Canada	1	2	8
Bell Canada	1	2	8
The National Library in Ottawa	1	2	8
The Canadian Radio-Television and Telecommunications Commission (CRTC)	1	2	8
The National Film Board	1	2	8
Spar Aerospace	1	2	8
National Museums of Canada	1	2	8
Teleglobe Canada	1	2	8

7. **Now I would like to read you a list of statements as they relate to communications and culture in Canada.** For each statement, please rate your level of agreement on a scale from 1 to 7 where 1 means you strongly disagree, 7 means you strongly agree and 4 means you neither agree nor disagree. .

	STRONGLY DISAGREE			NEITHER AGREE NOR DISAGREE			STRONGLY AGREE
Canada is a world leader in communications technology	1	2	3	4	5	6	7
There is a wide variety of cultural and heritage facilities available to Canadians	1	2	3	4	5	6	7
The financial support provided by government agencies to artists and craftspersons is adequate	1	2	3	4	5	6	7
Canadian films are of high quality	1	2	3	4	5	6	7
It is important to have Canadian content in television programming	1	2	3	4	5	6	7
There is not enough access to Canadian content on television	1	2	3	4	5	6	7

SECTION B

Now, I would like to ask you some questions relating to various types of equipment in your household.

8.a) **Which of the following do you, or other members of your household, own or operate?**

	YES	NO	DK	
Television remote control	1	2	8	
Cordless telephone	1	2	8	
Transistor radio	1	2	8	
Garage door opener	1	2	8	
Household intercom system	1	2	8	
Cellular telephone	1	2	8	
Home computer	1	2	8	
Cable television	1	2	8	
Pager	1	2	8	
Video cassette recorder	1	2	8	
C.B. radio	1	2	8	ask b)
Ham radio equipment	1	2	8	

b) **Do you or does anyone in your household own a licence to operate this equipment?**

Yes 1
No 2

Many household items make use of what is called radio frequency spectrum. Appliances such as radios and television sets rely on radio frequencies in order to work.

9. **Now, thinking of the ways in which the radio frequency spectrum is used, which of the following types of equipment do you think depend on radio frequencies in order to work?**

	YES	NO	MAYBE	DK
Television remote control	1	2	3	8
Cordless telephone	1	2	3	8
Transistor radio	1	2	3	8
Garage door opener	1	2	3	8
Digital clock	1	2	3	8
Household intercom system	1	2	3	8
Heart Pacemaker	1	2	3	8
Cellular telephone	1	2	3	8
Home computer	1	2	3	8
Cable television	1	2	3	8
Pager	1	2	3	8
Video cassette recorder	1	2	3	8
C.B. radio	1	2	3	8

Certain types of equipment or services that use frequencies are required to be licenced by Communications Canada.

10. **Of the following types of equipment or services, which do you think requires a Communications Canada licence to operate?**

	YES	NO	DK
Radio stations	1	2	8
Television remote controls	1	2	8
Cellular telephones	1	2	8
Police services	1	2	8
Garage door openers	1	2	8
Household intercom system	1	2	8
Taxi radios	1	2	8
Individual portable pagers	1	2	8
C.B. radios	1	2	8
Ambulance services	1	2	8
Radar equipment used for boats or aircraft	1	2	8
Television stations	1	2	8
Pizza delivery service	1	2	8
Fire departments	1	2	8

11. **To what extent do you agree that the following services should not be required to pay licence fees?** Please rate your answers on a scale from 1 to 7 where 1 means you strongly disagree, 7 means you strongly agree and 4 means you neither agree nor disagree.

	STRONGLY DISAGREE			NEITHER AGREE NOR DISAGREE			STRONGLY AGREE
	1	2	3	4	5	6	7
Radio stations	1	2	3	4	5	6	7
Taxi owners	1	2	3	4	5	6	7
Airline companies	1	2	3	4	5	6	7
Amateur radio operations ..	1	2	3	4	5	6	7
Television stations	1	2	3	4	5	6	7
Electrical power utilities.	1	2	3	4	5	6	7
Trucking companies	1	2	3	4	5	6	7
Federal government departments	1	2	3	4	5	6	7
Police services	1	2	3	4	5	6	7
Ambulance services	1	2	3	4	5	6	7
Fire services	1	2	3	4	5	6	7
C.B. radio operators	1	2	3	4	5	6	7
Provincial government departments	1	2	3	4	5	6	7

SECTION C

12. **Now, thinking again about the types of equipment in your household, have you ever experienced any interference with such items as radios and television sets?**

Yes 1
No ..... 2 GO TO Q. 18

13. **The last time you experienced interference, what type of equipment was affected?**

T.V. set 01
AM radio 02
FM radio 03
Short wave radio 04
Television 05
Cordless telephone 06
Cellular telephone 07
Pager 08
Intercom 09
Other (specify)
_____ .. 10

14. **What was the nature of the Problem?**

TV -- Horizontal or vertical lines across screen 01
Fuzzy or "snowy" picture 02
Double image (2 different images appearing at the same time) 03
Ghosting (same image seen double on screen) 04
Crackling, clicking, humming or buzzing noises 05
Other (specify) _____ ... 06

Radio -- Crackling, clicking, humming, or buzzing noises ... 07
Interference from other channel (2 stations heard at same time) 08
Other (specify) _____ ... 09

Other -- Telephone interference 10
Other (specify) _____ ... 11

15. **Did you contact anyone about the problem?**

Yes 1
No ..... 2 GO TO Q 18

16.a) **Who did you contact?**

The Department ..... 1 ASK b) to f)
Friend/relative 2
Utility company 3
Cable company 4
Repair person 5
Dealer 6
Manufacturer 7
Other (specify)
_____ .. 8

b) **How did you first become aware that the problem should be referred to the Department?**

Referred by a repair person or appliance representative 1
Referred by cable company 2
Referred by friends/neighbours/relatives 3
Referred by other government department/agency ... 4
Referred to blue pages in telephone directory 5
Experience with similar problem 6
Other (specify) _____ .. 9

c) **What is the present status of the problem?** [Read Options]

Resolved 1
Resolved, but different problem has arisen 2
Recurs ..... 3 -- GO TO Q 18
Still a problem ..... 4 -- GO TO Q 18

17. **For the next few questions, we would like you to indicate how satisfied you were with the manner in which you complaint was handled by Department staff.** Please rate your answers on a scale from 1 to 7 where 1 indicates that you were completely dissatisfied, 7 indicates that you were completely satisfied and 4 means you were neither satisfied nor dissatisfied.

