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2 MANDATORY RADIO STANDARDS IN CANADA

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FOREWORD

This study was undertaken at the request of Mr. S. N. Ahmed, Director General of Engineering Programs for the Department of Communications (DOC). Dr. R.W. McCaughern, Deputy Director General of Engineering Programs was the departmental representative for the study team. The study was carried out between November 1989 and March 1990, pursuant to a contract between the DOC and the Faculty of Law of the University of New Brunswick. DOC/Study Team interaction consisted of meetings to establish clear terms of reference for the study and monthly reviews of progress.

Comprehensive input was received through a series of 28 meetings with 53 governmental and private sector organizations in Canada and the United States. Additionally, the study team conducted independent research. The conclusions and recommendations reflect the judgement of the study team and are its responsibility solely.

The study team gratefully acknowledges the gracious cooperation of the many organizations and individuals who provided input.

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TABLE OF CONTENTS

MANDATORY RADIO STANDARDS IN CANADA
SECTION I - EXECUTIVE SUMMARY

1.1 BACKGROUND

This project was prompted by the Department of Communication's (DOC) interest in three broad factors influencing the technical regulation of radiocommunications today:

- Increasing privatization of the standards-making process
- Decreasing regulation by government
- Increasing impact of international trade agreements (such as the Free Trade Agreement (FTA) of 1989 with the U.S.A.) on domestic technical policy

1.2 THE MANDATE

The main purposes of this study are:

(1) To determine current views about the extent to which mandatory radio standards are truly required in Canada.

(2) To assess, in the context of North American Free Trade, the extent to which the development of mandatory radio standards should be harmonized with the U.S.A. requirements, both technically and procedurally.

(3) To present the pros and cons of mutual recognition of testing and certification of radio equipment by authorized bodies in

Canada and the U.S.A.

(4) To determine the extent to which some or all of the equipment authorization process could be further privatized.

(5) To identify ways in which the existing mandatory radio standards process in Canada could be improved.

In responding to these five questions, the study team was also asked by the Department to provide comments on:

(a) Future directions in standards in the context of the Free Trade Agreement.

(b) The suitability of the enabling authority of the Radiocommunication Act to accommodate harmonization of standards and reciprocity of testing and certification with the U.S.A.

1.3 THE PROCEDURE

To form an information base on which to judge the needs and the mood of industry, government, and users of the spectrum in Canada and the U.S.A., extensive consultations were held in Ottawa, Toronto, Montreal and Washington. There were 28 meetings with 95 persons from 53 Canadian and U.S. organizations.

These meetings/discussions were with middle to senior management personnel and lasted one to two hours each. The discussions, without exception, were frank and friendly.

The organizations contacted in Canada represented a complete cross section of service providers, manufacturers, users, laboratories, standards bodies and government. Governmental organizations included regulatory, Free Trade and GATT groups. A summary of the organizations represented in the various meetings is shown in Appendix 2 of this report.

Two underlying themes that emerged from these interviews were that spectrum management requires the combined efforts of industry and government and that the Department is to be commended for its participatory approach to spectrum management and for its initiative in undertaking this study.

1.4 CONSULTATIONS AND FINDINGS

Section III of the report provides in some detail the findings of the study team in relation to the five major and two related questions identified in Section 1.2 above.

The essential elements of these findings are the following:

(1) Without exception, the 74 participants in the 19 meetings in Canada affirmed the need for mandatory standards in Canada.

(2) The respondents believe that the development, authorization and mandating of standards should reside with one group, the DOC.

(3) The current participatory approach by the DOC to the joint government/industry development of mandatory standards is

seen as effective and fair by Canadian industry.

(4) The interviewees believe that there should be mutual recognition by Canada and the U.S. of testing and certification of radio equipment carried out by authorized bodies against a harmonized standard.

(5) Most respondents believe that the harmonized standard should be developed by joint CAN/U.S.A. Committees chaired by industry with government representation. DOC and FCC should retain approving authority.

(6) Many groups see the uncoordinated authorization of standards writing, testing and certification bodies in the U.S. as a problem that impacts upon Canada.

(7) Trade-related agreements and other trade developments may have a substantial impact upon the technical regulation of the radio spectrum and radio equipment in the future. For example, while the Free Trade Agreement (FTA) does not strictly require Canada and the U.S.A. to harmonize their technical standards and equipment authorization rules, the philosophy of the agreement calls for such forms of regulatory harmonization. The FTA has produced an expectation of harmonization.

(8) The enabling authority within the new Radiocommunication

Act will provide substantial legal support for the technical, procedural and operational policies required, should the Department of Communications decide that it wishes to engage in a harmonization exercise with U.S. governmental authorities. At this time, a number of regulatory impediments stand in the way of a successful harmonization exercise.

1.5 CONCLUSIONS

The comprehensive consultations with governmental bodies and private industry provided significant input to the study. The conclusions reached, however, reflect the judgement of the study team. Section 8.1 of the report lists the 29 conclusions reached.

1.6 RECOMMENDATIONS

The recommendations for action are the responsibility of the study team. Section 8.2 of the report lists the 14 recommendations made by the study team.

MANDATORY RADIO STANDARDS IN CANADA
SECTION II - THE STUDY

2.1 BACKGROUND

Radio equipment has been authorized for use, and its technical parameters managed, for almost 90 years in Canada. During this period, Canadian regulators have attempted to set technical radio spectrum policies which are consistent with international and Canadian/U.S.A. bilateral obligations, while ensuring that domestic technical spectrum-related policies are developed in the best interests of Canadian radio users, service providers and equipment manufacturers. For the most part, technical radio regulatory issues have centred upon matters such as interference management and spectrum efficiency.

Today, technical radio regulatory matters increasingly are complicated by broad public policy issues such as international and bilateral trade agreements, government resource cutbacks and regulatory developments in the United States. Also, new technologies and new markets for spectrum-related equipment are evolving rapidly.

Against this complex and evolving background, the question has been raised (with increasing frequency of late) whether Canada should now adopt a deliberate policy of harmonizing many of its mandatory technical standards, specifications and equipment

authorization processes related to testing and certification, with those in the U.S.A. This study was designed to explore this harmonization issue from a technical, political, practical and legal perspective. The recent proclamation of comprehensive radiocommunication legislation in Canada has made the need for such a review more apparent and pressing.

Bill C-6, known as the Radiocommunication Act, came into law in October 1989 and empowers the Minister of Communications with the authority to ensure "the orderly development and efficient operation of radiocommunication in Canada."

The Act authorizes the Minister, inter alia:

(a) "To issue radio licenses in respect of radio apparatus."

(b) "Establish technical requirements and technical standards in relation to:

i - radio apparatus
ii - interference-causing equipment, and
iii - radio-sensitive equipment."

(c) "Plan the allocation and use of the spectrum."

(d) "Test radio apparatus for compliance with technical standards established under this Act."

(e) "Undertake, sponsor, promote or assist in research relating to radiocommunication."

The Department of Communications, as the body authorized by the Minister to carry out

these functions, has undertaken a number of studies over the years to assist it in carrying out these functions. In October 1989, the Department contracted with the University of New Brunswick for the performance of this study and through the University, two principal investigators were engaged. These investigators were J.J. O'Shaughnessy, P.Eng., a consultant and Past President of the Radio Advisory Board of Canada, and David Townsend, an Associate Professor of Law at the University and author of the 1987 report for the DOC entitled, Canadian Municipalities and the Regulation of Radio Antennae and Their Support Structures.

This project was prompted by the Department's interest in three broad factors influencing the technical regulation of radiocommunications:

- Increasing privatization of the standards making process
- Decreasing regulation by government
- Increasing impact of international trade agreements (such as the Free Trade Agreement of 1989 with the U.S.A.) upon domestic technical policy

The objectives for the study are shown below.

2.2 THE MANDATE

2.2.1 General

The main purposes of this study are:

(1) To determine current views about the extent to which mandatory radio standards truly are required in Canada.

(2) To assess, in the context of North American Free Trade, the

extent to which the development of mandatory radio standards should be harmonized with U.S. requirements, both technically and procedurally.

(3) To present the pros and cons of mutual recognition of testing and certification of radio equipment authorized by bodies in Canada and the U.S.A.

(4) To determine the extent to which some or all of this process could be further privatized.

(5) To identify ways in which the existing mandatory radio standards process in Canada could be improved.

In responding to these five questions, the study team was also asked by the department to provide comments on:

(a) Future directions in standards in the context of the Free Trade Agreement (FTA).

(b) The suitability of the enabling authority of the Radio-communication Act to accommodate harmonization of standards and reciprocity of testing and certification with the U.S.A.

2.2.2 Definition of Terms

As the interviews revealed, the many technical and regulatory terms in use today have different meanings to different persons. For the purposes of this study, the following

definitions are used:

Radiocommunications: This includes all radio services except radio and TV broadcasting, and specifically includes:

(a) fixed microwave service

(b) mobile service

i - aeronautical

ii - marine

iii - land
- cellular
- general radio service
- paging

(c) satellite services

(d) low power, license exempt, radio equipment.

Mandatory Standard: Any document that contains technical parameters or processes with which one must comply in order to receive a license or to have equipment authorized for distribution, sale or use. In Canada, mandatory standards, may be contained within:[1]

- Standard Radio System Plans (SRSP's)

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[1] Whether examined collectively or individually, it is very difficult to assess the "mandatory" nature of the plans, procedures, specifications or circulars referenced here. Such an examination would have to account for the apparent and defacto nature or treatment of the technical parameter or process. For example, some documents use mandatory language ("shall" and "must") but often are applied in a discretionary nature within some of the DOC's five regional administrations. Other provisions are drafted as guidance or precatory policy, but, they have become referenced into licence criteria as mandatory requirements. For comment upon the apparent legal status of the Department of Communications technical documents, see Sections 5.2 and 5.3 of this study.

- Radio Standards Procedures (RSP's)

- Radio Standards Specifications (RSS's)

- Telecommunication Regulation Circulars (TRC's)

Harmonization: "The bringing into consonance or accord" (Webster's New Collegiate). For purposes of this study, interviewees were asked to regard "harmonization" as the process of making technical standards or specifications identical or technically equivalent in practice. However, it is important to recognize that trade law principles define harmonization as the process of making domestic laws, rules and processes compatible or equivalent to those of other trading partners. In the area of technical regulation such compatibility or harmony will permit mutual recognition of the respective mandatory technical standards and certification processes between nations; and mutual recognition of conformance testing to those requirements. Harmonization does not require that respective laws, rules or processes be made identical or even directly comparable.[2]

Certification: The issuance of a "certificate of type-approval or technical-acceptability"

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[2] The word "unification" is used when nations must adopt identical or common laws. For reference purposes, it should be noted that Article 604 of the Free Trade Agreement requires both nations, " To the greatest extent possible, and taking into account international standardization activities, each Party shall make compatible its standard-related measures and procedures for product approval with those to the other Party." (underlining added) The Technical Standards chapter of the Agreement goes on to define make compatible as meaning, "the process by which differing standards, technical regulations or certification systems of the same scope which have been approved by differing standardizing bodies are recognized as being either technically identical or technically equivalent in practice". (underlining added) Essentially, the FTA obligation for technical standards and approval processes requires mutual recognition (where possible) of the foreign counterpart regulations to domestic rules. This matter is discussed more fully within Section 4.4 of this study.

(RSP 100-Appendix 1). The authorization process that confirms "that the equipment complies with technical specifications, standards or requirements established by the Department" (RSP 100, Para 1.1.2).

Reciprocity: "A mutual exchange of privileges: specifically, a recognition by one of two countries or institutions of the validity of licenses or privileges granted by the other" (Webster's New Collegiate).

Licensing: Licensing occurs when certain regulatory and technical parameters are met by the applicant and may apply to any or all of radio services, radio systems, or radio equipment. Licensing may occur with or without certification of equipment. There are also certain types of equipment which require certification but do not require licensing.[3] Appendix 1 provides a simple description and chart of licensed services and license exempt equipment.

2.3 THE PROCEDURE

To form an information base on which to judge the needs and the mood of industry, government, and users of the spectrum in Canada and the U.S.A., extensive consultations were held in Ottawa, Toronto, Montreal and Washington. There were 28 meetings with 95 persons from 53 Canadian and U.S. organizations:

- In Canada, there were 15 (in person) meetings with 69 persons

[3] While the notion of "licensing" is very relevant to the existing Canadian radio regulatory scheme, note that the new Radiocommunication Act employs the generic term "authorization" for all licensing, certification and technical acceptance systems.

representing 40 different organizations or divisions of organizations. These 40 organizations included 7 governmental and 33 private sector groups. Almost all of the latter were associations (such as RABC, EEMAC, ITAC, Telecom Canada)[4] who in turn spoke on behalf of hundreds of Canadian companies.

- In addition to the meetings, there were four telephone conference calls with 2 private sector and 2 governmental groups.

- In the U.S.A., there were 7 meetings with 19 persons representing 7 organizations, 5 of whom were governmental and 2 of whom were private sector.

- Additionally, there were 2 conference calls involving 1 private sector and 1 governmental organization in the U.S.A.

These meetings/discussions were with middle to senior management personnel and lasted 1 to 2 hours each. The discussions, without exception, were frank and friendly.

The organizations contacted in Canada represented a complete cross section of service providers, manufacturers, users, laboratories, standards bodies and government.

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[4] These associations were: the Radio Advisory Board of Canada (RABC), an association of radio manufacturers, service providers and users which historically has played a key consultative role in the creation of many of DOC's technical standards and procedures; the Electrical and Electronic Manufactures Association of Canada (EEMAC), an association of manufacturers consisting of approximately 195 full and 30 affiliate members; Information Technology Association of Canada (ITAC), an association consisting of approximately 60 manufacturing firms with 5 other firms or associations with affiliate membership; Telecom Canada, an unincorporated association of the major Canadian telephone companies and Telesat Canada, the Canadian provider of continental satellite services. Telecom Canada, was selected for its use of terrestrial microwave, satellite and cellular radio systems.

Governmental organizations included regulatory, Free Trade and GATT groups. Effort has been made to attribute comment to those who made them. To the extent that their respective views about standardization or harmonization may differ, it would be useful when interpreting the results of the consultations to note whether the comments were made by a manufacturing or a user group. A summary of the organizations represented at the various meetings is shown in Appendix 2.

Two underlying themes that emerged were that spectrum management requires the combined efforts of industry and government and that the Department of Communications is to be commended for its participatory approach to spectrum management and for its initiative in undertaking this study.

MANDATORY RADIO STANDARDS IN CANADA
SECTION III - CONSULTATIONS AND FINDINGS

3.1 THE NEED FOR MANDATORY RADIO STANDARDS

3.1.1 General

It was the intent of the Department of Communications in questioning the mandatory nature of its standards to assess, in today's general deregulatory environment, whether there was a perception in Canada that there were too many or too few mandatory standards, or no need at all for them. Without exception, the 74 participants in the 19 meetings in Canada affirmed the need for mandatory standards in Canada. There was a similar unanimity of agreement by American organizations about the need for mandatory standards in the U.S.A.

3.1.2. Mandatory Standards

The underlying philosophy of the respondents perhaps can be summarized as:

(1) The radio spectrum is a limited resource that must be managed for the benefit of all Canadians.

(2) There should be no more mandatory standards than those which are essential to:

(a) ensure efficient use of spectrum

(b) prevent interference between services and

users (third party harm)

(c) ensure public safety.

(3) Mandatory standards should not include standards of a consumer quality of performance nature (unrelated to spectrum efficiency[5]). Such attributes are best left to the market place to determine or to voluntary standards bodies to develop and promote without government sanction.

3.1.3 Unnecessary Standards

In response to direct questions, there was some identification by the respondents of unnecessary standards or performance standards embedded in existing mandatory standards[6]. Comments include the following:

(a) Telesat Canada expressed the opinion that RSP 114 (License Application Procedure for Planned Earth Stations in Space Radio Communications) creates an unnecessary burden on applicants by requiring too much detail.

(b) EEMAC in its response expressed the view that its radio

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[5] While the question was not put specifically to the respondents, it is the opinion of the study team that the respondents who represented manufacturing firms would regard audibility standards as not related to spectrum-efficiency. This, despite the fact that a particular radio message may have to be repeated in some circumstances.