	COMPLETELY DISSATISFIED		NEITHER SATISFIED NOR DISSATISFIED				COMPLETELY SATISFIED
	1	2	3	4	5	6	7
Competence of staff	1	2	3	4	5	6	7
Courtesy of staff	1	2	3	4	5	6	7
Speed of response to problem	1	2	3	4	5	6	7
Effectiveness in solving .. the problem	1	2	3	4	5	6	7
Providing suggestions for repairs	1	2	3	4	5	6	7
Clarity of advice	1	2	3	4	5	6	7

As you now maybe aware, this survey is being sponsored by Communications Canada as part of an evaluation of services to the public. The responses you have provided are very important to the study as they will help the Department in best meeting the needs of Canadians. The last section of the questionnaire deals with background data about yourself and your household. This information is for statistical purposes only, and will not be connected to the information you have provided so far. Your responses are totally anonymous since we will not be asking you for your name or any other identifying information.

SECTION D BACKGROUND INFORMATION

18. **In what year were you born?**

|____|____|____|____|

19. **What is the highest level of formal education which you have completed?** Enter the grade or circle the appropriate code.

Primary school (enter grade) ..... |__|__|

High school (enter grade) ..... |__|__|

Some community college	14
Some university	15
Community college graduate	16
University graduage	17
Post graduate	18
Other (specify) _____	
_____ ..	19

20. **What is your present occupation (or former if retired) occupation?**

Student 1
Labourer/semi-skilled/skilled tradesmen . 2
Sales/Service/Clerical 3
Professional/Managerial/Administrative .. 4
Homemaker/Mother 5
Other (specify) _____

_____ .. 6

21. **Is that full-time or part-time?**

Full time 1
Part time 2

22. **What was the approximate total annual income of your household before taxes in 1987?** Please include all sources including employment from wages or salaries, pensions, investments, rents and payments from government.

Less than $10,000 1
$10,000 to $14,999 2
$15,000 - $19,999 3
$20,000 - $24,999 4
$25,000 - $29,999 5
$30,000 - $34,999 6
$35,000 - $39,999 7
$40,000 and over 8

DO NOT ASK:

23. **Sex:**

Male 1
Female 2

THANK YOU FOR PARTICIPATING IN THIS SURVEY

APPENDIX B

List of Communications Canada Staff Consulted

RADIO FREQUENCY SPECTRUM - STUDY #5
LIST OF COMMUNICATIONS CANADA STAFF CONSULTED

Directors General

Broadcasting Regulation
Ronald Begley

Radio Regulation
Robert Jones

Engineering Programs
Nissar Ahmed

Regional Directors General

Atlantic
Deputy Director General
George Richard

Quebec
Jean Marc Pellerin

Ontario
Dave Lyon

Deputy Director General
Gerry Brushett

Central
Jan Scora

Pacific
Bruce Drake

Spectrum Management -Ottawa

Spectrum Mangagement, Regulatory Policy and Planning
Alan Collier

Director, Regulatory Policy and Planning
Ed Ducharme

Spectrum Control
Maurice Nunace

Radio Frequency Spectrum Management
Program Evaluation
Revised Design Report
Survey of Complainants
Study #6

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1.0 INTRODUCTION

This report is the first of three primary deliverables of Study #13, Radio Frequency Spectrum (RFS) Management Program Evaluation: "Survey Designs". Specifically, this report outlines the research design for Study #6 of the Evaluation Assessment which calls for a survey of those who register interference complaints with Communications Canada. The survey of complainants represents an integral part of the evaluation of the Management Program, as it assesses the extent to which beneficiaries (i.e., the general public and licensed system users) are satisfied with the services available to deal with interference problems.

1.1 Purpose of the Study

The use of the Radio Frequency Spectrum is managed by Communications Canada under the authority delegated to it by the Department of Communications Act, the Radio Act and the Broadcasting Act. The Radio Frequency Spectrum (RFS) Management Program has the following three objectives:

1. to accommodate as many users as possible;
2. to encourage as many uses as possible; and
3. to accomplish the above with a minimum of interference.[1]

The Department has decided to undertake an evaluation of the RFS Management Program for a number of reasons including: Cabinet's Regulatory Agenda, a compliance review required by the Department of Justice Federal Statutes Compliance Project, and senior program managers' information requirements.

The Evaluation Assessment Report prepared by the Department outlines seven main evaluation issues:

1. Is any program needed to attain the objectives?
2. Has the program achieved its objectives?

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[1] Department of Communications, Government of Canada. Annual Report, 1985-86.

3. What have been the social, public and private costs and benefits of the program?
4. What is the impact of gathering license fees from licensed users?
5. What effects does the program have on licensed users?
6. Is the organisational structure of RFS delivery appropriate?
7. Are there alternatives to the existing program?

Thirteen studies have been suggested to address all of these issue areas, 11 of which will be undertaken. The overall purpose of this component of the evaluation (Study #13) is to design sampling strategies, questionnaires and terms of reference for three of the evaluation studies as detailed in the Evaluation Assessment:

1. A survey of licensed users (Study #4);
2. A survey of the general public (Study #5); and
3. A survey of complainants (Study #6).

1.2 Organisation of the Report

This report is the draft research design for the survey of complainants. The remainder of the report is organised as follows:

- Chapter Two of this report outlines the nature, content and administration of the complainants questionnaire.

- Chapter Three describes the sampling strategy and comments on its validity and reliability.

- Appendix A and B contain the draft survey instruments.

2.0 SURVEY OF COMPLAINANTS

The broad evaluation issue that is best addressed by a survey of users and general public complainants is "Has the program achieved its objectives?" (Issue #1 in the Evaluation Assessment). Within this issue is the more specific "Has interference been reduced through program efforts?" One of those efforts was the establishment of a mechanism through which both users and the general public could register their complaints. To determine the success of this mechanism in serving the beneficiaries of the spectrum, it is important to not only analyse the number, reasons for, frequency and results of complaints, but also to find out how satisfied complainants are with the process and services available.

According to the Investigation Report on which complaints are registered, complainants are categorised as: a) "radio communications", who represent licensed users of the spectrum; and b) "general public". The two complainant sub-populations differ in the types of apparatus they use and the channels through which their complaints reach the Department. What they do share is the potential to express their level of satisfaction with how their complaints are handled through the complaint system. An analysis of the information contained in the Regional Operations Management Information System (ROMIS) data base allows us to get a sense of the frequency of the types of problems that are reported, what types of equipment are affected by interference, the offending source and the prescribed cure. The existing information is valuable in itself, as it allows evaluators to chart over time the incidence of frequency interference, the bandwidths that are affected and the geographical distribution of types of complaints lodged. The existing data, however, lacks the information which only a survey of complainants can provide. It is through a systematic analysis of the contact-resolution process of the complaint mechanism (i.e., from the time the Department is contacted until the interference is corrected to the satisfaction of the complainant) that the efficiency and problematic aspects of the process may be measured from the perspective of the complainant.

Taking into consideration the two basic complainant types -- system users and the general public -- the method by which the unique needs of both groups can be most effectively assessed is through the administration of two slightly different

questionnaires, each being sensitive to the particular characteristics of each group. What follows is an appraisal of the questionnaire items for both instruments which outlines:

- how each item is linked to the relevant evaluation issues;
- the internal logic of the items, i.e., the interlinkage among the items;
- the potential for modifications based on a pretest of a sub-sample of complainants; and
- the information that already exists on the ROMIS data base.

Important aspects of the contact-resolution process are covered in order to determine specifically where problems occur. This way, the Department can assess at what point modifications in the complaint mechanism may be targeted in the future in order to meet the needs of all spectrum beneficiaries.

The following section serves as a guide for the nature and content of the "Survey of Complainants - General Public", noting particularly how the broad and specific evaluation issues are addressed. The draft questionnaire can be found in Appendix A.

2.1 Survey of Complainants - General Public

The introduction to this survey has been designed in accordance with the requirements for data collection specified by Treasury Board Circular 1986-19. Respondents are informed of who is sponsoring the research, the purpose of the survey, the confidentiality of the information gathered and the voluntary nature of responses. In accordance with sound research practice, complainants are also given the opportunity to reschedule the interview for their convenience.

The central question of complainant satisfaction has been divided into the relevant question areas as follows:

- What channels do the public go through in order to bring their complaint to the attention of the Department?

- How was their complaint handled by the officer who received their complaint and how satisfied were they with this action?
- What was the process through which their problem was dealt with?
- Was the problem corrected to the complainant's satisfaction?

The issues to be addressed by general public complainants (Evaluation Issues Two and Five) are summarised in the table below along with their respective indicators and references to the survey instrument.

Main Issue	Indicators	Questions
Has interference been reduced through program effort?	Incidence of interference problems	2,3,7
	Severity of problem	6
How satisfied are the complainants with program delivery?	Awareness of complaint mechanism	8
	Resolution process	9,10,11
	Complainant satisfaction with handling of complaint	12,13

The first series of questions (Items 1 and 2) are designed to aid the respondent in focussing on the history of his/her contacts with the Department and of all complaints registered. It is also necessary that the instrument itself be designed with the characteristics of the ROMIS data base in mind. Each record is entered by complaint, thus there is the possibility that individual complainants may have a history of lodging multiple complaints. Item 2 serves to provide a profile of the respondent in terms of his/her frequency of complaints. It should be noted that the proportion of general public complainants who lodge multiple complaints is small, but nonetheless should be accounted for.

The samples of both the general public and user complainants will be drawn in order to include those who lodged complaints during the 1987-88 fiscal year. Should a respondent have a history of complaints, Item 3 serves to focus the respondent on the relevant time period, i.e., since April 1, 1987. This may pose a certain degree of recall error in the case of multiple complaints, but as the incidence of multiple complaints is

expected to be small among general public complainants, a pre-test will determine the extent of response burden.

Respondents are then asked to recall the complaint lodged on a certain date. Interviewers will provide the background information to the complaint specified based on the description drawn from the Investigation Report for the complaint sampled. This will aid the respondent in focussing on the sampled complaint based on the characteristics recorded on the Report. This will aid the respondent in focussing on the sampled complaint based on the characteristics recorded on the Report. Before conducting the survey, interviewers should become familiar with the Investigation Report and the meaning of the codes entered on each form so that the data may be translated into terms the respondent can easily understand. Item 5 was designed to verify whether the information on the Investigation Report was accurate.