[6] Comments relating to the existance of unnecessary radiocommunciation standards in Canada were not received from the RABC.

equipment manufacturers would like to see the removal of some receiver standards from the mandatory radio specifications. They see these requirements as being "performance" specifications and not required. They identify that such standards are not required by the FCC and therefore present an unnecessary burden on Canadian manufacturers. Their response (Appendix 3) identifies eight sections in RSS 119 (Land and Mobile Stations...Operating in the Allocated VHF/UHF Bands) which contain performance specifications for both transmitters and receivers and which should be considered "reference only" but not "mandatory".

The question of receiver standards is not a simple one. There are groups in the U.S.A. who believe that there should be some mandatory receiver standards in the U.S.A. Canada's concern for ensuring the most efficient use of spectrum, and the fact that almost all other nations have receiver standards must be balanced against manufacturers' views and the Canada/USA trade difficulties which they appear to cause.[7]

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[7] Many of those interviewed cited Canada's use of receiver standards as a fundamental impediment to harmonizing Canadian and American technical standards.

This matter is addressed again in Section VIII under "Conclusions".

(c) ITAC, in a written submission (Appendix 4), identified that RSS 118 (Land and Mobile Stations Cellular Radio Telephone Transmitters and Receivers) also contains certain "performance" standards which, while not a problem, should not be propagated when rules are adopted for digital cellular systems.

3.1.4 The Need for Mandatory Standards

Clearly, all of the respondents believe that mandatory standards are a necessary fact of technological life. In the words of one interviewee: "Every country in the world has mandatory standards. Canada's should be kept to a minimum but kept high for the benefit of all. "Section 3.4 on "Privatization of Mandatory Standards" and 3.5 on "Improvements to the Current Process" discuss how this might best be done.

3.2 HARMONIZATION WITH THE U.S.A.

3.2.1 General

Coordination and harmonization activities between Canada and the U.S.A. in radio regulatory matters have been ongoing for many years. This history is most apparent in relation to the technical regulation of radiocommunications, and the scope and pace of these activities recently have increased. Harmonizing activities now include frequent

regional and centralized contacts to coordinate use of the radio spectrum, the existance of a DOC/FCC technical laison committee, DOC representation on U.S. centred industry standards committees, DOC acceptance of FCC certifications for certain radio equipment[8], the acceptance by the DOC of payment in U.S. funds for equipnment testing services, internal reviews of some DOC technical standards and policies in light of recent FCC changes to their technical rules[9], and the provision of resources for this study. (Harmonization activities are detailed further in Appendix 7).

When questioned about harmonization of Canadian and American technical standards, the respondants answered with the same unamimity as they did with the question about the need for mandatory standards. There was universal agreement on the desirability of harmonization. On the corollary questions, "For what services/products" and "How to bring it about", these diverse answers were provided:

3.2.2 (a) <u>Is there a need to harmonize all mandatory standards?</u>

Harmonization of all radio standards was not regarded as desirable or possible. As one U.S. respondent noted, the frequency allocation table must be the starting point of any harmonization effort. In a number of circumstances,

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[8] Examples of DOC acceptance of radio equipment certifications by U.S. authorities involve Citizen Band/General Radio Service apparatus and certain aeronautical radio equipment.

[9] For example, the Department of Communications is now reviewing the contents of its digital apparatus policies to check for their harmony with the FCC's recent changes to the content of its <u>Part 15</u> devices rules.

previous allocations and the vested interests which have acted in reliance upon them, effectively foreclose the possibility that either the spectrum usage or the technical specifications involved can be harmonized.

A commonly held view is that the need for harmonization is less for services involving microwave and satellite communications. There is more need in mobile communications. The decision to harmonize certain standards should be an economic one and not a regulatory one.

The test of economic need is best met by determining if there is a group willing to "lead the charge," to be the director/coordinator of Canadian activity in the often laborious process of harmonization of standards between countries.

3.2.3 Harmonization Concerns

The development of standards acceptable to manufacturers, users and regulators is difficult enough in one country. It is an order of magnitude more difficult to bring harmonization about between two countries. Complicating factors in the U.S.A. environment are:

(a) A multiplicity of organizations involved in the development

of radio standards.

(b) The lack of a coordinating body (such as the RABC in Canada)[10] that can bring together the diverse views of service providers, manufacturers and users.

(c) The lack of a governmental or quasi-governmental body such as the Standards Council of Canada which has the authority to recognize and co-ordinate the standards writing, testing and certification bodies in the country.

(d) A rather weakened (in the opinion of many) regulatory body, the FCC, that is not pro-active in bringing about change in regulations and standards due to its deregulatory and market-based policies, and probably because of the difficulty of effecting such changes in the fractured U.S. environment.

(e) The onerous U.S. rulemaking process, which the FCC (and many other U.S. governmental bodies) must adhere to when creating technical standards and procedural requirements, often inhibits joint FCC/DOC action, or even discussion,

[10] The role which the RABC has played in the Canadian standards and procedure making process is unique. In one organization, government officials have access to one organization which represents radio users, service providers and manufacturers. There is no equivalent organization available to the FCC. As noted elsewhere within this study, the diverse and dispersed interest groups in the U.S.A. greatly complicate the Commission's rulemaking process.

while the process is ongoing.[11]

Many U.S. organizations frequently stated the view that the Canadian standards development environment is well managed, effective and pro-active. Canadian standards are generally judged to be of high technical competence and more encompassing than U.S. standards.[12]

In a process of harmonization, the question of how 'mutual accommodation' will be achieved, or in the alternative, 'who will accommodate whom' is not a trivial one.

3.2.4 How to harmonize with the U.S.

How to accomplish this harmonization with the U.S.A. received much attention during the investigation. Two primary schools of thought emerged for consideration. These

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[11] The U.S. Administrative Procedure Act restricts ex parte contacts during the stages when a governmental body is actively engaged in the rulemaking process. (Ex parte means dealing with an "interested person" or "party" in the absence of others.) Thus, upon commencing a rulemaking proceeding, the FCC is expected to deal in an official capacity only with the 'parties of record'. The study team was informed that FCC staff often interpret this rule as a prohibition on dealing directly with the DOC during particular rulemaking processes. This, despite the fact that a foreign government is not truly "interested" in the outcome of a proceeding in the sense intended. Such an interpretation would leave the DOC only two options: to wait until the FCC has completed its consideration of all comments and given its response; or to participate (before the Commission) in the proceeding with a status identical to all other parties. (Government to government negotiation to reach a harmonized result would not be permitted.) This issue is discussed within Sections 6.2 and 8 of the study.

[12] While the actual technical parameters in Canadian standards are not necessarily 'tighter' than their American counterpart, often compliance with more technical specifications is required. These additional parameters go beyond the receiver standards which were much discussed as an obvious difference. Often Canadian standards are more encompassing because test methodology is included within the specification. In contrast, the FCC rarely references test methodologies within its mandatory standards.

involved "Industry to Industry" as opposed to "Government to Government" schemes.

(1) Industry to Industry

This scenario calls for appropriate industry groups (eg., cellular) from the two countries to meet with each other, develop and agree upon a common base standard. Government representatives would be included in the group. The "harmonized" standard would then be submitted to the DOC and FCC for approval or revision by the two governmental groups. After implementation, the two standards would be regarded as equivalent in form and effect.

(2) Government to Government

In this scenario, standards would be developed separately in each country and submitted to each regulator respectively for implementation. When the DOC and FCC were satisfied with their own country's proposed standard, the two governmental groups would negotiate a harmonization agreement between the two countries and then advise their respective industries of the decision[13].

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[13] As noted previously within this study 'government to government' negotiation for harmonized rulemaking is greatly inhibited by the existing rulemaking requirements of the U.S Administrative Procedure Act.

To this study team, there appeared to be only one organization that favoured the second approach. The Department of National Defence favoured this approach as the practical way to bring about agreement.[14]

It is to be clearly noted that all other governmental and industry groupings with whom we conferred in both Canada and the U.S.A. favour the "Industry to Industry" scenario. No one minimizes the difficulty of reaching consensus on bilateral standards, but scenario 1 is the preferred and recommended way.

3.2.5 Additional comments on harmonization

Some other significant thoughts that arose during discussions:

(1) The regulatory bodies in Canada and the U.S.A. would have to signal clearly to their respective industries that it is their wish that standards be harmonized.

(2) An edict "to go forth and harmonize all standards" would not be as effective as a decision to harmonize in selected areas of standards. Start small to finish big.

(3) Let economic need be the major determinant of which standards should first be harmonized. Standards for new products or services with mass consumer markets (eg., digital

[14] As an aside, it can be reported that the DND was not opposed to being licensed and charged regular fees by the DOC. During their interview, DND representatives acknowledged that Australia and New Zealand are so licensed and Japan is about to be.

cellular and the next generation of cordless telephones) is the pragmatic place to start.

(4) As a measure of economic need, find a group in the private sector that is willing to spear-head a particular harmonization activity. EEMAC is on record to this study team as being willing and able to undertake this role in certain fields and in mobile standards in particular. The RABC would be another appropriate group in certain fields were it willing to do so.

(5) CSA expressed the willingness to assist, if asked, in the process of setting up a Canada/U.S.A. radio standards body and in providing secretariat services to it.

(6) The NTIA in the U.S.A. pointed out that were such a Canada/U.S.A. standards development group formed, it would probably have to be open to participation by foreign organizations to meet U.S. legal requirements.

(7) The FCC emphasized that harmonization of radio standards with Canada would require a firm U.S. national policy and substantial funding.

(8) The TIA (Telecommunications Industry Association) in the U.S.A. expressed the view that some of their standards were developed with input by Canadian industry and, therefore,

could be considered as bilateral.[15] It would be difficult, they felt, to have their members change their standards, but Canada could feel free to adopt them. The study team expressed the view that "unilateral reciprocity" was not precisely what Canada had in mind.

(9) It was the opinion of Christopher Imlay, legal counsel for the U.S. Amateur Radio Relay League, and a knowledgeable observer of the U.S. radio regulatory scene, that medium and small manufacturers in the U.S. would strongly favour harmonization of standards and, consequently, so would employees in the State Department and representatives on Capitol Hill.

(10) A member of ITAC expressed the view that Canadian industry would have to be alert not to let a standards harmonization process be drawn out to the disadvantage of Canadian industry.

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[15] Specific reference was made to the active participation by a Canadian representative on the TIA digital cellular standards committee. Unfortunately, the TIA could not claim that it had sought Canadian participation as a deliberate policy toward bilateral standards-making.

3.3 RECIPROCITY OF TESTING AND CERTIFICATION

3.3.1 General

The question to be addressed at this stage of the report is as follows:

If mandatory standards are required in Canada, and if harmonization of those standards with the U.S.A. is desirable, is it desirable also to have reciprocity in testing and certification of equipment? That is, should equipment tested and certified in one country--against the harmonized standard--be accepted into the other country without additional testing?

In principle, all organizations on both sides of the border favour reciprocity. In practice, there are concerns. The core of these concerns is the lack of an official lab accreditation process in the U.S. There are several in place, but a commonly expressed concern in Canada is "who will judge the judges" in the U.S.

3.3.2 NIST Notice of Hearing

Certification, testing and lab accreditation also are matters of concern in the U.S.A., particularly to NIST (The National Institute of Standards and Technology), the former National Bureau of Standards. As an agency of the Department of Commerce, NIST issued a Notice of Hearing in the Federal Register of November 27, 1989 advising that a public hearing will be held on April 3, 1990 "to gather information, insights, and comments relating to improving U.S. participation in international standards-related activities and to possible government actions."

"The central purpose of the hearing is to assess the current situation and to seek suggestions for improvement, especially regarding mechanisms for coordinating U.S. participation in international standards activities."

"The hearing is expected to include expressions of views on potential models for government-private sector interactions, such as the Standards Council of Canada". (Underlines added)

The hearing also will explore any problems encountered by U.S. industry in testing and certification in foreign countries. Attached to the Notice of Hearing is a two-page concept paper proposing the formation of a SCUSA (Standards Council of the U.S.A.) to parallel the SCC (Standards Council of Canada).

Discussions with Dr. Stanley Warshaw, the Director, Office of Standards Services, in NIST and the issuer of the Notice of Hearing, provided the following insights:

(1) With the pluralist approach to standards inherent in the U.S. system, there will be opposition by some standards bodies to the creation of any superior body such as SCUSA.

(2) Two or three Congressional committees are also involved in a review of U.S. standards processes. Some legislation may be introduced.

(3) Two to three years is an optimistic estimate of the time required to create a SCUSA or the equivalent in the U.S.A.

3.3.3 Report of the U.S. Advisory Committee for Trade Policy and Negotiations

The Advisory Committee on Trade Policy and Negotiations (ACTPN) was created by the U.S. Congress in 1974 to advise the President on agreements reached within the Tokyo Round of Multilateral Trade Negotiations. Congress expanded the ACTPN's mandate to overall trade matters in 1988, including bilateral and multilateral negotiations, actions taken under the U.S. trade laws, and important developments in world trade requiring a policy response. ACTPN members are appointed by the President for two-year renewable terms and represent a broad spectrum of U.S. commercial interests, including agriculture, manufacturing and services industries and labor.

This Committee is made up of senior officers from 36 major U.S. organizations. it is chaired by James D. Robinson III, Chairman and CEO, American Express Company. Interestingly, not many members of the Committee are from the telecommunications sector.

The ACTPN formed a special task force early in 1989 to help shape U.S. policy toward the European Community's single market program. The report of the task force was transmitted on November 27, 1989 to the Honorable Carla A. Hills, the United States Trade Representative.

The following comments and recommendations of the task force are noted here as germane to this study on Mandatory Radio Standards and relate in particular to the question on "Reciprocity of Testing and Certification."

1. The ACTPN "identified six issues in which the U.S. has a significant interest in influencing the direction of change."

2. Under the heading of "Procurement" (Issue 2) ACTPN recommended that the U.S. Trade Representative "seek bilateral consultations covering the telecommunications and heavy electrical equipment sectors now closed to U.S. suppliers."

3. ACTPN defined Issue 3, Product Standards and Certification, as "Whether non-EC firms will have effective access to the drafting of EC-wide standards; and, once those standards have been established, whether member states will recognize testing and certification carried out by non-EC organizations." (underlines added)

4. Under the heading of "Product Standards, Testing and Certification," ACTPN recommended that the U.S. Government:

   a) "Seek the institutionalization of a standards-setting procedure that provides early and effective access for U.S. firms and international standards bodies."

   b) "Press for the establishment of appropriate mechanisms that will lead to the mutual recognition of testing data and certification procedures."

5. The ACTPN also recommended that "U.S. companies actively participate in the international standards setting process." (underline added)

3.3.4 Other Reciprocity Comments

Both GATT (General Agreement on Tariffs and Trade) and FTA (Free Trade

Agreement) point to the need for reciprocal recognition of testing and certification of work performed in the member countries. The crux of the problem, as stated earlier, is how to create confidence that foreign testing and certification will be as reliable as that done domestically.

There are groups, particularly in the U.S.A., who believe that there is room for several "testing and certification" bodies in a country and that the market place will decide which one(s) to accept. Increasingly around the world, the view is held that while this pluralistic approach may be acceptable within a country, it is not practical in multilateral trade. A fuller discussion on trade-related implications of harmonized policies can be found within Section IV of this report.

3.4 PRIVATIZATION OF MANDATORY STANDARDS

3.4.1 General

While it might have been considered that the viewpoint of industry about privatization of mandatory standards would be "damn the DOC" and "let industry get on with the job," clearly such is not the case. No group of the 44 contacted believed that the authority for mandatory standards should reside in any place other than the DOC.

It is also the general feeling that it was important that the responsibility for the standards development process be with the group responsible for the regulatory approval of the standards. It was felt not to be practical to have one group (eg., CSA) develop standards, even with full participation by all interested parties, and have another group (eg., DOC -

Engineering Programs) authorize the standards. However, the CSA did indicate that, if they were asked by the DOC and industry to carry out such a standards activity, they would be willing to do so.

This is discussed again in Section VIII - Conclusions

3.4.2. DOC Certification and Engineering Bureau

Under this heading of "Privatization," there was discussion about the role of the DOC Certification and Engineering Bureau (Clyde Ave.) which is the engineering laboratory and certification arm of the DOC Engineering Programs department. While the review of their role was incidental to the study, the following comments are noted:

- The role of the Clyde Ave. facility has been reduced over the last few years with cutbacks in personnel from 37 person years to 26.
- Probably all testing work done at the facility can also be done at private labs in Canada, and industry has the option of going to either the DOC facility or to a private one. The DOC's charges are by design not less than those of private labs.
- Some groups believe that competitive information is more secure in the DOC testing environment. The DND regarded the existence of the Clyde Ave. facility as essential for testing involving classified technology.

- It was generally felt that Canada must retain a facility of this type to ensure:

  (a) that there is always a lab of last resort and a facility available for those who feel the private sector cannot provide the level of confidentially or security which they require.

  (b) that the technical expertise necessary for spectrum management functions continues to exist in the government of Canada.

  (c) the availability of an independent audit capability of other labs performing tests against mandatory standards.

- The CSA indicated that while they were not recommending the privatization of the Clyde Ave. facility, they would like to have the opportunity to be involved in any proposal to privatize its operations. Apparently, such an opportunity was not provided in the privatization of the EMI Lab formerly run by the National Research Council (NRC).

3.5 IMPROVEMENTS TO THE CURRENT MANDATORY RADIO STANDARDS PROCESS

3.5.1 General

A general assessment of the rating of the current process in Canada, by the 44 organizations contacted, would place it somewhere between good and excellent.

It is recognized that the radio spectrum is a precious natural resource which must be managed and that certain technical standards must be mandated. The current participatory approach to the development of standards by the DOC with full consultation with industry is highly regarded and seen as fair.[16]

3.5.2 Comments by Respondents

The foregoing is not intended to imply perfection in the process, but, with one exception, the respondents suggested that there is a need for fine tuning, rather than major adjustments, in the technical regulation of the radio spectrum.

The noted exception is found within the reply from the Marine Committee of the RABC. The Committee states that "the use of approved equipment is by intimidation. Enforcement is almost negligible, it is politically sensitive, it is inconsistent, it is too slow."

The following comments by the respondents are of a fine tuning nature:

(1) There is a need for tighter standards to control EMI

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[16] Some interviewees expressed the view that this participatory approach is much preferred to the more adversarial approach of a few years ago.

(Canadian Coast Guard).

(2) A review of what standards are issued as RSP's as compared to RSS's is justifiable. Probably more RSS's are required.

(3) EEMAC believes there is a need for more effective use of the spectrum by the broadcast industry.

(4) One-hop radio systems (18-23 MHz) should be moved from the SRSP approach to the RSS approach.

(5) The role of the "engineering brief" in the testing and certification process is not clear in current DOC practices. RSP 100, Para 1.6.2 states that an engineering brief is required in all cases. However, RSP 100, Appendix III shows an engineering brief as being required only when the tests are carried out by a private lab. It is also not clear exactly what the professional engineer is attesting to in signing the engineering brief.[17]

Appendix 5 elaborates on this problem. It is also discussed under the Recommendations.

(6) The onus should be on the DOC to justify the inclusion of any performance standards which are unrelated to spectrum

[17] The study team was told that some Canadian engineers merely remove the front covers of the briefs they receive and affix their own front page without extensive review of the contents of the brief.

efficiency in mandatory radio standards.[18] All existing standards should be reviewed to see if such performance standards could be removed. Section 3.1.3 and Appendices 3 and 4 list standards that some industry groups believe contain elements which should be classed as "reference" or "voluntary".

[18] While this view would be asserted strongly by manufacturing groups (e.g. EEMAC), the same may not be said for certain user groups. It is submitted that the DND, Coast Guard and the RCMP would not necessarily support such a move - especially if audibility specifications were not regarded as being spectrum-related.

MANDATORY RADIO STANDARDS IN CANADA

SECTION IV - TRADE-BASED IMPLICATIONS OF HARMONIZATION

4.1 INTRODUCTION

As discussed previously within this study, the feedback obtained from a surprisingly high number of the Canadian industry and government representatives interviewed, revealed that they were prepared to support, or at least to discuss seriously, further harmonization of the technical aspects of radio regulation in Canada and the U.S.A. They would support such harmonization for the explicit objective of enhancing trade in radiocommunication equipment between the two countries. International trade in telecommunication equipment (wireline) is a recent but rapidly growing phenomenon. Global trade in radiocommunication equipment is almost completely undeveloped at this time. (Section 6.4 briefly discusses the potential for trade in spectrum-related equipment).

This section of the study was written to address some of the trade-based implications of a move toward increased harmonization. The data incorporated here were obtained from the series of personal and telephone interviews, and from independent research by the study team.

4.2 TRADE IMPLICATIONS GENERALLY

Throughout the last decade, many government regulators and private sector companies have paid increasing attention to trade issues. They have asserted that future economic growth, and the availability of funding for research and development (R&D) depends upon expanding domestic and foreign markets for products and services. They have claimed that expanding markets for many types of products depend upon reducing or eliminating barriers to rapid commercialization[19] domestically, and reducing similar barriers to export to foreign markets. Much of their attention has centred upon non-tariff, or technical, barriers to trade.

The "barriers" frequently identified include engineering or technical standards for products, and the testing and certification requirements, set out within domestic laws, to ensure that products conform to the applicable standards or rules. Typically, these standards have concerned such things as consumer protection, environmental safety and other public interest matters such as resource management.

As one can appreciate, the extent and nature of the technical standards which each nation has set, as a precondition to proceeding to market certain products, is premised upon a number of factors. They include such things as:

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[19] " Commercialization" is the process of bringing a product from initial concept to point of sale.

(a) assessment of risk of injury to users, third parties or to the environment

(b) assessment of the ability of private consumer and commercial laws to protect users, third parties or the environment

(c) international legal obligations (bilateral and multilateral agreements or treaties)

(d) the express objectives or limitations within the domestic legal framework for technical regulation

(e) scarcity of the particular resource(s) involved

(f) assessment of the utility of or need for consistency among products and parts

(g) the particular regulatory philosophy of the political administration

(h) historical factors (such as how previous regulatory regimes evolved)

(i) assessment of the need to protect domestic products from competing foreign products

(j) domestic notions of the importance of national sovereignty and the need to participate in international trade liberalization

(k) the availability of funds and human resources provided through the political resource-allocation exercise within a

particular administration

It is readily accepted that each standard, rule or process has a cost as well as a benefit. These costs are paid by the manufactures and exporters, and by the general populous through a lower gross domestic product (GDP). Presumably, each country performs a cost/benefit analysis of some sort before a new requirement is encodified into law. Clearly, the costs of these requirements grow exponentially, without a concomitant increase in benefits, when countries:

(a) create technical standards, rules and authorization processes which differ significantly from those set by their trading partners for the same product or product-type. (significantly differing product requirements between nations)

(b) subject imported products to standards, rules or processes which are more rigorous, extensive or time-consuming than those required for domestic commercialization of the same or similar product. (significantly differing product requirements between domestic and imported products within a nation)

(c) create macro systems or facilities using technologies, or interconnection or inter-operability requirements which will necessitate a unique product run. (incompatible macro systems or facilities)

(d) refuse to accept test data from foreign testing facilities when the relevant standards, rules and test methodologies are comparable to domestic requirements. (delegitimize foreign test data)

(e) refuse to accept the validity of the accreditation of a foreign testing facility when the relevant domestic accreditation requirements are comparable; or subject a foreign testing facility to accreditation requirements which are more onerous than domestic requirements. (delegitimize foreign testing facility accreditation)

(f) use domestic statutes or regulations so as to protect certain domestic products by refusing to certify or by otherwise impeding the marketing of foreign products which differ in nature from domestic products but perform a competing function. (delegitimize certain foreign products which are dissimilar in nature to domestic products but perform a competing function)

Recent emphasis on trade liberalization has begun to focus attention on each of the problems identified above. Internationally, success has been limited to date. Generally, the larger international trading partners have only gone so far as to accept the notion of "national treatment". According to this trade principle, foreign products or suppliers may

be treated no less favourably than domestic products or suppliers during the domestic equipment authorization process.

The key question for this decade is whether the major international trading partners can move beyond national treatment to "reciprocity". In other words, operation of the domestic equipment authorization scheme so as to treat foreign rules and processes (as compared to products and suppliers) as if they were comparable or equivalent to domestic requirements. Therefore, product authorizations for market entry obtained abroad would permit the particular product to proceed directly into the domestic market.

The notion of reciprocity is a very controversial one. The objections would include the following:

(1) As discussed above, political administrations create technical rules and processes for a number of reasons. Many of those objectives will have to be adjusted, compromised or forsaken under a bilateral or multilateral, reciprocal scheme.

(2) Within the nations which sign reciprocal arrangements all technical standards, rules and processes, and the reliability of conformance testing, are effectively reduced to the lowest common denominator[20].

[20] There is no inducement to regulate above the lowest denominator because a product authorization from a signatory nation with modest technical, quality and procedural

(3) Each nation must trust that its signing partners will make sufficient enforcement efforts to ensure a reasonable level of conformity with their legal requirements (to keep sub-standard goods out of the market.

(4) Government and private laboratories which make their revenue from performing conformance testing, as part of an equipment authorization scheme, may find that the bulk of the business goes to foreign test facilities which offer the quickest and least expensive route to approval[21].

(5) Testing and certification laboratories located within nations with small markets, relative to those of their reciprocal trading partners, might find that foreign manufacturers send their product authorizations to the larger relative market[22].

(6) Nations with small markets, relative to those of their reciprocal trading partners may find that it is their standards, technical rules, and process requirements which must change to accommodate their larger partners' systems. In other

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requirements is equivalent to an authorization from a state with rigorous requirements.

[21] In many cases, this form of competition might be quite positive. Such might depend upon the integrity of the foreign testing and certification and upon the rigour of the foreign base standards and other technical requirements.

[22] Such may happen to Canadian testing and certification facilities if we should enter into a reciprocal arrangement with the U.S.A. Canadian facilities could prosper only if they were known for being more expeditious and inexpensive than their U.S. counterparts.

words, it is difficult to secure balanced or mutual accommodation.[23]

(7) Reciprocity represents a significant loss in political (and some say technical) sovereignty

(8) The ability to plan for and respond to perceived national problems is inhibited by the requirement of collective action.

Three important trade-liberalization initiatives were undertaken during the 1980's which may impact significantly upon global telecommunication trade this decade. All three of these initiatives specifically focused upon both non-tariff barriers to trade and the enhancement of trade in telecommunication equipment. These are the GATT (General Agreement on Tariffs and Trade) activities, the FTA (Free Trade Agreement) and the accelerated activities of the EEC (European Economic Community) focusing on 1992.

Among other objectives, the GATT, FTA and the EEC 1992 initiatives have tried to liberalize trade by harmonizing the engineering and technical rules, and product testing and certification requirements between the national signatories to the respective agreements.

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[23] Many of the Canadian respondents expressed concern that Canada would be forced to accommodate the technical objectives and regulatory philosophy of its American neighbours by substituting U.S. technical rules and schemes for our own without any accommodation.

Before proceeding to examine each of these initiatives in detail, an important observation should be made. One should note that only the EEC 1992 activities specifically address the technical and regulatory planning of radiocommunication equipment and services, as distinct aspects of telecommunication matters. If one examines the history of trade-based international negotiation related to telecommunication, it will be noted that it has been preoccupied exclusively with wire-based as opposed to wireless equipment and services. In fact, prior to the recent attention paid to telecommunication wireline services, all attention had been directed historically to trade in terminal equipment which would interconnect directly with the public switched telephone network (PSTN). This should not be too surprising considering that the amount of international trade in radio spectrum related equipment, relative to other electronic equipment, has been quite modest to date.

What is critical to note is that this situation is about to change, and international trade in spectrum related equipment will emerge as a key economic and policy matter in the 1990's. It is this future growth in international trade in wireless products which justifies a detailed examination of trade laws which, for the most part, do not yet impact upon the manufacture or technical regulation of radiocommunication equipment.

4.3 THE GATT STANDARDS CODE

On January 1, 1980, the international Agreement on Technical Barriers on Trade (The Standards Code) came into effect. The Standards Code is one element of the General

Agreement on Tariffs and Trade (GATT). GATT activities consist of multilateral rounds of negotiations which attempt to stimulate economic growth and development by liberalizing world trade. The chief means to liberalize trade is to negotiate the reduction of trade barriers and other barriers to cooperative international relations.

The Standards Code, which resulted from the Tokyo Round of negotiations attempts to ensure that signatory countries do not create unnecessary obstacles to trade through their technical standards and certification systems. Typically, such standards and systems relate to health, safety, consumer and environmental protection; and it includes national packaging, marking and labelling requirements. Specifically, the Standards Code requires that its signatories:

(a) use international standards as the base for developing new standards, where such are appropriate

(b) create standards which are based upon performance criteria as opposed to design criteria, where appropriate

(c) not engage in standards related activities which would act as an unnecessary obstacle to international trade

(d) ensure that imported products are treated no less favourably than domestic products

(e) permit foreign suppliers of goods to have access to domestic standards and certification systems on an equal basis to those accorded to domestic manufacturers

(f) provide a central enquiry point which will provide answers to requests for information about technical regulations, standards and rules for product certification

(g) notify the GATT Secretariat of significant changes to standards, technical rules or certification requirements which may impact upon international trade

To summarize succinctly, the Standards Code enforces two key international trade concepts; "national treatment" and "transparency". First, the national signatories to the Code must not discriminate between domestic and foreign goods or suppliers, within the standards and certification processes. The treatment accorded to their nationals shall be accorded to foreigners. Second, the technical and procedural 'rules of the game' within each country shall be made available to enquiring signatories, and any significant changes shall be "notified" in a timely basis.

It is important to review what the Standards Code does not require of its signatories, so that its potential impact upon international trade can be appreciated:

(a) it does not require that new technical standards and other requirements be identical, or even comparable, to those within the signatory administrations

(b) it does not directly affect existing standards, technical rules or procedures

(c) the Code does not require that domestic standards systems recognize the tests, test data or product certifications of the signatory countries

(d) it does not address the accreditation of testing facilities or the approval of bodies performing inspections and registration of private quality assurance systems[24]

To date, of the 96 nations which have signed the principal GATT agreement, only 39 have signed the Standards Code; and, of those 39, only 29 have implemented the code into domestic law. Significantly, the major international trading nations have signed and implemented the Code - Canada and the U.S.A. among them. Currently, the relevance of GATT provisions to the harmonization of technical radio regulatory matters is due to the incorporation of some GATT provisions into the Canada/U.S. Free Trade Agreement.

4.4 THE FREE TRADE AGREEMENT

Technical standards issues are addressed directly within three chapters of the Free Trade

[24]The next round of GATT negotiations on Technical Barriers to Trade may address this very issue. During the Study Team's consultations with the U.S. Trade Representative's Office (USTR) they revealed an initiative to add two new articles to the Standards Code to ensure that lab accreditation and quality assurance systems do not create an unnecessary obstacle to international trade.

Agreement (FTA) and addressed incidentally within the "national treatment" requirement contained in Article 501 of Chapter 5 of the agreement. While it is important to canvass these provisions for the purposes of this study, it should be appreciated at the outset that the FTA requirements which may impact upon the technical standards-creation or authorization processes for radiocommunication regulation, do not significantly go beyond the current obligations to which Canada and the U.S.A. have agreed within the General Agreement on Tariffs and Trade (GATT) as presented within the previous subsection of this study.

Article 501 of the FTA reaffirms that the two signatories to the Free Trade Agreement shall accord "national treatment" to the goods of the other party in accord with Article III of the GATT. Thus, the two countries may not establish or maintain a domestic law, regulation or other requirement which has the effect of discriminating against the products of the other country. This does not mean that each country must treat the goods of the other contracting party in a manner identical or similar to that which they would be subject in their country of origin. The non-discriminatory treatment guaranteed in Article 501 relates to rules concerning the sale, transportation, distribution, use, taxation or country of origin requirements (of the constituent parts of a product). While the contents of this article do not impact directly upon the current nature or form of technical regulation over radio equipment in either contracting country, one significant aspect of the national treatment requirement is that foreign (off-shore) radio products which are approved for the Canadian or the American market can proceed directly to the

partner county's market without additional testing or certification.