Should a respondent be one who has lodged multiple complaints, an alternative method of soliciting opinions on such matters as satisfaction with the handling of complaints would be to assess satisfaction on a general, rather than a case-specific basis. Although this may be desirable, it would not allow to match such variables as awareness of the source of the interference or the type of apparatus affected to the existing data. Again, a pre-test of the instrument using a sub-sample of complainants will determine if recalling a particular reporting incident is problematic for the respondent. Alternatives to the above method and the associated advantages and disadvantages are as follows:

1) Specifying the most recent complaint registered. This would allow the respondent who has repeated contact with the Department to recall his/her most recent complaint. Although this would facilitate recall, there would be no way to: a) ensure that an investigation report was filed for that particular complaint; and b) match actual features of the sampled complaint to the complainant perceptions of the problem. In other words, the most recent complaint investigated will not necessarily be the one sampled, thus any reference to satisfaction may not correspond to the sampled complaint.

2) Soliciting from respondents their general satisfaction with the way in which the Department dealt with their complaints. This would provide an overall picture of

complainant satisfaction with services, but will not discriminate between frequent and one-time complainants. This presents serious problems in the validity of responses, especially for those who have lodged multiple complaints and who may have had different experiences on each occasion.

By considering the limitations of the above, the proposed method of focussing the respondent on the basis of the case retrieved from the ROMIS data base seems to be the most efficient way of gathering the most valid, reliable, and thus most meaningful information in light of the evaluation issues.

Interference can represent varying degrees of inconvenience to the general public. Item 6 allows the respondent to determine how great an inconvenience the interferenced was perceived to be, and Item 7 helps determine the incidence of interference that may or may not be reported.

Item 8 of the questionnaire asks the respondent to recall the first step made in getting the complaint to the attention of the Department. There is at present no advertising directed at the general public with respect to who to contact when experiencing interference. Complainants are usually sent a brochure when the interference is first assessed by the officer handling the complaint. This is the only method of advertising other than government telephone listings. Determining how complainants get their information, whether it be by word of mouth or by referrals, will help the Department develop strategies to inform the public without placing undue burden on the system of handling public complaints.

In order to determine the satisfaction of respondents with the complaint procedure, it is first necessary to determine the course of action suggested by the officer who handled the complaint. The officer assesses teh problem as one that can be corrected by the complainant if the source of interference is the equipment itself or other household appliances. Otherwise, an investigator is sent. In the first case, complainants are sent a brochure to help identify the problem. If the problem persists, it may be investigated, thus an Investigation Report will be filled out. The series of questions dealing with this process (Items 9 and 10) allows the respondent to trace the steps made until the present (if the problem has not yet been resolved), after which

he/she can indicate the time delay between contacting the Department and correcting the interference (Item 11). Some of this information can be corroborated with existing information on the ROMIS data base.

Satisfaction with the manner in which the complaint was handled by Department staff is a vital research issue, thus Item 12 has been designed to measure the various dimensions of satisfaction as they relate to the complainant's experience with the Department. Item 13 determines whether or not the problem was followed-up and if not, if such action would have been desired.

Section B of the questionnaire is devoted to the demographic characteristics of complainants. Dwelling type is asked in Item 14, as those who live in apartment buildings are more subject to experience interference. Proximity to large cities and structures which contribute to the incidence of interference (Item 15) is also a factor which may play a role in the amount of interference reported.

Data on age, education and gender are recorded (Items 16 through 18), to complete the profile of general public complainants. These will be useful in identifying factors which contribute a intelligibility concerns. Information from the Investigation Report should also be pre-coded onto the instrument in order to contribute to the analysis of the responses.

2.2 Survey of Complainants - Users

As with the general public complainant questionnaire, the users of the spectrum will be able to provide valuable information on the satisfaction with program delivery. The user instrument differs significantly in many ways, due mainly to the varied nature of the problems encountered, the knowledge base of the respondents and the action taken. Appendix B contains the draft survey instrument.

The radio communications users will address the same broad evaluation issues as the general public complainants, although from a different perspective. The table below illustrates the issues, indicators and corresponding survey items. Analysis of data resulting from this survey component will have to be particularly sensitive to the impact

posed on the respondent (Item 6) and the resulting actions that led to the complainants' satisfaction or dissatisfaction.

Main Issue	Indicators	Questions
Has interference been reduced through program effort?	Incidence of interference problems	2,3,7
	Severity of problem	6
How satisfied are the complainants with program delivery?	Complaint process	8
	Resolution process	9,10,12
	Satisfaction with actions/ handling of complaint	11,13,14

Users of the spectrum would be more likely than the general public to contact the Department at the onset of the interference, given their increased awareness through the licensing process and because it represents a greater inconvenience to them. Nonetheless, Item 8 has been included to account for those who reach the Department via other means.

Item 9 determines how aware the complainant was of the source of the interference before contacting the Department. The degree of awareness would likely contribute to the overall satisfaction of the investigation procedures unless their is disagreement between the complainant and the inspector. Like the general public complainant questionnaire, the steps are traced leading to the rectification of the problem and the satisfaction with the process (Items 8 through 10 inclusive).

Satisfaction of user complainants is also measured on a number of dimensions (Items 11 and 13). Item 14 deals specifically with the issue of follow-ups. In certain cases, follow-up calls are made to complainants who have registered complaints. This is particularly the case where users who share frequencies lodge complaints against co-users for such things as wasting air time, using abusive language, etc.

Section B includes similar sociodemographic variables to the general public complainant survey. If the sample drawn from the user data base indicates a

preponderance of organisations (e.g. radio stations, police departments) as opposed to individual users (e.g. amateur radio operators), it may be desirable to include additional items such as number of full/part-time employees, etc. Investigation Report data will also be pre-coded onto the instrument to contribute to the analysis of responses.

2.3 Survey Administration

As suggested in the Terms of Reference, we recommend that the survey of complainants be administered by telephone for the following reasons. First, it is important to interview the individual who filed the report. In a telephone survey this can be ensured. In a mail survey another party may complete the questionnaire. The number of skip patterns necessary to guide the respondents through the instrument. Second, suggest a telephone interview would be appropriate. Third, the speed and efficiency of a telephone survey will far outweigh the lower costs of a mail-back survey and will likely result in a higher response rate. While mail-back surveys allow time for contemplation and permit more complex questions to be asked, a telephone interview is more appropriate for the length of this questionnaire. Also, interviews allow the collection of information on the reasons for non-response (i.e. too busy, person no longer working/living there, language problem etc.) which is not possible through the administration of a mail survey.