The three chapters of the FTA which contain articles directly relating to technical standards issues are chapters six, seven and twenty. Of these, only the contents of Chapter Six will impact upon the technical regulation of radio equipment.[25] Within this chapter the following provisions are the most relevant to the scope of this study:

- "The Parties affirm their respective rights and obligations under the GATT Agreement on Technical Barriers to Trade" (Art. 602)
- "Neither Party shall maintain or introduce standards-related measures or procedures for product approval that would create unnecessary obstacles to trade..." (Art. 603)
- "To the extent possible, and taking into account international standardization activities, each Party shall make compatible its standards-related measures and procedures for product approval with those of the other Party" (Art. 604 Para. 1) (underlining added)
- "Each Party shall, upon request of the other Party, take such

[25] Generally, Chapter Seven deals with agricultural, food, beverage and related products and, specifically, Article 708 seeks to harmonize technical regulatory requirements and inspection procedures for these products. Article 2008 within Chapter Twenty provides a process for both countries to settle their ongoing dispute concerning Canada Mortgage and Housing Corporation's plywood standards requirements which were preventing the use of certain U.S. manufactured plywood within CMHC construction projects.

reasonable measures as may be available to it to promote the objectives of paragraph 1 (Art. 604 Para. 1) with respect to specific standards-related measures that are developed or maintained by private standards-related organizations within its territory" (Art 604 Para.2)

- "Each Party shall provide for recognition of the accreditation systems for testing facilities, inspection agencies and certification bodies of the other Party" (Art. 605 Para. 1)
- "Each Party shall provide, upon request, a written explanation whenever any of its federal government bodies is unable to accept from bodies located in the territory of the other Party test results that are needed to obtain certification or product approval" (Art. 606)

Of the articles cited above, the obligation contained within Article 604, Paragraph 1 is most essential to the enquiries contained within Section 1 of this study. According to this article both nations are required, to the greatest extent possible (and taking international standards activities into account), to make compatible their standards-related measures and procedures for product approval.[26] The critical phrase "make compatible" is defined within the chapter to mean "the process by which differing standards, technical

[26] "Product approval" is defined within the definitional section of the chapter to mean " a federal government declaration that a set of published criteria has been fulfilled...".

regulations or certification systems of the same scope which have been approved by different standardizing bodies are recognized as being either technically identical or technically equivalent in practice" (underlining added). It should be noted that the phase "harmonize" was not chosen for this article, yet it does appear within an unrelated chapter of the Free Trade Agreement.[27] The distinction may be significant because, the way it is drafted, the compatibility requirement appears to be more of a reciprocal recognition (to the greatest extent possible) requirement, than an obligation to move the technical standards per se toward some acceptable common ground. For these reasons, it is submitted that the current GATT obligations under the Technical Barriers or Standards Code are not extended by the Free Trade Agreement in any meaningful way.

For the purposes of the technical standards covered within Chapter Six of the Free Trade Agreement (radiocommunication standards included), there exists no clear obligation for Canada and the U.S.A. to move their standards and authorization processes toward some mutually acceptable common ground. Instead, technical specifications and rules now existing within each country respectively, should be examined against their counterpart to see which might be regarded by the contracting parties as suitable for reciprocal recognition. Obviously, where significant differences exist between the contents or

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[27] Significantly, Article 708 dealing with agricultural products speaks more forcefully in terms of a requirement "to harmonize their respective technical regulatory requirements and inspection procedures...[and] where harmonization is not feasible, to make equivalent their respective technical regulatory requirements and inspection procedures" (underlining added). From the use of the word "harmonization" within this article, it would seem apparent that for certain purposes within the FTA, harmonization may mean to make identical.

objectives of such standards or processes, it would be difficult to take such reciprocity very far (without reformulating the standards or process rules of one or of both countries). Thus, within the FTA, it is the spirit and not the letter of harmonization which applies to the regulation of radiocommunication equipment.

An identical 'spirit over obligation' approach was negotiated by the framers of the FTA to deal with the acceptance of test data by the respective federal authorities within each country; when such data is submitted from the other country for the purpose of securing a domestic certification or approval. At the most, there is a presumption, rather than a requirement, that test data will be accepted in a reciprocal fashion.

To a great extent, the principal article of the Free Trade Agreement dealing with technical standards should be regarded as a primer for another round of negotiations which will deal with harmonization requirements and reciprocal acceptance of certifications or of the data upon which such authorizations are premised.[28]

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[28] The 'primer' aspect of the Agreement is reinforced by the existence of Article 608 which states that the parties "shall, as may be appropriate to further the objectives of this Chapter, undertake additional negotiations with respect to :

a) making compatible standards-related measures and product approval procedures;
b) accreditation; and
c) acceptance of test data."

4.5 THE EUROPE 1992 INITIATIVE

As noted previously within this study, the European Economic Community's 1992 initiative is critically important to this examination of standards-writing in Canada because there is little doubt that Europe's new approach to technical standards and certification will impact significantly upon these activities in Canada during the 1990's.

The twelve countries[29] of the European Economic Community are working feverishly toward a common objective; the creation of the largest single market in the western world. Their recently accelerated timetable calls for the elimination of all internal (between member states) barriers to the free flow of people, goods, capital and services within the Community by January 1, 1993. At that point, they will commence a new era in trade co-operation and co-ordination with a population in excess of 325 million people and a gross domestic product of almost 5 trillion dollars (Canadian funds). Thus, Canada's second largest trading partner, the EEC, will have a population and GDP which surpasses those of Canada's largest trading partner, the U.S.A.

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[29] The twelve countries which comprise the EEC consist of 4 major economic nations and 8 smaller countries with relatively modest economies. They are respectively, France, Federal Republic of Germany, Italy,, and the United Kingdom; and, Belgium, Denmark, Finland, Greece, Ireland, Luxembourg, Netherlands and Spain.

If the EEC achieves its common market, it will fulfil objectives set over 30 years ago in the 1957 Treaty of Rome. This treaty committed EEC member states to eliminate tariffs between themselves and to create a common external tariff. Despite three decades of effort, little progress was made[30] toward removing technical, or non-tariff, barriers until the 1980's when the pace accelerated dramatically. There were two reasons for this change of pace. The first was a court decision and the second was an EEC statute which amended the Treaty of Rome itself.

First, in 1979 the European Court of Justice rendered the Cassis de Dijon decision. This case held that any product which met the technical requirements set by any one member state, could proceed directly to the markets of the other member countries. Thus, the respective technical standards and certification processes which were often quite different in fact, were not to be treated as different in law[31]. Obviously, this induced the member states to harmonize their technical requirements through a centralized process.

Second, the statutory vehicle for this centralized process was the Single European Act. By amending the Treaty of Rome, it provided the accelerated timetable and a more

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[30] One should not think that no progress was made toward harmonizing technical standards during the early years. For example, in 1973 the Commission issued EC-wide Product Safety requirements and certification rules for electronic equipment as Low Power Directive 73/23/EEC.

[31] At the time, and such is still the case today, the twelve member countries had created very different standards and approval requirements which collectively comprised approximately 100,000 standards and technical regulations.

politically expedient decision-making structure for the Economic Community. The Act adds a new Article 8A to the Treaty which states that:

> "...the Community shall adopt measures with the aim of aggressively establishing the internal market over a period expiring 31 December, 1992..... the internal market shall comprise an area without internal frontiers in which the free movement of goods, persons, and capital is insured..."

A critical change in Commission voting structure was contained within Article 100A of the new Act. It provided that a "qualified majority" of votes would be used instead of the unanimity requirement which previously had permitted hesitant member countries to veto any harmonization efforts.

Both of these developments have led to what is being termed a "new approach" to standards-making for the Community. While it is beyond the purview of this study to discuss this approach in detail, it should be noted that technical regulations and authorization processes related to telecommunication services and equipment have been selected for early treatment because of the perceived importance of the telecommunication sector of the European macro economy. In this particular harmonization exercise, the 12 EEC nations have been joined by the 14 other CEPT countries. The implications of these developments for Canada are now being studied within the DOC.

MANDATORY RADIO STANDARDS IN CANADA
SECTION V - REGULATORY IMPLICATIONS OF HARMONIZATION

5.1 INTRODUCTION

In order to assess the potential for Canada and the U.S.A. to harmonize their technical standards, specifications and equipment authorization rules, it is necessary for one to get a sense of both the extent of the differences between the two systems, and the reasons for those differences. The short answer is that frequently Canada and the U.S.A. have quite different technical requirements and authorization rules for a number of reasons which have historical, philosophical, and legislative explanations. Obviously, some of the explanations are general while others are quite specific. This section of the report will explain these differences in terms of the historical and regulatory factors which appear to be relevant when addressing the potential for further harmonization of Canadian and American technical standards, specifications and equipment authorization rules.

5.2 GENERAL, HISTORICAL, OPERATIONAL AND LEGISLATIVE DIFFERENCES

5.2.1 Historical Overview-Canada

Radio equipment has been authorized for use in Canada for almost 90 years. The first two radio devices were approved by the federal public works department in 1901 and put into service in 1902. During 50 of those 90 years the principal legislative instrument to manage public and private access to and use of the radio spectrum was the Radio Act

of 1938 (as amended)[32]. This legislation put a particular "face" on spectrum regulation in this county which is still very apparent today. This, despite the passage of extensive amendments to the former statute through the Radiocommunication Act[33] (proclaimed into law October 5, 1989)

The Radio Act was amended very infrequently over its term of service. There were relatively few legal challenges to the provisions contained within the statue, or to the exercise of authority under them. The principal legislative activity in the statute was control over the technical parameters[34] of licensed radio stations. This control was premised upon a broadly couched, executive (ministerial) discretion to grant, deny and amend radio station licenses, and to impose licensing terms and conditions as appropriate. Installing or operating radio apparatus without an authorization (or a specific exemption) was subject to prosecution. To summarize, the statute provided broadly couched, discretion-based regulation of a technical nature.

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[32] The first radio regulatory legislation in Canada was the Wireless Radiotelegraph Act which was proclaimed into law in 1905.

[33] As will be discussed, the amendments to the Radio Act were so extensive that only a few provisions of the old act were not affected by passage of the Radiocommunication Act. Despite these changes, the old "face" of spectrum management remains because while over one half of the new provisions are authority to make subordinate legislation or rules, due to the short passage of time, little legislative action has been taken to date. The former Radio Act was the enabling authority for all of the extant subordinate legislation (regulations and schedules) and technical documents in Canada.

[34] Technical parameters such as radio frequencies, bandwidth, emission type and quality, power and direction of signal and, antenna type, height and location.

Historically, the two principal Canadian regulators of the spectrum, the Department of Transport and the Department of Communications, were staffed with engineers, specialized technicians and clerical resources. The chief concern of these regulators was controlling radio stations and systems so that they would operate in the most spectrum efficient manner. The primary mission of these staff members was service delivery, and almost every request for spectrum or equipment authorization was accommodated in one way or another.

These engineers and specialized technicians, in direct consultation with industry representatives, wrote most of the required technical regulations and standards, and supporting documentation without extensive legal assistance[35]. When creating technical standards or procedural rules, there were few formal legal requirements for rulemaking[36], and those mandated for the creation of federal regulations were often avoided by following the alternative course of creating casual technical documents which

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[35] Until quite recently, Legal Service Departments in the federal government were quite modest in size and tended to function as providers of legal advice when the department was faced with a prosecution or other traditional legal problem. Operational policy was rarely provided (or sought).

[36] In 1972, the Statutory Instruments Act replaced the federal Regulations Act (1950), and created a two step regulation approval process for which the Standing Committee on Statutory Instruments provided parliamentary oversight. Not until 1986 did there exist comprehensive regulation and rulemaking policies and requirements. But, even the current requirements are of questionable application when a department is attempting to create 'rules' which are not part of a legal regulation or schedule. Despite this lack of formal requirements, the Department of Communications does have an impressive history of consultation through pre-publication of many of its technical standards or specifications in advance of their adoption as policy.

had no independent legal status. Currently, there exist four separate sets of radio regulations[37] and approximately 188 technical telecommunication documents[38]. The majority of these documents do not have the status of law.

The legacy of the history, legislation and rulemaking requirements described immediately above is that the Department of Communications has evolved into a world leader in the technical, administrative and computer-assisted aspects of radio frequency spectrum management with a proud history of service delivery[39]. But, many of its technical standards and authorization policies are premised upon subordinate legislation and rules which will not readily accommodate a mandate of technical harmonization with the current counterpart to those standards and policies in the United States. (These problems will be discussed following a comparative review of the history, legislation and rulemaking requirements for the United States. See Section 5.3.1).

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[37] These sets of subordinate legislation are: the General Radio Regulations, Part I, the General Radio Regulations, Part II, the Radio Interference Regulations and the Radio Operator Certificate Regulations.

[38] Over time the Department of Communications has developed about ten different types of technical policy and guidance documents called policies, procedures, standards, rules, specifications, equipment lists, system plans, manuals, bulletins and circulars.

[39] As noted elsewhere within this study, the opinions obtained from Canadian and American regulators and industry representatives during the interviews conducted by the study team confirmed that spectrum management in Canada is highly respected at home and abroad.

5.2.2 Historical Overview-U.S.A.

Radio (wireless) stations were established in the United States a few years in advance of their introduction into Canada. In 1899 the United States Army established a wireless station on a light ship off of Fire Island, New York. By 1901, the U.S. Navy had adopted a wireless system and by 1904 twenty Navy coast stations had been established and ten more were in the process of being installed. Despite this early lead in the introduction of radio, Canada's first radio legislation in 1905, pre-dated America's first statute by five years[40].

The statute of primary concern to this study is the Communications Act of 1934. It abolished the Federal Radio Commission established by the former legislation and replaced this body with the Federal Communications Commission (FCC). It is important to note that the mandate of the new Commission extended far beyond the technical tasks of the Canadian regulator. The FCC has been given a comprehensive jurisdiction over the use of the radio spectrum and over telecommunications[41] falling within the constitutional competence and reach of the federal government, excepting the spectrum

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[40] Congress passed the Wireless Ship Act in 1910, followed by the Radio Act of 1912 and then the Radio Act of 1927.

[41] President Roosevelt wanted all wire and wireless communications to be regulated by a single body. The Communications Act of 1934 'collected' federal (interstate and foreign) jurisdiction over telegraphs and telephones from the Department of State, the Post Office and the Interstate Commerce Commission and vested it in the FCC.

management responsibilities over the ferderal government's use of the spectrum which was assigned eventually to the National Telecommunications and Information Administration (NTIA).

On the radio regulatory side, according to the original 1934 statute, the chief mandate of the FCC was "regulating interstate and foreign commerce in communication by wire and radio so as to make available, so far as possible, to all the people of the United States a rapid, efficient, nationwide, and worldwide wire and radio communication service with adequate facilities at reasonable charges...the national defence.....promoting safety of life and property through the use of wire and radio communication..." This differs significantly from the narrow technical objectives carried for 50 years within the Canadian Radio Act.[42]

5.2.3 Regulatory Comparison

The Communication Act of 1934 (as amended) has been the principal legislative foundation for managing the radio spectrum and for authorizing all radiocommunication

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[42] While no one passage from the Radio Act can be cited for comparative purposes, it is useful to draw from various provisions which make the point. For example, the Act used to state that " The Minister may... issue, [licences in respect of radio stations and radio apparatus] for such terms and subject to such conditions as the Minister considers appropriate for ensuring the orderly development and operation of radiocommunications in Canada. Amendments in the mid 1970's, broadened the technical objectives of the Minister so as to encourage " the development and more efficient operation of radiocommunication facilities...for the purpose of increasing their usefulness and availability in the public interest". (Quotations from sections 5(1) and 9(2) of the 1985 consolidation of the former Act.)

equipment, other than equipment used by the various emanations of the federal government, for the past 56 years. This statute and a number of historical and philosophical regulatory differences have put a very different 'face' on radio regulation when compared to its Canadian counterpart.

First, while the chief means of authorizing access to the radio spectrum has been through licensing schemes; the nature, management and factors for consideration of licensing often bear little resemblance to those in Canada. As an initial point of departure, the FCC tends to authorize uses of the spectrum through service designations, Canada regulates users of the spectrum. The American approach offers more regulatory flexibility for such things as inter-mixing user types, system-based licensing and authorizing licence-exempt equipment. In addition to this flexibility, their legislation permits certain stated licensing rules and criteria to be suspended if private users come to a contractual arrangement between themselves as to how interference matters are to be handled. Such agreements are permitted when spectrum efficiency or FCC resource saving will result.

The FCC has privatized licensing activity in other important ways. For example, for the most congested of all radio services, the land mobile service, the FCC incorporates user-based coordination committees[43] to do much of the frequency assignment. Canada has

[43] It is the Private Radio Bureau which has privatized licensing in this fashion. The private coordinators are industry organizations such as the Special Industrial Radio Service

no official equivalent to private coordinators except that certain satellite users often do significant advance EMC[44] work before processing their licence application[45]. In Canada the act of issuing licences is done from field offices using a centralized computer system which incorporates interference assessment and protection criteria (EMC analysis) within a sophisticated software program. The FCC has centralized much of its licensing without an similar automated program to assist with the EMC work.[46] Centralization of licensing is possible in the U.S. because much of the EMC work is done by the private sector[47]

Association (SIRSA) which levy a charge directly to the user of the service. The technical staff of such committees can be up to 30 members. This private activity leaves the FCC with little more than the licensing paperwork to do from the central location in Gettysburg, Pa.

[44] EMC stands for electromagnetic compatibility.

[45] Canadian officials are hoping to increase the amount of pre-licence coordination by private users of the spectrum. To that end, the new Radiocommunication Act contains a provision which attempts to render basic technical licensing details as public information so that applicants can obtain the technical data of the existing licensees with which they will have to coordinate.

[46] The U.S. cannot emulate the Canadian software because its approach to spectrum management is much more fragmented than in this country, and because Canada relies on specific equipment receiver standards and specifications in order to maximize use of the spectrum available. For the most part, the FCC does not set receiver standards, but when making frequency allocations and assignments the Commission does expect and assume that minimum receiver performance characteristics will be present in the field. Such assumption may well lead to poor field performance by equipment with low receiver qualities. Considering the rule-based nature of U.S. radio regulation, one may wonder if this approach is lawful.

[47] It deserves note that in America a certain amount of local coordination is performed by the dealers and distributors of radio equipment. The private sector plays no such function in Canada.

From the comparative material related to licensing activity one can readily appreciate one reason why Canadian spectrum management can be designated as service-based, while in the U.S.A. it may be aptly termed management-based. This assessment is borne out in the comparative statistics of the respective numbers and functions of staff associated with spectrum management in each country. In Canada, the regulator selects the frequency, does the coordination and responds directly to resolve interference problems. A functional resource allocation exercise performed in the mid 1980's revealed that there were approximately 900 person years[48] dedicated to spectrum management work. Approximately 250 PY's were assigned to headquarters (Ottawa) and 650 PY's were designated to the department's five regions. About 70 of these 650 PY's were identified as part of a deliberate objective to decentralize certain policy, regulatory and technical functions to produce a strong regional presence[49].

Figures obtained for the FCC five years ago reveal the following comparison[50]. Of a

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[48] The statistics below are from a Department of Communications internal memo written from de Montigny Marchand to Assistant Deputy Minister Robert Gordon, dated January 31, 1985. While the both the DOC and the FCC will have suffered staff cuts over the past five years the figures are very useful. It should be noted that in Canada, the Canadian Radio-television and Telecommunication Commission has a small number of technical staff assigned to assess the spectrum management aspects of broadcasting licence applications.

[49] Whether for reasons of history, geography, or cultural and linguistic duality; regional presence and regional service-delivery are prominent characteristics of the structures and operations of most federal government departments.

[50] It must be stressed that these figures, while useful, are quite dated and rough approximations at best. The FCC has suffered great staff cuts recently due to falling into disfavour with Congress through the second half of this decade. Most of the figures offered should be reduced by 10% to reflect these staff reductions. Also, it should be noted that

total staff of 1953, 1140 were related to spectrum management functions, with 380 of these positions assigned to the Commission's 38 field offices. The NTIA, as of five years ago, had approximately 140 persons designated for spectrum management functions. On a per capita basis, even accepting that licensing is not handled by field personnel at the FCC, the regional service and regional presence in Canada stands as a dramatic contrast to the staffing arrangements in the U.S.A.[51] This country's current resource deployment has many implications for future efforts to reorient DOC regulation toward that at the FCC. Since it is unlikely that the Department of Communications could persuade the FCC to further regionalize its operations, the DOC may have to centralize certain of its functions or sevices to find additional resources to allocate to some of the policy formulation, rulemaking and enforcement activities which will be the inevitable result of Canada/U.S.A. technical harmonization. (see Conclusions, Section 8.1)

When one goes beyond a contrast of personnel numbers, to compare actual job functions,

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FCC staff often perform a mix of functions or functions which do not have an identical Canadian counterpart.

[51] It is acknowledged that a Canada/U.S.A. per capita comparison has definite limitations when contrasting resource allocations for an activity like spectrum management. First, a number of the functions which must be performed are not population-sensitive. For example, certain expertise will be required whether there are a large or small number of users of some categories of radio service. Second, an important spectrum management function, international coordination, requires a strong regional presence across this nation because 90% of the Canadian population lives within 100 miles of the American border. Thus, almost all frequency assignments require coordination with U.S. government officials. Comparatively, a very modest percentage of American assignments require coordination with a foreign government agency. International protocol would not permit such coordination to occur at the user level.

the distinctions between radio regulation within the two countries becomes even more pronounced. Unlike Canada, mandatory rulemaking requirements in the United States are more extensive and resource intensive, and these requirements have a much longer history. The Administrative Procedure Act in the U.S.A. was first proclaimed in 1946. Today, this statute continues to create extensive rights for the private sector to participate directly in the making of any regulation, rule, standard, specification or policy which will have the status of law (must be complied with to avoid a government penalty or to enjoy a state benefit).

The rulemaking requirements of the Administrative Procedure Act, coupled with the American constitutional notion of the 'rule of law'[52] and the litigious nature of the American populous; have combined to create a unique form of radio regulation which requires many laws and many lawyers to administer. Consequently, at the FCC approximately 15% of the gross budget and 300 PY's can be attributed to rulemaking responsibilities[53]. Also, it has been estimated that 25-30% of all FCC staff have a law degree. In contrast, while Canadian regulatory provisions are discretion-based, U.S.

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[52] The 'rule of law' is a constitutional law principle which demands, amongst other things, that the populous be governed by clear laws of direct application instead of general policies or broad discretions. While the rule is recognized in Canadian constitutional law and is cited within the preamble to the Charter of Rights and Freedoms, it has not had a comparable impact upon the form or content of legal rules.

[53] These figures were obtained from a personal interview with H. Walker Fester III; Deputy Chief, Management Planning and Program Evaluation, FCC on September 1, 1989.

regulations are rule-based[54]. Their regulations are both extensive and explicit. While a count of pages approach only gives a sense of the extent of legal rules which the FCC must apply, it is startling to Canadians to note that the combined regulations for wire and wireless communications require 2500 (double column, English only) pages set out in five volumes[55]. Due to the restrictions of the Administrative Procedure Act, the FCC cannot lessen the extent of its regulations through means of incorporating by reference other rules, standards or specifications which have not gone through the complete rulemaking process[56].

Contrast of the technical or engineering aspects of the regulatory process in each country continues to demonstrate that those who undertake spectrum management responsibilities

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[54] The rule-based nature of U.S. radio regulation has a long history. In part it stems from two legal cases decided in the 1920's. In Hoover v. Intercity Radio, 286 Fed. 1003 (1923) the Columbia District Court of Appeals decided that the American Radio Act of 1912 did not permit the Secretary of Commerce to exercise any discretion as to whether a licence would be issued, only with respect to the frequency to be assigned (regardless of interference caused). In 1926 the Department of Commerce attempted to prosecute the Zenith Corporation for operating on a frequency other than one assigned. The District Court of Illinois held that Commerce Secretary's power to control frequency assignments was too discretion-based to be lawful. See: United States v. Zenith Radio Corporation 12 Fed. 2nd 614 (1926)

[55] Title 47 of the Code of Federal Regulations (CFR) has approximately 1215 pages divided between five volumes and 100 subparts. It is reissued annually in its entirety. Added to this total of pages of text is the 240 pages (approx.) of rules set out in the NTIA Manual of Regulations and Procedures for Federal Radio Frequency Management created pursuant to Executive Order 12046 of March 26, 1978.

[56] Incorporation by reference can only be done for policies which have no binding effect. An example of such a policy would be the reference to test methodology MP 4 recommended in the digital apparatus rules within Part 15 of the CFR.

above and below the 49th parallel often perform different functions. In Canada spectrum engineers are much more involved actively in the initiation, formulation and drafting of technical standards and other specifications than in the U.S.A. As the study team was reminded repeatedly during the course of interviews while in Washington, American radio standards are developed in a pluralistic fashion. By this our interviewees meant that radio equipment industry or user groups petition the FCC to go into a rulemaking mode, they submit a very mature draft of a technical standard or specification for scrutiny by any one interested the issue at hand, and then the FCC will fashion a proposed standard or spec. for public comment. Following a comment assessment period, the FCC will take whatever action appears appropriate (ie. ratify the proposed standard or spec. or decide that ratification of the technical proposal is premature, unwanted, unnecessary or inadequate)[57]. Thus, within the FCC's supervision, those most affected by, or most interested in, the matter usually will have their wishes respected.

During the interview between the study team and representatives with the FCC's Office of Engineering and Technology, OET representatives stressed their philosophy that standards would be made mandatory only when necessary. Until that point is reached[58]

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[57] The provisions of the Administrative Procedure Act apply to the standards creation process.

[58] Specifically cited by OET representatives as an illustrative example of when the FCC was moved to make mandatory standards, when it would have preferred to leave the interference problems to the private sector to work out, was the fact that the FCC created standards on cordless telephones in response to a number of serious interference and misperformance problems.

the Commission will encourage the creation of and adherence to voluntary standards created by industry technical committees[59].

The standards activities and policies of the NTIA can be distinguished from those of the FCC with the following explanations. First, the NTIA creates standards for federal government systems, as opposed to those deemed necessary for public/commercial systems[60]. Second, NTIA standards tend to be (purely) technical and hardware oriented in contradistinction to FCC standards which have the additional characteristic of being regulatory or operational[61]. Third, NTIA radio equipment standards do specify receiver performance characteristics. For the most part, the FCC regards receiver performance

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[59] The presumption that U.S. federal agencies should rely on privately created, voluntary standards is a long held philosophy which was expressly restated within a number of Office of Management and Budget circulars issued during the Reagan era. See for example: OMB Circular A-119, "Federal Participation in the Development and Use of Voluntary Standards" October 26, 1982. This standard was viewed as explicit support of a policy of reliance on the private sector to supply government needs for goods and services (privatization). Such policies are seen as having particular relevance to telecommunications regulation due to concerted federal government efforts to deregulate this sector of the economy.

[60] The FCC is responsible also for regulating state and municipal radio systems and the equipment they use.

[61] This comparison was supplied by NTIA representatives when interviewed by the study team in Washington on January 4, 1990. The NTIA collaborates with an interdepartmental committee consisting of federal government users of the radio spectrum. The committee is called the Interdepartmental Radio Advisory Committee. At the point of writing this study the NTIA had just concluded an Inquiry intended to open for public comment all aspects of spectrum management in the U.S.A. The comment period closed on February 23, 1990 and it is expected that an NTIA response to comments will be released in September 1990. It also bears noting that the National Institute of Standards and Technology will commence a public hearing on U.S. participation in international standardization, certification, quality assurance schemes and testing activities on April 3, 1990. (See: Section 3.3.2)

as an operational selection factor for the private consumer[62].

In Canada, the technical engineering branch of the Department of Communication has maintained a long-followed tradition of 'Canadianizing' international base standards for marine and aeronautical use. For a significant number of other service areas, Canadian standards have been 'internationalized' for global use. Typically, these Canadian standards contain technical specifications which are not present in the comparable U.S. standard. A significant number of Canada's technical specifications would be viewed by the FCC as performance characteristics best regarded as consumer selectivity factors. During consultations with Canadian interviewees, it was admitted that our domestic radio industry had played a strong role in ensuring that our technical standards were of strong engineering integrity. Interviewees above and below our border acknowledged that Canada's technical standards permit a more efficient use of the radio spectrum, and that Canada's technical requirements were consistent with those of most of the other developed nations of the world.

To a great extent, it is this nation's receiver standards which supply the technical parameters for the computer software for the automated frequency assignment system.

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[62] While interviewed, OET representatives reaffirmed their long standing desire to leave receiver performance factors to the market place. This position is supported legislatively through Communication Act of 1934 which specifically enables regulation of electromagnetic emissions of radio devices but is silent on receptivity characteristics. A specific, limited amendment was created to permit receiver standards to be created for domestic televisions.

What is not clear is whether it is necessary to mandate broad technical parameters and to require adherence to receiver standards[63]. Generally, such matters are issues of regulatory philosophy.

The history of Canadian regulation of the private sector, in general, tells a tale of protection of both domestic consumers of products (the users) and domestic manufacturers from risk (physical and fiscal), and of extensive service delivery. It would appear that radio regulation merely falls within a nation-wide pattern. The key question for spectrum managers for the 1990's is whether this pattern is appropriate in a period of global trade, cost recovery and government cut backs.[64]

5.3 SPECIFIC LEGISLATIVE ISSUES

5.3.1 Existing Legislative Impediments

As the preceding subsection has identified, there are a number of general historical, philosophical and legislative implications which must be appreciated when contemplating the potential for harmonization of Canadian and American standards, technical

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[63] Receiver standards need not be mandatory to be used within the computer program. The OET representatives of the FCC and of the PRB (Private Radio Bureau) stressed that they employ receiver standards when setting other technical parameters (ie. they make rather specific technical assumptions about reasonable receiver performance capability when they plan the frequency, power or distance between other radio systems).

[64] During recent executive briefing sessions regarding such cut backs it was admitted to senior managers that it unrealistic to keep asking them to 'do more with less' and that they must adjust to 'do less with less'.

specifications and equipment authorization rules. In this subsection of the study an attempt will be made to identify some of the specific legislative issues which likely will complicate such a harmonization effort. Principally, attention will be addressed to existing problems with Canada's four sets of radio regulations and the legal status of the 188 (or so) technical documents used by the Department of Communications to manage telecommunications. Where appropriate, enabling authority within the recently proclaimed Radiocommunication Act, which might be used to respond to the problems identified, will be discussed.

On October 5, 1989 the new Radiocommunication Act was proclaimed into law. Up until that moment, all of the technical regulations, standards, rules, specifications, procedures, equipment lists and system plans which DOC currently relies upon to manage use of the radio spectrum and to authorize radiocommunication equipment had been created under the former Radio Act (a very dated statute with very limited enabling authority). The essential point is that the new legislation did not change the scope or content of these technical documents, and proclamation of the new act did not likely improve the legal status of the extant subordinate material. What this means is that standards, specifications and authorization rules which where not legally authorized by the former act, did not obtain a valid status just because the new act expressly authorizes the creation of such requirements[65].

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[65] The answer to this question lies within the court's current approach to the repeal and substitution doctrine. Section 44 of the federal Interpretation Act reads as if former

This study now will address some of the specific policy, legislative and compliance-based problems which the Department of Communications would have to respond to if DOC were to harmonize its standards, specifications and authorization rules with those in the U.S.A. These problems are as follows:

(a) due to a lack of proper enabling authority required when the majority of DOC's technical standards, specifications and authorization rules were created; the legal enforceability of most of Canada's technical requirements is very questionable[66]

(b) due to the manner in which they are drafted, the majority of DOC's existing technical regulatory provisions and policies

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subordinate legislative material is reissued (or reproclaimed) under the new act when one statute is repealed and another is proclaimed in its place. The problem is that court cases suggest that the subordinate material continues in force.