3.0 SAMPLING STRATEGY

3.1 Overview

Complaints are logged by district office staff. The complainant's name, address and telephone number are recorded in addition to information about complainant type (e.g., general public or user) and the nature of the complaint itself. The Communication's Canada response to the complaint is also subsequently recorded.

Complaint information is kept in active files over the course of each fiscal year. Complaint records are stored in two ways. Information from all districts on complaint type, district, date and investigation findings is stored on computer in the Regional Operations Management Information System (ROMIS) in Ottawa's district office. Complainant address, telephone number, and specific department action taken are kept in hard copy only and stored in each of the district offices. Information from both sources is needed in this study: Complaint records can first be accessed from ROMIS by district, region, date, and/or complainant type. Then, using control numbers (essentially a unique identifier) the hard copy information corresponding to the computer-stored complaint information can be obtained through the district offices.

Between April 1, 1987 and January 26, 1988 over 10,000 complaints were logged. Roughly one third were from users and two thirds from the general public. The budget of this project will permit a sample of 2,000 complaints to be randomly drawn from all complaints received since April 1, 1987. Equal numbers of complaints by region (Atlantic, Quebec, Ontario, Central and Pacific) and by type (public or user) will be selected. Thus, the sample will include 200 cases in each cell of a two-type by five-region matrix.

We are estimating a mean response rate of 60 per cent across both user and public subsamples. While the telephone approach with its associated call-backs may be expected to produce a relatively high response rate, this will be mitigated by the fact that specific individuals must be contacted (not simply households or businesses). A 60 per cent response rate would provide a total, final analysable sample of 1200. This sample size will allow inferences to be made to the population (i.e., <u>all</u> complaints logged this year) within confidence intervals of between +/- 1.59 per cent and +/- 2.65

per cent (for sample proportions of 10 per cent vs 90 per cent and 50 per cent vs 50 per cent on dichotomous variables, respectively)[1] when statistics are calculated using the entire sample. Statistics by complainant type (n ~ 600) will have associated confidence intervals of between n +/- 2.25 per cent and +/- 3.75 per cent. Statistics by region (n ~ 240) will have associated confidence intervals of between +/- 3.56 per cent and +/- 5.93 per cent.

3.2 Procedure

The ROMIS data can be obtained from the Ottawa District Office (contact Mr. Peter Dalton) in magnetic format. Sampling should proceed by first selecting cases by complainant type and by region and then, using a randomised selection program, drawing 200 cases for each "cell" of the total sample. (Subpopulation totals by cell should be recorded at this point for later statistical weighting.) All case data should be transferred to a separate file (in SAS format) for later analysis. (By including the data of <u>all</u> sampled cases in the analysis file -- rather than just the data of those whom responded -- (a) some analyses on a larger data set, and (b) a comparison of respondents and non-respondents on some variables will be possible).

Control numbers should be drawn by district to establish lists for each district of sampled complaints required. District offices can then be contacted and asked to provide copies of the complaint information in their possession for each sampled case. Since this will present a fair burden to the district office managers, we suggest the following procedures: Each district manager should be sent a letter from, preferably, the ADM in charge of RFS management, informing them of the project and asking for their cooperation. A letter from the researchers should then follow listing the complaint numbers required and procedures for copying and forwarding the information. An

---

[1] Applying the formula

$$+/- \ 1.96 \ \frac{N - n}{N - 1} \ \frac{P(1 - p)}{n}$$

where N is 10,000.

envelope and courier way-bill should accompany the letter to facilitate the forwarding of the information. Finally, all districts should be telephoned approximately one week after the researcher's letters will have been received to thank/prompt managers.

By maintaining the same I.D. number for (a) ROMIS data, (b) hard copy data from the districts, and (c) interview response data, all data for a given case can be kept together for eventual coding and entry. To facilitate this, we suggest adding a coding form to the instruments which will allow all hard copy data to be captured. Coding schemes will have to be developed once the review of this information has begun. In particular, codes for complaint "description" will be required. The hard copy data will, of course, also include names and telephone numbers required for interviewing.

Interviewers should telephone the individual who registered each sampled complaint and either conduct the interview with the complainant then or arrange for an interview later. Only the complainant him or herself is to be interviewed (not, for example, another member of the household). If contact cannot be made on the first telephone call, up to three call-backs should be made.

Since complaints, not complainants, comprise the units of sampling, the problem of having certain individuals listed more than once in the sample will have to be examined, once names have been added to the ROMIS case information. We suggest, if the number of "repeats" is minimal, that repeats be skipped over in telephoning so that no complainant is contacted more than once. If there are a large number of repeat complainants (over, say five per cent of the complaint total) then the number of skipped cases should be recorded so that an appropriate replacement subsample can be drawn.

3.3 Sample Quality

There are several factors which will affect the quality of the data. These, however, do not relate to sampling bias. Rather, they are problems associated with the sampling frame or population. From discussions with Hubert Pambrun, District Manager, Ottawa, we know that some complainants register more than one complaint in a year. Thus, an individual registering many complaints will have a proportionally higher chance of being selected into the sample than a complainant registering just one complaint.

This in itself is not a problem, however, we also know that complaints can have widely varying legitimacy. For example, complaining about interference may be a way of increasing the competitive edge one taxi company has over another, a way of "getting back" at a neighbour, etc. Also, in some districts, complaints may be handled more efficiently, encouraging repeat complaints. In other districts, a slow, "bureaucratic approach" to dealing with complaints (e.g., a complainant being asked to log all cases of interference for a month prior to the Department agreeing to investigate) may discourage legitimate complaints from being lodged in the future.

Compounding this problem is the fact that different districts actually log complaints with different frequencies. That is, some districts record all complaints, while others, particularly those located in larger centers, send the official departmental pamphlet ("Radio and Television Interference") to the complainant and wait for a second call (indicating the problem still exists) before recording the complaint.

These problems will most affect descriptive sample statistics (e.g., mean number of complaints of type "x" per year, mean number of all complaints by district size, etc.). Information on how complaints are handled, complainant satisfaction, etc., will be less affected since it is likely to be only partially tied to factors like district size and complaint type.

One way to deal with the problem is to compare the variables in question (e.g., frequencies of complaint types) with the same variables determined through the licensed user and/or general public surveys. For example, the public may be asked how many interference problems of several different types they have had since April 1, 1987. The frequency distribution of this variable could then be compared with the relevant distribution from the complaint sample.

Another approach is to simply keep these potential sources of bias in mind throughout the analysis. Additional information can be collected from the districts to help in this regard. For example, individual office complaint procedural manuals may be obtained so that complaints from offices recording all , versus a subsample of, complaints may be compared. Actual numbers of pamphlets sent out by each district since April 1, 1987 may also be obtained (if possible). Since weighting will be required by complainant type and region for statistics which infer to the population, we suggest further weighting

also be considered in selected analyses to deal with any systemic data inconsistencies encountered.

APPENDIX A

Complainant Survey - General Public

COMPLAINANT SURVEY -- GENERAL PUBLIC

Hello, I'm _____ from _____.
We're doing a survey on behalf of Communications Canada (formerly called the Department of Communications) to get an understanding of the types of problems people experience with their communications equipment, such as interference with radio, stereos and television sets.

Your name has been randomly selected from a list of people who have registered complaints with the Department. We would like to find out how satisfied you are with the handling of any problems you experienced and if they have been resolved to your satisfaction. Participation in this study is voluntary, but your responses are very important as they will help the Department better serve you in the future.

Let me assure you that your name will not be linked with any of the information you provide. Your responses will be combined with others participating in the survey and will be presented to the Department in statistical form only.

This survey should take no more than ten minutes of your time. Would you like to begin?

(If no: Or would you rather I called back later?)

Date: _____ Time: _____

Complainant Survey -- General Public

Section A

First of all, we would like to get a sense of the process you followed that lead you to register your complaint or complaints with Communications Canada.

1. **Thinking about your past contacts with Communications Canada, how often have you contacted the Department for reasons other than registering a complaint?** Was it:

   Once a year 1
   Once a month 2
   Once a week 3
   Once a day 4
   None, only to register complaint 5

2. **How many times have you ever registered a complaint with the Department.**

   |__|__| Number of complaints
   (If 1 complaint registered, GO TO Question 4)

3. **Now thinking of the period since April 1, 1987, how many complaints have you brought to the attention of the Department?**

   |__|__| Number of complaints since April 1, 1987

4. **The Department keeps a record of all complaints in order that they may follow-up on the problem and ensure that it was corrected to the client's satisfaction. For this survey, we would like you to recall the complaint you registered on (Date) _____.**

   According to the information on the Investigation Report, there was a problem with (type of equipment) [INTERVIEWER: Read what is in the "Description" section of the Investigation Report].

5. **Is this an accurate description of the problem?**

   Yes 1
   No 2
   Do not recall 3

6. How much of an inconvenience did the interference present to you. (Please rate your answer on a scale of 1 to 7 where 1 indicates a very major inconvenience, 7 indicates a very minor inconvenience and 4 indicates a moderate inconvenience.)

Major Inconvenience			Moderate Inconvenience			Minor Inconvenience
1	2	3	4	5	6	7

7. IF MORE THAN ONE COMPLAINT: Have you made similar complaints concerning this equipment?

Yes 1
No 2

8. How did you first become aware that the problem should be referred to the Department?

Referred by a repair person or appliance representative 1
Referred by cable company 2
Referred by friends/neighbours/relatives 3
Referred by other government department/agency ... 4
Consulted blue pages in telephone directory 5
Previous experience with similar problem 6

Other (Please specify) _____. 9

9.a) When you first contacted the office about the interference, what was the first action suggested by the person handling your complaint.

Will send a brochure to help identify problem 1
Respondent should contact power utility 2
Respondent should have equipment checked by dealer 3
Will send an inspector to investigate problem .... 4 -- GO TO Q.10
Respondent should monitor problem 5

Other (Please specify) _____. 9

b) Once you read the brochure, did you identify the problem as one with the equipment itself (such as a T.V. antenna or control knob), some other equipment in your household (such as other electrical appliances) or was it from an external source (such as a hydro line)?

Equipment 1
Household interference 2
External interference 3

10. **After identifying the problem, what did you do next?** [Prompt if necessary]

Fixed by self/family/neighbor 1
Contacted utility 2
Contacted Department 3
Contacted manufacturer 4
Contacted dealer 5
Contacted repair person 6
Other (Please specify) _____.. 9

11.a) **What is the present status of the problem?** [Read Options]

Resolved 1
Resolved, but different problem has arisen .. 2
Recurs ..... 3 -- GO TO Q.12
Still a problem 4

b) **From the time you contacted the Department until the time the problem was corrected, how many days or weeks did it take for the problem to be solved?**

|____|____|____| days |____|____|____| weeks

c) **Was the interference corrected to your satisfaction?**

Yes 1
No 2

12. **For the next few questions, we would like you to indicate how satisfied you were with the manner in which your complaint was handled by Department staff. (Please rate your answers on a scale from 1 to 7 where 1 indicates that you were completely dissatisfied, 7 indicates that you were completely satisfied and 4 means you were neither satisfied nor dissatisfied).**