[66] The former Radio Act contained certain enabling provisions to authorize the creation of technical requirements for broadcasting matters but not for other radio services or equipment types. Technical requirements other than for broadcasting matters would have to be referenced within the licence itself and be enforced as a term or condition of a licence. The legal enforceability of technical matters has not been a troubling issue in the past because the Department rarely has prosecuted violators of technical rules. A cursory review of the department's history of prosecution revealed that over the past twenty years only one prosecution had been brought related directly to technical regulatory matters and DOC lost the case due to the lack of specific authority to require compliance with labelling and type-approval rules. In the case of R. v. Four Seasons Marine Mobile Electronics Ltd. and Jack Sedlack, decided in the Provincial Court of British Columbia on November 30, 1982 by Judge K.A.P.D. Smith (unreported), the Department attempted to prosecute a corporation and individual for the unauthorized use of an equipment certification and label registered with another company. Judge Smith held that Section 16 of GRR Part II would not support such a prosecution because it did not specify that approval and labels are specific to companies (or individuals), as well as to equipment.

cannot be re-proclaimed under the new enabling authority of the Radiocommunication Act without being substantially rewritten[67]

(c) the enabling authority set out within the Radiocommunication Act for managing technical spectrum matters employs terminology and a hierarchy of document types which differ from those in use today[68]

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[67] As discussed previously within this study, almost all of Canada's radio regulatory provisions were drafted by engineers and other specialized technicians some time ago without extensive legal assistance. Also, these technical rules were drafted in English and then translated into French. Unfortunately, neither the existing regulations nor the subordinate technical documents would meet the rigour of a legal challenge of today's standards. Courts recently have increased the nature and scope of their legal scrutiny over all regulatory material which departments attempt to enforce on the populous. The quality of the French versions of these rules is a legal issue because the quality of the translated versions of the technical regulations and documents is not good. This is significant legally because, at law, each version is equally authoritative. This means that a violator cannot be prosecuted under the English version of a rule, if the French version of the same rule does not have sufficient legal integrity to support the prosecution.

[68] As drafted under the former Radio Act, the regulations which enable the technical management of the radio spectrum pose a number of technical policy limitations which could be overcome once the enabling authority in the Radiocommunciation Act is used to create subordinate rules and documents to address the full range of issues which the Engineering Programs Branch will be called upon to address this decade. For example, the current statutory framework for exempting radio equipment from licensing is too limiting and resource intensive for DGEP's purposes. Specific exemptions based upon field strength is particularly unworkable today. The FCC's recent rewrite of its rules for Part 15 devices has authorized (without licensing) many new forms of consumer wireless devices which certainly will be desired by Canadian consumers. Such devices will become part of the Canadian consumer market whether DOC accommodates them or not. The differing terminology problem is a serious one. The bulk of the regulations are written as if the department is still attempting to control the technical aspects of radio by station. Most international regulation (including the in the U.S.A.) is performed, or soon will be performed, by service.

(d) DOC's current legislative schemes for exempting equipment from licensing and for authorizing equipment for market through the current type-acceptance and type-approval regimes do not accommodate sufficiently rapid commercialization (from concept to market) of many of the new wireless electronic products which the public will demand this decade[69] This delay has been caused by legislative, as opposed to technical problems.

(e) currently, the department's jurisdiction to control the manufacture and importation of electronic equipment related to use of the radio spectrum is limited to non-radio equipment which has the potential to interfere with radiocommunications. Therefore, regulation of the technical aspects of radio equipment is only through the licensing process, or at the point when it is to be installed or operated. Control over the importation, manufacture and sale of radio equipment would be critical to the feasibility of harmonized

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[69] As mentioned in the previous footnote, the current scheme for exempting radio equipment from licensing requirements is too inflexible and resource intensive. In some cases, the department has refused to consider the authorization of certain equipment because it could not be accommodated readily within the existing regime. Also, the department should consider drafting new authorization schemes which permit the flexibility and rapid commercialization which the "verification" and "notification" schemes of the FCC accommodate. The enabling authority contained within the Radiocommunication Act will support the creation of such flexible schemes.

standards, specifications or authorization processes with those in the U.S.A.[70]

(f) historically in Canada, the principal means available to secure compliance with technical requirements has been through prosecution in our provincial courts. Such prosecution has proved to be politically unpopular, very resource intensive[71] and not cost effective. The FCC, on the other hand, has been able to issue administrative fines through a flexible and cost effective "ticketing scheme" for some time.

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[70] A fully harmonized authorization scheme permits reciprocal acceptance of certifications and other authorizations. Such a regional trade zone would not be acceptable to the U.S.A. if we did not control domestic manufacturers and our own borders. This matter is discussed more fully as one of the practical implications of harmonization. (see Section 6.3)

[71] By DOC's own internal calculations, the resource cost per prosecution has been quite high. The department's (modest) estimate suggests that one quarter of a person year (PY) is consumed for each prosecution commenced.

5.3.2 Enabling Authority Possibilities

The legislative impediments to technical harmonization described immediately above need not represent a permanent bar to future action. With proclamation of the Radiocommunication Act, a number of legislative and policy options were opened to DOC which would facilitate the harmonization of technical regulation of radio services and equipment. What follows is a encapsulation of some of the most relevant provisions of the new statute. It should be stressed that these provisions represent enabling authority only. Putting legislative 'flesh upon the bones' of these skeletal provisions could be accomplished only in the context of a substantial regulations (re)writing project[72]. The existing regulations and technical documents dealing with control of the technical aspects of spectrum management should be recast and redrafted at the earliest opportunity[73]. The relevant enabling powers within the Radiocommunication Act are as follows:

(a) Section 4 of the Act sets up a presumption that, from the point of installation onward, all radio equipment in Canada is subject to a radio authorization process unless it is

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[72] It should be noted that the Radio Regulatory, Policy and Planning Directorate (DRP) within DOC has been working since last fall to secure resources for a sizable regulations project to implement the powers and possibilities contained within the new Act.

[73] The need to undertake this project is not premised alone upon the harmonization possibilities it would present. To the extent that the Department of Communications wants any technical requirement to be enforceable legally, it must rewrite the existing rules and processes so that they will be in compliance with current drafting standards.

specifically exempted from it. It is an offence to "install, operate or possess" radio apparatus except in accordance with a valid authorization. "Radio authorization" means a licence, certificate or authorization issued by the Minister". Under section 5 of the statute, the Minister may issue 5 types of authorizations in the form of radio licences, broadcasting certificates (the former TC&OC), radio operator certificates, technical acceptance certificates, and authorizations created by the Minister as needed for radiocommunication purposes.

(b) this legislation sets up a new hierachy of control over the technical aspects of radio equipment. It envisages that technical requirements will be mandated: as terms and conditions referenced within radio licences or broadcasting certificates; as a part of a specific technical acceptance certificate (TAC) program[74]; as part of technical standards which must be met as a condition of being exempt from a specific radio authorization process or scheme[75]; and, to the

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[74] Such a TAC program could by a type-acceptance or type-approval system, or through some very different authorization scheme. The key point is that it is anticipated that some form of authorization may be required as a precondition to manufacturing, importing, distributing, offering for sale or selling the equipment subject to the scheme.

[75] Subsection 6(1)(m) empowers the Governor in Council to make regulations prescribing the qualifications for exemption from an authorization process. It is these provision in concert with section 4(1)(a), and section 4(3) in conjunction with s.6(1)(m)

extent that the equipment is not about to be installed, operated or possessed[76], as subject to specific technical standards as set by the Governor in Council pursuant to section 6(1)(a) of the Act. The Minister's power to create technical requirements or standards pursuant to section 5(1)(d) of the statute must be referenced into some authorization scheme to be legally enforceable. This section was drafted this way to permit the Minister to create precatory or recommendatory technical requirements[77].

(c) The new Act provides express authority within sections 4(2), 4(3) and 6(1)(i) to control the manufacture, importation, distribution, lease, offering for sale or sale of radio apparatus, interference-causing equipment and radio sensitive equipment. These provisions should provide ample authority to control imported equipment at all stages in the distribution chain.

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which would permit comprehensive technical control to be exercised over intentional radiators of radio energy in a manner similar to the new Part 15 rules in the U.S.A.

[76] It is likely that "possessed" in this context means possession which relates to the installation or operation of the radio equipment.

[77] The drafting plan was to create legislation which would authorize the Minister to make technical standards and specifications (from an expenditure authorization sense), to create ministerial technical spec's which could be referenced within other authorization schemes and to give some recognition, within the new act, to the existing regulations and standards which may have no independent legal status.

(d) Legislative control over equipment authorization processes for radio apparatus is expressly provided for in the new statute. Sections 6(1)(d)[78] and 6(1)(h) set out regulation making authority sufficient for most types of certification processes. Likely, as part of a specified approval process, laboratory accreditation requirements could be made mandatory through the enabling provision in section 6(1)(h) dealing with the "inspection, testing and approval of radio apparatus, interference-causing equipment and radio-sensitive equipment in relation to technical acceptance certificates".

(e) For compliance purposes the Radiocommunication Act offers a great amount of remedial action to improve enforcement activity. For example, section 5(1)(g) expressly authorizes the Minister to "test radio apparatus for compliance with the technical standards established under this Act." Also, the new legislation provides enabling authorization for court

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[78] Section 6(1)(d) is quite explicit, it states: "[The Governor in Council may make regulations]....prescribing the procedure governing the making of applications for radio authorizations, or any class thereof, including form and manner, and prescribing the processing and disposition of those applications and the issuing of radio authorizations by the Minister..."

injunctions[79] (section 10(1)(4)) and for the establishment of an administrative ticketing scheme (section 12) similar to the system now existing in the U.S.A.)

(f) Section 6(2) of the legislation permits the Department of Communications to incorporate by reference any "classification, standard, procedure, or other specification... as amended from time to time". This section offers rulemaking flexibility which the FCC does not have. It permits the Department to incorporate directly into a regulation, national or international technical standards, specifications or equipment authorization procedures merely by referencing their mandatory application. If the standard is reissued, (updated) the new standard becomes mandatory without necessitating a change to the regulation[80].

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[79] The potential uses of such injunctions has not been explored as yet. Note that the Minister may apply to the courts for an injunction when he/she apprehends that sections 4 or 9 of the act have been or are about to be contravened. Parties who acted in disregard of such injunctions would be in contempt of court. Enforcement by such means would take 'political heat' off of the ministry. And, it is submitted that the department will find it less complex legally to apprehend equipment and bring it before the Federal Court of Canada for disposition, than to apprehend an individual and bring him/her before a provincial court on a prosecution for an alledged breach of federal legislation.

[80] There are some legal caveats which must accompany the written text above. The use of such an incorporation by reference power is quite novel. To be valid the standard, specification or procedure referred to would have to be readily available in Canada in both official languages. Thus, DOC would have to translate U.S. material which was to be incorporated into a domestic regulation. The requirement that the material be available in

As one can readily appreciate, the enabling authority referred to above will permit the Department of Communications to create suitable counterpart legislation, or harmonized versions, to the technical standards, specifications and equipment authorization rules in the U.S.A., should such be the appropriate action to take.

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both languages to be enforceable was supported by a very recent judgement of the Supreme Court of Canada entitled; A.G. Quebec v. Brunet et al. decided by the Supreme Court on February 28, 1990 (unreported). This case concerned the unsuccessful enforcement of an order to return to work following the violation of a collective agreement which was available in one official language only.

MANDATORY RADIO STANDARDS IN CANADA
SECTION VI - PRACTICAL IMPLICATIONS OF HARMONIZATION

6.1 INTRODUCTION

To assess the full implications of a concerted effort to harmonize Canada's technical standards and authorization processes for radio equipment with the standards and processes now existing in the United States, it is important to look beyond the trade and regulatory implications of such a move and describe the practical ramifications of such harmonization. While it is beyond the scope of this study to provide a detailed analysis of the practical implications of harmonization, it is necessary to raise and discuss briefly the most significant practical issues which the DOC can expect to encounter. In some cases, the practical significance of harmonization is as profound as the legal or trade-based considerations.

6.2 FITTING INTO U.S. RULEMAKING

One of the most practical matters to examine concerns the process issues surrounding how government to government harmonization discussions or negotiations might be achieved. During discussions with all interviewees, this process matter was raised for reaction. As explained previously within this study (Section 3.2.4), two scenarios were

suggested to the study team (principal responsibility at the government to government level and chief responsibility between Canadian and American industry associations within a sector of the radio industry (industry to industry)). Both scenarios involve coordinated action between the respective federal governments. What was not noted by the respondents is how such coordinated action might occur within the rulemaking requirements mandated by the U.S. Administrative Procedure Act.

For the rulemaking covered under the terms of this act, all mandatory federal standards, specifications, test methodologies or authorization processes must go through a formal rulemaking process. One important aspect of the legal requirements of the Act is that the final rule must be a product of the submissions made to the rulemaking body. All submissions are part of the public record and ex parte contacts with the rulemaking body, in this case the FCC, are forbidden. Ex parte contacts are discussions or meetings held, or written presentations received, without all interested parties having been given equal access to the rulemaking body. The study team was informed that, on many occasions, FCC staff have regarded this prohibition as one which effectively prevents the government representatives from another country, Canada in this case, from being accorded a status above or separate from all other participants in a particular rulemaking matter. While the rulemaking process was ongoing, these FCC representatives would not discuss the contents of a particular rule with DOC personnel. Thus, Canadian government representatives could either participate before the FCC as a regular party; or, in the alternative, await the conclusion of rulemaking hearings, at which time they

would be presented with a fait accompli to adopt in whole or in part, or to use as a model to create a compatible counterpart. Obviously, such an approach would not treat Canada as a sovereign nation deserving recognition within a process invoving mutual accommodation. Interestingly enough, the provisions of the Administrative Procedure Act does not clearly prohibit government to government negotiation on rule content.

Another practical problem which involves fitting into the current rulemaking processes in the U.S.A. is an attitudinal one. Due to the historic size, value and influence of the American market in radiocommunication equipment, the study team did experience what one U.S. interviewee termed the "egocentric nature" of U.S. industry and federal government personnel. This internal preoccupation with the U.S. market will make it very difficult for foreign, in this case Canadian, industry and government representatives to play a meaningful role within a particular rulemaking process.[81]

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[81] During interviews with a representative of the TIA and with the personnel of the FCC's Office of Engineering and Technology, the study team was explicitly and implicitly told that Canada should feel to adopt U.S. rules and processes once they are developed. Interestingly, a large number of Canadian interviewees expressed trepidation about how any harmonization process could ensure that Canadian perspectives were given appropriate recognition. A recent example of this egocentricity occurred at a meeting of a number of U.S. and international representatives involved in the standards-setting process for telecommunication terminal equipment held in Fredericksburg, Pennsylvania in February of 1990. One of the principal purposes of this meeting was to explore the possibility of creating harmonized terminal interconnection standards with Canada. Unfortunately, Canadian industry and government personnel did not get the feeling that they were participating in a process to explore mutual accommodation.

6.3 ENFORCEMENT ISSUES

If Canada and the U.S.A. should create a regional trading zone through the use of harmonized technical specifications and authorization processes which are accepted in a reciprocal manner, the compliance implications likely would be profound for the DOC, in both policy and resource terms. As a starting point, there is no doubt that the very notion of a regional zone implies that rights and agreements will exist between the nations within the zone which do not extend to those outside of the region. Typically, these rights and agreements will be protected through enforcement actions against domestic users, service providers and manufacturers who do not comply with the rules and through enforcement activities at the border to ensure conformance by foreigners.[82]

If the 49th parallel is to become a more transparent border under Free Trade in general, and in relation to trade in spectrum-related equipment in particular, the U.S.A. will demand that Canada adequately enforce the harmonized technical specifications and processes against non signatory countries at all Canadian points of entry. As noted within Section 5.3.1 of this study, Canada currently does not enforce technical radio rules at the border. Also, if conformance testing and certification done in Canada is to be recognized

[82] Significantly, one item high on the agenda for coordination of the common market within the European Economic Community is the adoption of common enforcement policies to ensure that conformity with EC technical rules and authorization processes will be consistent throughout the regional trade zone. Countries, such as West Germany, which have made extensive efforts to ensure compliance with their technical regulatory schemes, are demanding that all members of the Community prepare to do likewise.

in a reciprocal manner in the U.S.A., the DOC will be expected to pursue enforcement activities more vigorously that it now does[83]. For the DOC, the resource implications of such enforcement requirements go beyond the obvious dedication of resources for the monitoring, investigation, prosecution and other compliance activities involved. It must be remembered that the majority of DOC's technical regulatory rules and processes must be recast[84] within a redrafted set of regulations in order to have the legal integrity sufficient to support enforcement activities.

When considering Canada's enforcement issues related to harmonized technical radio

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[83] As noted previously, within recent history the DOC has undertaken almost no enforcement of its regulatory requirements beyond prosecuting unlicensed operation in a small number of cases each year. While the FCC does enforce its technical rules, it does not expend a great amount of resources prosecuting all cases of non-compliance. The Commission uses its administrative infraction scheme to good use and the prosecutions which it does undertake are selectively chosen and, when these prosecutions are successful, the FCC widely publicises the results. During the course of interviews with U.S. respondents, the study team heard complaints about a general lack of enforcement activity by the FCC. It was submitted that the Commission waits until a particular compliance problem gets so bad that it has no choice but to get tough, and then it prosecutes a number of cases. Proffered examples included recent prosecutions involving CB linear amplifiers, computing devices and cordless telephones.

[84] The existing technical standards and certification rules were not drafted with compliance by prosecution in mind. For example, current certification rules often require that test data be submitted through an engineering brief signed by a professional engineer recognized by a provincial or territorial engineering society. Essentially, as a guarantee of conformity, the rules require only that the engineer's professional stamp be affixed to the brief. No statement of legal responsibility is required of the engineer or of the body seeking the certification; that the data is accurate, that the tested equipment complies with the required technical rules or that other samples of this model will comply with the applicable requirements. In contrast, Part 2 of the FCC rules now designate a "responsible party" who is legally accountable for the conformance of the tested model and for subsequently manufactured or imported models.

rules and processes, one must examine also the practical implications of a decision not to further harmonize our technical regulation of radio equipment. As noted above, Free Trade is making the Canada/U.S. border more transparent than it has been at any other period in our recent history. If harmonization does not occur, the DOC may be faced with a record amount of non-compliant radio equipment in the country.

It is important to recognize that the very nature of radio devices subject to regulation is changing over time. Generally speaking, until quite recently, there was no mass consumer market in radio equipment. This decade will witness the development of a significant number of large consumer markets in unlicensed wireless, personal communication devices (such as cellular telephones (analog and digital) and the next generation of cordless telephones (CT-2)). Additionally, the new operational and technical flexibility associated with Part 15 devices in the U.S.A. will stimulate the development of a number of mass and specialty niche consumer markets in low power wireless devices used for purposes other than personal communication. Wireless devices which prove popular in the U.S.A. will find their way into Canada regardless of the wishes (and efforts) of our spectrum regulator, and regardless of the potential interference problems they may cause if their spectrum use is not coordinated.

An interesting case study of the problems associated with the regulation of a mass market in radio equipment which has technical standards, which differed significantly from those in the U.S.A., can be obtained through study of the history of Canada's technical

regulation of General Radio Service (GRS) equipment. Not many years ago, the DOC tried to insist that a Canadian certification to Canadian standards be obtained prior to the approval of GRS equipment for licensing. Despite the Department's best efforts, a significant amount of American approved equipment got into use in Canada without DOC authorization. Radio consumers did not appreciate why equipment identical or equivalent to (and less expensive than) equipment lawfully marketed in Canada had to be retested and certified, if it had been already approved in the U.S.A. One of the most regrettable outcomes of this compliance problem for the DOC was that the majority of this equipment never was certified for use in Canada and it was used without the Department obtaining the much needed licensing revenue necessary to respond to GRS-based interference complaints. Eventually, DOC decided to regard an FCC CB equipment certification as acceptable for service in Canada.[85]

6.4 SECTORAL ECONOMIC IMPLICATIONS

If the practical economic implications of technical and procedural harmonization of radio equipment are examined sectorally, a number of financial issues must be considered. First, as Canadian (and American) manufacturers of radio equipment proceed through

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[85] It is submitted that the current 'grey market' in unauthorized cellular telephones is causing similar compliance problems for the DOC. This market exists because of the real or perceived transparency of the Canadian/American border and the easy availability of identical or equivalent (and less expensive) cellular phones which have been approved for the American market.

the 1990's, they will face serious problems related to rapid technological innovation, technical complexity, increasing competitive pressures, the spectre of regional trade blocks, rising research and development costs[86], increasing marketing expenses and a quickly evolving regulatory environment. To make a suitable profit in this volatile environment, it is submitted that domestic manufacturers will require a market which is much larger than Canada alone can provide. A regional market approximately the size of the European Economic Community may be needed to justify the costs and risks outlined above. Harmonizing equipment standards and authorization processes with the U.S.A. would provide such a market. Recent statistics from the U.S. Department of Commerce suggest that the total value of a combined Canada/U.S. market in spectrum-

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[86] While none of the interviewees discussed this matter, it is apparent that the digitalization of radiocommunication equipment and standards will have as dramatic an impact upon radiocommunication apparatus and regulation as it has had upon telecommunication equipment and policy. For example, the digitalization of telecommunication equipment has contributed significantly to a sharp increase in research and development costs, principally due to the expense associated with the development of software programs. It is now estimated, for example, that in order to justify the R&D expenses surrounding the development of a new digital switch, one must be prepared to capture 8% of the world digital switch market, just to break even. (This statistic is from a book entitled, Telecommunications in Europe: Free Choice for the User in Europe's 1992 Market, Commission of the European Communities, Brussels: 1988 (at p. 114) DOC itself must consider the impact which the digitalization of radiocommunication technology may have upon their standard-writing activities. For example, will departmental personnel have the expertise to deal with the complexity of such standards? It is anticipated that copyright agreements or other protection will be part of future digital radio standards. The phrase 'telematics' was coined to describe the mix of telecommunication and computer technology, possibly the word 'spectromatics' might aptly recognize the combination of radiocommunication and computer technology.

related equipment in 1990 could exceed 70 billion dollars per year![87] (Canadian funds). Also, the harmonization process itself may provide the stability and predictability (to the regulatory environment) which industry might regard as a necessary precondition to investing in new technologies and markets during uncertain times.

Second, as part of the consideration of the negative impact of harmonization, one must anticipate the possible economic impact upon the operations of branch plants which may be located in Canada solely for the purpose of producing radiocommunication equipment to fulfil the unique technical requirements for the domestic market. Whether such branch plants were American or off-shore owned, a large affiliated plant (located abroad) could respond to the equipment needs of the Canadian market through a short term extension of a production run created to fulfil the market requirements of the U.S.A.

Third, it is important to explore the possible impact upon the private testing and certification facilities located in Canada if an equipment authorization obtained in either in Canada or the United States was accepted in either country in a reciprocal manner. It is quite possible that off-shore, American and Canadian equipment manufacturers

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[87] In 1988, the Department of Commerce estimated that U.S. shipments of spectrum-related equipment exceeded 54 billion dollars (U.S.) The suggested combined market of 70 billion (Canadian) dollars for 1990, was obtained by extrapolating the 1988 market figure to create a 1990 estimate, and by adding a modest amount for the Canadian market contribution, and then the sum was converted to Canadian dollars. It should be appreciated that one half of the total market is from government procurement, and of that percentage, the vast majority of it is is from Department of Defence spending. Defence procurement was excluded from the 'national treatment' provisions of the GATT and the FTA.

might send their radio apparatus to U.S. test houses for testing and approval. Despite the equivalence of the certifications obtained, there may be a psychological propensity to obtain approval in the dominant market. On the other hand, if Canadian testing facilities had a reputation of providing the fastest, most efficient service, this psychological advantage would disappear.

6.5 PROBLEMS WITH THE U.S. DEREGULATORY PHILOSOPHY

In one sense, the most significant harmonization problem is Canada's proximity to a nation with immense economic and technological influence which regulates telecommunication matters with a strong liberalization/privatization philosophy. Radiocommunication standards-creation in Canada has a history of operating with a balance of private and public sector input. This balance has produced technical regulation of the radio spectrum and of radio equipment which is respected domestically and internationally. In the pluralist/liberalized/privatized, regulated markets in America, standards-creation is industry-driven and dominated, and it operates in a decentralized, uncoordinated fashion. Canada may have much to lose. In fact, the U.S.A. must more successfully export its philosophy internationally before most foreign radio regulators will adopt U.S. technical rules or standards, or disregard the differences between regulatory systems, so as to accept American technical standards and the authorizations/ certifications premised upon them in a reciprocal manner. The study team was cautioned, while in the U.S.A., about the futility of making recommendations which

would require the FCC or the NTIA to respond by adding significant burden to their regulatory obligations, or to the regulatory burden of the radio industry or to the users of radio equipment in America. It would seem as if the U.S. regulatory philosophy is not a negotiable item.[88]

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[88] Deregulation and privatization principles even have been an integral part of the FCC's Management by Objectives (MBO) policies for the past few years. Chairmen Fowler and Patrick both listed the following as their first and second MBO objectives:

> "The overriding objective of the Commission, in compliance with our statutory mandate, is to maximize the public interest benefits derived from the United States' communications facilities and services.
>
> In so doing, the Commission will:
>
> 1 Promote, whenever possible, a competitive marketplace for the development and use of communications facilities and services.
>
> 2 Provide a regulatory framework which permits markets for communications services to function effectively, while eliminating regulations which are unnecessary or inimical to the public interest."

MANDATORY RADIO STANDARDS IN CANADA
SECTION VII - OTHER CONSIDERATIONS

7.1 THE IMPORTATION OF RADIO FREQUENCY DEVICES

7.1.1 General

The study team was asked by the Department of Communications to consider and to discuss with industry in Canada the implications of the following FCC Notice of Proposed Rule Making.

The FCC released on August 7, 1989 a Notice of Proposed Rule Making (General Docket No. 89-349) in the matter of "Amendment of the rules concerning the importation of radio frequency devices capable of causing harmful interference." Reply comments were due by October 13, 1989.

The Notice deals with proposed changes to the use of FCC Form 740, "Statement regarding the importation of radio frequency devices capable of causing harmful interference." See Appendix 6. This form is sent to the FCC and must accompany all radio frequency equipment imported to the U.S.A.

The general purpose of the form "is to keep devices which do not comply with our technical requirements from being distributed to the general public, thereby reducing the

potential for harmful interference being caused to authorized radio communications" (Para 2 - Notice of Proposed Rule Making).

The purpose of the proposed rule making is to simplify the paper flow but not eliminate the requirement for Form 740.

7.1.2 Industry Comments

There were two main questions in relation to Form 740 that were discussed with Canadian industry:

(1) Is Canadian industry opposed to the use of Form 740 by the U.S.A.? While no manufacturer wishes to encourage the creation of forms, no respondent to our question was opposed to the use of the Form by the U.S.A. It was generally seen as an expedient way of controlling the importation into a country of radio frequency equipment that might not meet national requirements.

Replies from EEMAC and ITAC (Appendices 3 and 4) reflect this view.

(2) Would a similar form or control in Canada be beneficial? As might be expected, this was not a major issue with the non-manufacturing sector. The general reaction there could perhaps be summed up as "what is sauce for the goose...." It

is also noted that the Marine Committee of the RABC feels strongly (see also section 3.5.2 of this report) that enforcement by the DOC of the use of approved marine equipment is "almost negligible, politically sensitive, inconsistent and slow." They do not appear to be completely satisfied with the current approach by DOC.

From the manufacturing community, the following comments are noted:

EEMAC states (Appendix 3) that "it is important to stop the use of unapproved equipment in Canada so as to prevent destructive interference to authorized users. It is also unfair to suppliers of approved equipments who have to bear the cost of approvals."

"Now that the Radiocommunication Act gives the Minister power to control the importation and sale of unapproved equipment, EEMAC looks forward to seeing a process similar to Form 740 in Canada to stop the equipment at the border."

ITAC has a different point of view and states (Appendix 4) that "we do not consider there would be sufficient benefit to

Canadian based companies to justify implementation of a similar program in Canada."

Further comments on this issue are provided in Section VIII of this report under "Conclusions and Recommendations."

MANDATORY RADIO STANDARDS IN CANADA
SECTION VIII - CONCLUSIONS AND RECOMMENDATIONS

Section II of this report outlined the five major questions, in the broad field of mandatory radio standards in Canada, for which the Department of Communications sought answers.

Section III provided a summary of the views of and many of the individual comments by the 53 private sector and governmental organizations interviewed by the study team.

Sections IV, V and VI raised some of the trade, regulatory and practical implications of harmonization of technical standards and authorizations processes.

Section VII reported the results of consultations related to the FCC's consideration of rules concerning U.S. controls over the importation of radio frequency devices.

This section summarizes the conclusions and recommendations of the study team. They naturally reflect the judgement and are the responsibility of the study team.

8.1 CONCLUSIONS

8.1.1 The Need for Mandatory Standards

(1) Mandatory radio standards (as defined in Section 2.2.2) in Canada are essential to the management of the radio spectrum in Canada. The need for them is not questioned.

(2) The responsibility for the development and approval of mandatory standards must rest with a single authority with

the regulatory power to mandate and enforce the standards. That authority is the federal Department of Communications. There is little or no support for transferring standard making responsibility related to radio to the CSA or any other standards body.

(3) There should be no more mandatory radio standards than those which are essential to:

(a) ensure efficient use of the spectrum

(b) prevent interference to and between radio services and users (third-party harm)

(c) ensure public safety

These are the three criteria against which the need to render a standard mandatory should be judged.

(4) Mandatory standards should not include standards of a quality of performance nature. These are consumer selectivity factors which are best left to the market place to determine and for voluntary standards bodies to develop (with participation by government as required).

(5) Within existing mandatory standards there are technical requirements or features, not related directly to management of the spectrum, which radio equipment manufacturers would prefer to have changed to

"reference" or "voluntary" standards (For examples, see Section 3.1.3 and Appendices 3 and 4).

8.1.2 Harmonization of Standards

(6) The desirability of harmonizing mandatory radio standards with those in the U.S.A. is not questioned.

(7) The most acceptable way of developing these harmonized standards would be through joint CAN/U.S.A. committees, chaired by industry with government representation thereon. Such joint committees should be established on a product or sector basis (eg., cellular mobile).

(8) A standard harmonized by these committees would still require approval by the appropriate regulatory authority (DOC, FCC and NTIA) in each country.

(9) The current rulemaking process mandated by the U.S. Administrative Procedure Act, the interpretation often accorded to the ex parte contact rules in particular, significantly inhibits government to government negotiation (or even discussion) of the contents of proposed technical policies once the formal rulemaking process has commenced. Thus, as this pluralist

rulemaking process now operates in the U.S.A., it makes it almost impossible for the spectrum regulators in each country to harmonize the contents of their respective technical standards and processes through negotiated accommodation.

(10) It is neither desirable nor possible to harmonize all technical standards and specifications. Nor is there a need to harmonize all of the technical parameters within existing mandatory standards. The numerous differences between the extent, nature, process and objectives of spectrum management and radio equipment control in each country would make comprehensive harmonization an undesirable and unworkable goal.

(11) Harmonized technical standards would be most beneficial, to industry government and consumers, if harmonization efforts are concentrated in areas where there soon will emerge a mass market for wireless consumer equipment. Emerging personal communication devices such as future cordless telephones (CT-2), the next generation of paging equipment and digital cellular phones are excellent candidates for harmonized standards. In short, it is economic benefit factors which should determine which

standards are selected for harmonization. There should be clear economic benefits to equipment manufactures, equipment users and to the government regulators involved.

(12) There is a need to consult upon and further study:

(a) how best to establish a joint CAN/U.S.A. process to develop common mandatory standards

(b) the specific products or services for which these harmonized mandatory standards should first be developed

(c) whether there would be any advantages to having common North American rather than common CAN/U.S.A. mandatory standards.

(13) It is essential that the regulatory authorities, the DOC and the FCC, signal clearly to industry that they support technical harmonization. Additional support for harmonization is available from government departments or agencies with trade-based responsibilities. (such as the Dept. of Commerce and USTR in the U.S.A., and the Dept. of External Affairs in Canada).

(14) There should be no room for "unilateral reciprocity" in the development of bilateral standards (Section 3.2.5, item 8). Harmonization should be achieved through a process of mutual accommodation.

(15) The DOC should recognize that, ultimately, a Canada/U.S.A. technical harmonization exercise will impact upon the resource allocation decisions of the Department. The study team suggests that the DOC will be called upon to respond to such things as its lack of formal rulemaking processes, the absence of rule-based technical policies for mandatory standards, its lack of enforceable equipment authorization rules, the absence of subordinate legislation to effectuate control over the country's borders, and its paucity of enforcement activity.