	Completely dissatisfied			Neither satisfied nor dissatisfied			Completely satisfied
Competence of staff	1	2	3	4	5	6	7
Courtesy of staff	1	2	3	4	5	6	7
Speed of response to problem	1	2	3	4	5	6	7
Effectiveness in solving the problem	1	2	3	4	5	6	7
Providing suggestions for repairs	1	2	3	4	5	6	7
Clarity of advice	1	2	3	4	5	6	7

13.a) **Did anyone follow-up after you lodged the complaint to ensure that the interference was corrected to your satisfaction?**

Yes ..... 1 GO TO QUESTION 14
No 2

b) **Would you have preferred if someone followed up on the complaint?**

Yes 1
No 2

Section B

Now we would like some background information to help us analyse the information you have provided. Let me again assure you that your answers will be reported in statistical form only. Your name will not be linked to the information in any way.

14. **In what type of dwelling did you live when you experienced the interference?** [Prompt if necessary]

Single house 1
Semi-detached or double house 2
Duplex 3
Low-rise apartment (Less than 5 storeys) 4
High-rise apartment (5 or more storeys) 5
Mobile home 6
Row house 7

Other (please specify) _____.9

15. **Is this dwelling located within 1/2 mile of the following:**

	YES	NO	DK
A highrise building?	1	2	8
A high voltage power line? .	1	2	8
A downtown core?	1	2	8
An industrial park?	1	2	8

16. **In what year were you born?**

|__|__|__|__|

17. **What level of formal education did you last complete?** [Prompt if necessary]

Elementary 01
Some high school 02
High school 03
Some college 04
College diploma 05
Some university 06
Undergraduate degree 07
Graduate degree 08
Post-graduate degree 09
Other (Please specify) _____. 10

DO NOT ASK:

18. Sex:

Male 1
Female 2

Thank you for participating in this survey.

APPENDIX B
Complainant Survey - Users

COMPLAINANT SURVEY -- USERS

Hello, I'm _____ from _____.
We're doing a survey on behalf of Communications Canada (formerly called the Department of Communications) to get an understanding of the types of problems radio communications users have with respect to their communications equipment and the use of the radio spectrum.

Your name has been randomly selected from a list of individuals who have registered complaints with the Department, either as independent radio operators or as a representatives of commercial, industrial, or governmental communications users.

We are most interested in your level of satisfaction with the handling of any problems you experienced and if they have been resolved to your satisfaction. Your participation in this survey is voluntary, but your responses are very important as they will help the Department best serve you or your organisation in the future.

Let me assure you that your name will not be linked with any of the information you provide. Your responses will be combined with others participating in the survey and will be presented to the Department in statistical form only.

This survey should take no more than ten minutes of your time. Would you like to begin?

(If no: Or would you rather I called back later?)

Date: _____ Time: _____

Complainant Survey -- Users

Section A

First of all, we would like to get a sense of the process you followed that lead you to register your complaint or complaints with Communications Canada

1. **Thinking about your past contacts with Communications Canada, how often have you contacted the Department for reasons other than registering a complaint?** Was it:

   Once a year 1
   Once a month 2
   Once a week 3
   Once a day 4
   None, only to register a complaint 5

2. **How many complaints have you [on behalf of your organisation] <u>ever</u> registered with the Department?**

   |__|__| Total number of complaints

   [If 1 complaint registered, go to Q. 4].

3. **Now, thinking of the period since April 1, 1987, how many complaints have you [on behalf of your organisation] brought to the attention of the Department?**

   |__|__| Number of complaints since April 1, 1987

4. **The Department keeps a record of all complaints in order that they may follow-up on the problem and ensure that it was corrected to the client's satisfaction. For this survey, we would like you to recall the complaint you registered on (Date) _____.**

   According to the information on the Investigation Report, there was a problem with (type of equipment) [INTERVIEWER: Read what is in the "Description" section of the Investigation Report].

5. **Is this an accurate description of the problem?**

   Yes 1
   No 2
   Do not recall 3

6. **What was the extent of the harm the interference posed on you [your organisation] in terms of the following: (Please rate your answer on a scale from 1 to 7 where 1 indicates a very major problem, 7 indicates a very minor problem and 4 indicates a moderate problem).**

	Very Major Problem			Moderate Problem		Very Minor Problem	
Time loss	1	2	3	4	5	6	7
Money loss	1	2	3	4	5	6	7
Damage caused to equipment	1	2	3	4	5	6	7
Inconvenience	1	2	3	4	5	6	7

7. **IF MORE THAN ONE COMPLAINT: Have you made similar complaints concerning this equipment?**

Yes 1
No 2

8. **Who dld you <u>first</u> contact about the interference?** [Prompt if necessary]

The Department 1
Supplier of equipment 2
Service organisation..... 3
Cable company 4
Power utility company 5
Other (specify) _____ ... 9

9. **Were you aware of the source of the interference before you lodged your complaint?**

Yes 1
No 2

10. **When you contacted the office about the interference, what was the <u>first</u> action suggested by the person handling your complaint?** [Prompt if necessary]

User to monitor problem 1
User to contact power utility 2
User to contact equipment dealer/
lessor 3
Department will monitor problem 4
Inspector would be sent 5
Other (Please specify) _____ .. 9

11.a) **To what extent were you satisfied with this action?** Please rate on a scale of 1 to 7 where 1 indicates that you were completely dissatisfied, 7 indicates you were completely satisfied and 4 means you were neither satisfied nor dissatisfied.

Completely dissatisfied		Neither satisfied nor dissatisfied				Completely satisfied
1	2	3	4	5	6	7

b) **What is the present status of the problem?** [Read Options]

Resolved 1
Resolved, but new problem has arisen . 2
Recurs ..... 3 GO TO Q. 13
Has not been corrected as yet 4

12.a) **From the time you contacted the Department until the problem was corrected, how many days or weeks did it take for the problem to be solved?**

|__|__|__| days |__|__|__| weeks

b) **Was the interference corrected to your satisfaction?**

Yes 1
No 2

13. **For the next few questions, we would like you to indicate how satisfied you were with the manner in which your complaint was handled by Department staff. (Please rate your answers on a scale from 1 to 7 where 1 indicates that you were completely dissatisfied, 7 indicates that you were completely satisfied and 4 means you were neither satisfied nor dissatisfied).**

	Completely dissatisfied			Neither satisfied nor dissatisfied			Completely satisfied
Competence of staff	1	2	3	4	5	6	7
Courtesy of staff	1	2	3	4	5	6	7
Speed of response to problem	1	2	3	4	5	6	7
Effectiveness in solving the problem	1	2	3	4	5	6	7
Providing suggestions for repairs	1	2	3	4	5	6	7
Clarity of advice	1	2	3	4	5	6	7

14.a) **Did anyone follow-up after you lodged the complaint to ensure that the interference was corrected to your satisfaction?**

Yes ..... 1 GO TO 15
No 2

b) **Would you have preferred if someone followed upon the complaint?**

Yes 1
No 2

15.a) **Was the affected equipment fixed or mobile?**

Fixed 1
Mobile ..... 2 GO TO QUESTION 16

b) **Was the affected equipment located within 1/2 mile of the following:**

	YES	NO	DK
A highrise building?	1	2	8
A high voltage power line? .	1	2	8
A downtown core?	1	2	8
An industrial park?	1	2	8

Section B

Now we would like some background information to help us analyse the information you have provided. Let me again assure you that your answers will be reported in statistical form only. Your name will not be linked to the information in any way.

16. **In what year were you born?**

|__|__|__|__|

17. **What level of formal education did you last complete?** [Prompt if necessary]

Elementary 01
Some high school 02
High school 03
Some college 04
College diploma 05
Some university 06
Undergraduate degree 07
Graduate degree 08
Post-graduate degree 09
Other _____..... 10

DO NOT ASK:

18) **Sex:**

Male 1
Female 2

Thank you for participating in this survey.

APPENDIX C

Terms of Reference

3. Revise the questionnaire if necessary

4. Administer the questionnaire

5. Analyse the data, using descriptive and explanatory statistics, according to the issues raised in the evaluation assessment and the research design report

6. Prepare a draft report including the research methodology, field report and analysis of the data. The questionnaire should include survey marginals

7. Revise the report and present the findings to the Management Committee

DELIVERABLES AND DEADLINES:

The contractor will deliver the following products at the stated times:

DELIVERABLE	DEADLINE
1. A precise schedule of activities for the project, including a statement of clear understanding of the problem	Week 1
2. A pretest report	Week 2
3. Raw survey data in SAS format	Week 6
4. Draft final report (15 copies) for comments within the Department	Week 9
5. Final report (10 copies) to be delivered both in hard copy and WordPerfect format. The final report will also be delivered in French and English	Week 11

BUDGET:

The budget for this project is $35,000, $25,000 of which must be spent by March 31, 1987. This is a fixed price bid.

SCHEDULE OF PAYMENTS:

EVENT	PORTION	DATE (1988)
Deliverable #1	10%	Week 1
Deliverable #2	30%	Week 2
Deliverable #3	45%	Week 6
Deliverable #4	10%	Week 9
Deliverable #5	5%	Week 11

TERMS OF REFERENCE
RADIO FREQUENCY SPECTRUM MANAGEMENT PROGRAM EVALUATION
STUDY #6: SURVEY OF COMPLAINANTS

BACKGROUND:

The Program Evaluation Division of Communications Canada is currently conducting an evaluation of the Radio Frequency Spectrum Management Program (RFS). Spectrum Management is the largest program of the Department in terms of person-years alloted and the one with the greatest interaction with the public. The program is also decentralized across Canada to regional and district offices. Each region is different from the others in terms of client base, client needs and program operation. The assessment report for this evaluation is attached.

A survey of those who register interference complaints with Communications Canada is one of 13 background studies necessary to the evaluation of the Radio Frequency Spectrum Mangagement Program. The survey of complainants represents an integral part of the evaluation as it will assess the extent to which beneficiaries (in this case both the general public and licensed system users) are satisfied with the way in which their interference problems are handled by the Department.

OBJECTIVES OF THIS STUDY:

The purpose of this survey is to measure satisfaction with the program from those who have made interference complaints in the past year. In addition to levels of satisfaction, it is also important to analyse the number, reasons for, frequency and results of complaints. A survey design report has been prepared which includes the following:

- a thorough analysis of the available sampling base;
- a description of the work required to draw reliable samples;
- a judgement on the quality of the sample and an analysis of the reliability of the results obtainable for these samples;
- a questionnaire to be administered to complainants who are members of the general public; and
- a questionnaire to be administered to complainants who are licensed system users.

It is anticipated that the survey will be conducted as a telephone interview. The final, completed sample size desired is 1200 complainants. More details on the nature of the study can be found in the survey design report attached to this Terms of Reference.

CONTRACTOR'S TASKS

The contractors tasks are to:

1. Establish the sampling frame according to the procedures outlined in the research design
2. Pretest the instruments

CRITERIA FOR EVALUATING THE PROPOSALS:

The following criteria will be used in evaluating the proposals and selecting the winning firm. Bidders are urged to address each of these points in their proposal.

CRITERION	POINTS
Demonstrated understanding of the problem	10
Demonstrated familiarity with the data collection methods	20
Demonstrated familiarity with sampling techniques	20
Creativity in the treatment of the proposed approach	10
Capacity to fulfill the work requirements within deadlines	20
Level of skills of team members	20
Total budget where proposals are of equal merit	--