8.1.3 Reciprocity of Testing and Certification

(16) The desirability of having reciprocal recognition of testing and certification by qualified/authorized bodies in each country was not questioned by those interviewed for this study. The impact which reciprocal testing and certification would have upon private laboratories in Canada must be examined and taken into account.

(17) A major stumbling block to the determination of qualified/authorized bodies in the U.S.A. is the lack of a governmental or quasi-governmental body in the U.S.A., such as the Standards Council of Canada, which has the authority to recognize qualified standards writing, testing and certification bodies in the country. A pro-active approach by the Canadian government to the U.S. government to encourage the establishment of a SCUSA (Standards Council of the U.S.A.) or its equivalent would be beneficial to all of Canadian industry (see Section 3.3.2).

(18) The questionable legal status of the equipment authorization process in Canada likely will inhibit reciprocal acceptance of test data agreements, and reciprocity of testing and certification arrangements. (see Sections 5.2 and 5.3)

8.1.4 Privatization of Mandatory Standards

(19) The responsibility for the development of mandatory radio standards should not be privatized. It should stay with the DOC group responsible for the regulatory approval and mandating of the standards.

(20) The current participatory approach by the DOC to the joint government/industry development of mandatory standards is seen as effective and fair by Canadian industry. It is considered by many as a model to be copied by the U.S.A.

(21) The Certification and Engineering Bureau (Clyde Ave.), which is the engineering laboratory and certification arm of the DOC, should be maintained at whatever level is appropriate to ensure:

(a) that there is always a testing and certification facility of last resort in Canada,

(b) that an adequate level of testing and certification knowledge continues to exist in the Government of Canada,

(c) that there is an independent organization in Canada with the capability of auditing other facilities that perform tests against mandatory radio standards,

(d) that a facility is available for those who feel that only a government facility can provide adequate protection of confidential business knowledge, and perform testing and

certification within a secure environment (security clearance).

8.1.5 Improvements to the Current Mandatory Standards Process

(22) In conjunction with other sectors from DOC (International Relations personnel for example) and with representation from the Department of External Affairs; the Engineering Branch of DOC should create, and make public, a comprehensive technical standards policy (with general principles about such things as mandatory requirements, harmonization and the regulation of operational quality unrelated to spectrum efficiency). These general principles should guide the creation of all technical standards and process rules for the foreseeable future. Until such a policy is created, the onus should be on the DOC to justify the inclusion of any performance standard among the mandatory standards. The claim by industry that the standards identified in Section III and Appendices 3 and 4 should be classed as "reference" or "voluntary" requires evaluation by the DOC.

(23) The need for an engineering brief in the testing and certification process and the responsibilities of the

professional engineer related thereto are not clear and appear to be contradictory in RSP 100 and RSP 100, Appendix III. In some cases the rules actually require an engineering brief but informal policy arrangements have waived the brief in circumstances when it seemed sensible to do so. For example, the department will waive the required engineering brief for certain low power devices.

(24) There is a need for a review of the control mechanisms in place in Canada to keep radio frequency devices that do not comply with our mandatory technical requirements from being imported into the country, manufactured in Canada or distributed to the general public.

8.1.6 Trade and Harmonization

(25) Strictly speaking, the Free Trade Agreement does not require Canada and the U.S.A. to harmonize their respective technical radio policies. Both countries are required to recognize as identical or equivalent existing standards and authorization processes, where such is possible. It is the philosophy and not the letter of the FTA which calls for harmonization of technical standards and equipment authorization processes.

(26) The philosophy of harmonization in the FTA has caused

many of the respondents to believe that an actual harmonization process is required under the Agreement. Also, most respondents believe that the increasing international trade in telecommunication equipment and the globalization of technical telecommunication issues makes the technical harmonization of Canadian and American radio equipment regulation both appropriate and inevitable.

8.1.7 Authority Within the Radiocommunication Act

(27) The enabling authority within the new Radiocommunication Act offers significant opportunity to create the regulatory preconditions for technical harmonization. A significant amount of technical policy work will have to be done in advance of, or parallel to, redrafting the existing regulations and technical documents. Policy decisions will have to be made on matters such as: which standards are to be made mandatory? what type of Technical Acceptance Certificate (TAC) program is required? and whether a "verification" process is to be created?

(28) In light of the new scheme surrounding technical

authorization and new terminology employed within the Radiocommunication Act, a review and rationalization of the contents of the principal DOC technical and regulatory documents (SRSP's, RSP's, RSS's, TRC's, etc.) are justified. It would be desirable to distinguish among technical standards, regulatory requirements and procedural directives.

(29) The questionable legal status of Canada's existing radio regulations and supporting technical documents will significantly inhibit increased harmonization efforts. Most of the regulations must be recast and redrafted. The use of existing standards and specifications which contain technical detail only should be rationalized within the hierarchy of technical documentation contemplated within the new Radiocommunication Act, and (re)promulgated using proper legislative authority to give them a clear legal status. Existing testing and certification processes should be recast and redrafted.(see Sections 5.2 and 5.3)

8.2 RECOMMENDATIONS

The following recommendations reflect the judgement of the study team. Accordingly, it is recommended that the Department of Communications:

(1) Retain responsibility for the development of mandatory radio standards within the DOC, and retain principal responsibility for the standards development, approval and mandating process within the Engineering Branch of DOC.

(2) Undertake the creation of a comprehensive radio standards policy. (See: Conclusion 22) To assist with the decision as to which standards are to be made mandatory, the policy should include general principles such as the three enumerated in Conclusion 3.

(3) Review all existing standards with the objective of reclassifying, where appropriate, some specific mandatory requirements as "voluntary" or "reference" standards (see Conclusion 22).

(4) Advise the radio industry formally that the Department of Communications is prepared to accelerate its efforts toward technical harmonization with the U.S.A. in cases where such harmonization would be of economic benefit to industry or to consumers. Again, the radio standards of emerging personal wireless communication devices which connect to the public switched telephone network

are excellent candidates.[89]

(5) Undertake consultation and further study, with input from both radio users and the equipment manufacturing industry, to determine:

(a) how best to establish a joint CAN/U.S.A. process to develop common mandatory standards.

(b) for which specific products or services these mandatory standards should first be developed.

(c) whether there would be any advantages to having common OAS (Organization of American States), North American or CAN/U.S.A. mandatory standards.

(6) Initiate a meeting between Canadian and American government representatives, to discuss the costs and benefits of harmonizing certain of our respective technical

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[89] It is not recommended at this time that the interconnection aspects of such wireless communication devices be further harmonized with Part 68 rules. Standards for interconnection with the Public Switched Telephone Network were beyond the scope of this study. It may be interesting to note, that upon learning of the study, a representative of a large private telecommunication equipment testing facility in the U.S.A. specifically contacted the study team to urge them not to recommend harmonization of the existing Terminal Attachment Program Advisory Committee (TAPAC) program with Part 68. The representative expressed the view that Canada's program was superior to its U.S. counterpart and that it should not be compromised through an accommodation process.

standards, specifications and equipment authorization rules. Attendance might be by invitation only and the session might be called "Dialogue on Harmonization: Canada/U.S. Radiocommunication Standards in the 1990's." It would be important to invite representatives from the U.S. Department of Commerce and the USTR. It is suggested that the FCC would be more accomodating if those offices were represented.

(7) Bring to the attention of senior government officials in the U.S.A. how the interpretation often accorded to the ex parte contact rules within the Administrative Procedure Act, will significantly inhibit harmonization activities premised upon mutual accomodation.

(8) Bring to the attention of senior government officials in the U.S.A. the fact that harmonization would be facilitated if there existed a SCUSA (Standards Council of the U.S.A.) organization or its equivalent that would have the authority to recognize and, to some extent, coordinate the standards writing organizations, testing laboratories and certification bodies in the U.S.A.

(9) Maintain the Certification and Engineering Bureau located at Clyde Ave. as the engineering laboratory and

certification arm of the DOC (See Conclusion 21).

(10) Review RSP 100 and RSP 100, Appendix III and clarify the need for engineering briefs in all testing and certification processes, as well as the responsibilities of the professional engineer who attests the brief.

(11) Assess the impact reciprocal acceptance of laboratory data, testing results and certification would have upon the Canadian private testing facilities.

(12) Support the petition to obtain the resources necessary to undertake the regulations restructuring and rewriting project referred to within this study (See footnote 72). If such resources can be secured, the Engineering Branch of DOC should participate actively in that project to ensure that both its immediate and long term policy needs are addressed.

(13) Review and rationalize the contents of the principal DOC technical and procedural documents, and separate technical standards from regulatory requirements and procedural directives, in light of the enabling authority which is now available in the Radiocommunication Act to effect change to technical policy related to radio regulation.

(14) Undertake a study to review the adequacy of the control mechanisms which have been implemented in Canada to keep radio frequency devices, that do not comply with our mandatory technical requirements, from being imported and distributed to the general public. Also assess how well the controls are enforced. The advantages, disadvantages and costs associated with the introduction of a control such as FCC Form 740 (see Section 3.9) also should be assessed.

APPENDIX 1

LICENSING, MANDATORY STANDARDS AND CERTIFICATION

Management and control of the spectrum in Canada is primarily brought about through licensing of any or all of radio services, radio systems, or radio equipment.

Licensing occurs when certain regulatory and technical parameters are met. In the context of this study, mandatory standards are those technical parameters that must be met before a license will be granted or before certain types of equipment will be certified.

Certification of equipment requires confirmation that the equipment meets certain approved technical parameters.

In Canada, these technical parameters or mandatory standards are spelled out in varying levels of detail for:

- Microwave Systems in SRSP's (Standard Radio System Plans)
- Satellite Systems in RSP's (Radio Standards Procedures)
- Mobile Systems in RSS's (Radio Standards Specifications)
- Certain Licence Exempt Equipment in TRC's

(Telecommunications Regulation Circulars)

It is most important to note that in the context of this study, these four sets of documentation (SRSP's, RSP's, RSS's, TRC's) are defined as mandatory standards.

It should also be noted that while licensing requires that certain mandatory standards (as defined above) be met, certification of equipment is not always required for the granting of a licence. This is explained further in the following.

LICENSING WITHOUT CERTIFICATION

This approach is used for a "Service" for which there are few service providers or manufacturers of equipment. Examples are "fixed microwave service" and "fixed satellite service."

The technical parameters for such services are spelled out in 21 SRSP's (Standard Radio System Plans) for microwave and in 2 RSP's (Radio Standards Procedures) for satellite service.

The applicant's technical acceptability is judged by verifying technical conformity against the SRSP's or RSP's at the time of the application for a licence.

The tradeoff from the point of view of the DOC is a more complex licensing procedure (since both technical and regulatory requirements are combined) but only for the few applicants versus a simpler licensing procedure plus a detailed set of technical specifications for equipment and the related certification process.

LICENSING WITH CERTIFICATION

This approach is used when there are many equipment manufacturers or many end users involved. In this case, detailed specifications are developed for the equipment; the equipment must be tested against the specification and then certified that it has passed before a licence is issued. Here it is readily apparent that the licensing

process itself is relatively simple but the certification process is an additional step.

This approach has application, for example, with Land Mobile Service where there are many service providers, many suppliers of equipment, and many end users. In this case, detailed specifications are developed for the fixed radio transmitter/receiver and for the transmitter/receiver in each car. All equipment must be tested and certified against the detailed specification. Following that the issuance of licences to the many service providers and users is relatively straight forward. The detailed standards are issued as RSS's (Radio Standard Specifications).

The services in this "Licence with Certification" category are:

- Land mobile both general and cellular for which there are nine RSS's (Radio Standard Specifications)
- Aeronautical mobile with one RSS
- Marine mobile with four RSS's
- General Radio Service with one RSS.

LICENCE EXEMPT EQUIPMENT

Control of certain low powered radio equipment is effected by defining that a licence is not required to use that equipment as long as the equipment itself meets certain detailed specifications.

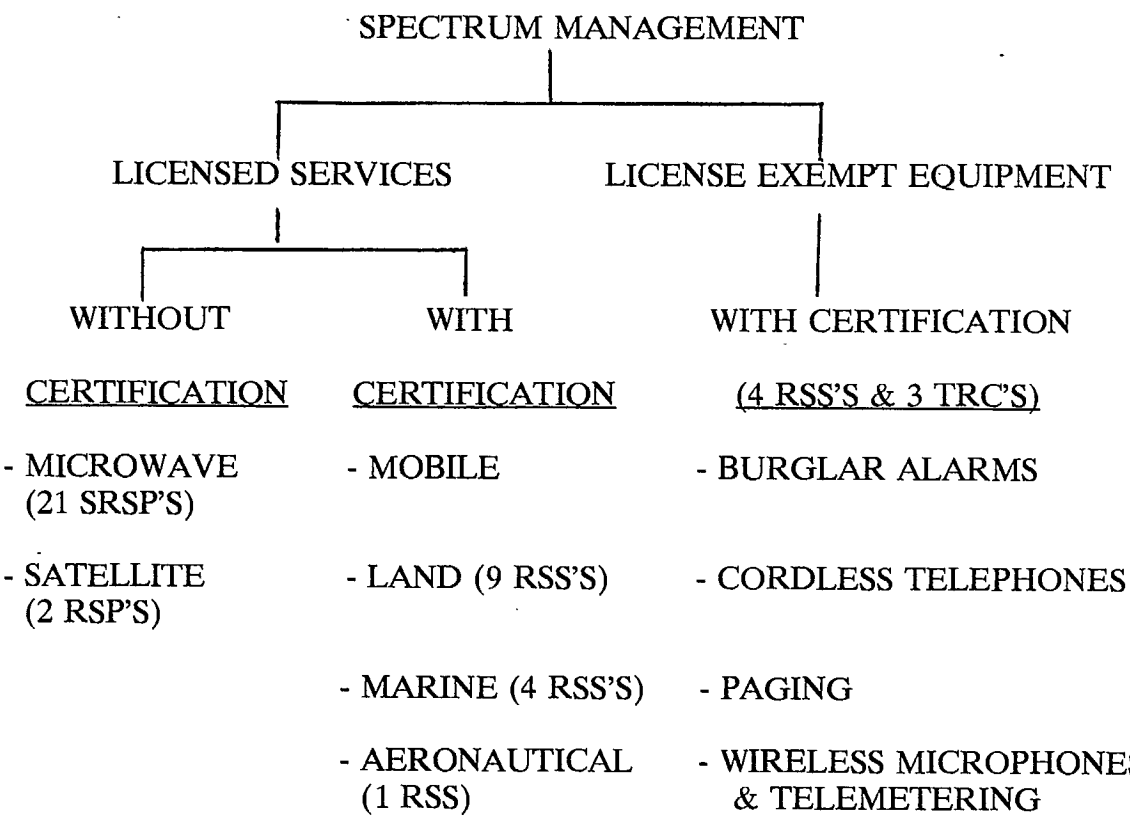
In this case, the equipment must be tested against the approved standard and certified as having passed. These standards are issued as RSS's (Radio Standard Specifications) or as TRC's (Telecommunication Regulation Circulars).

There are four RSS's and three TRC's in this category covering:

- Radio Paging Receivers (RSS 201)
- Burglar Alarm Equipment (RSS 202)
- Low Power Cordless Telephones (RSS 209)
- Low Power Wireless Microphones and Telemetering Devices for One-Way Communication (RSS 214).

RADIO LICENSING IN CANADA

In summary, management and control of the spectrum is carried out by licensing or implied licensing. In diagrammatic form, it exists as follows with the related number and type of mandatory standards indicated:



APPENDIX 2

SUMMARY OF MEETINGS AND CONFERENCE CALLS

Canada

Meetings	Persons In Attendance	Organizations In Attendance
CDN Coast Guard	3	1
CNCP	2	1
CSA	3	1
Dept. of Natnl. Defense	3	1
DOC - Cert. & Eng. Bureau	2	1
- Intnl. Relations	1	1
- Ontario Region	3	1
- Radio Regulation	2	1
EEMAC - Executive	2	1
- Mobile Committee	10	7
ITAC	6	5
RABC - Mobile Committee	25	16
Telecom Canada	2	1
Telesat	3	1
Transport Canada	2	1
Conference Calls		
Extnl. Affairs - FTA	2	1
- GATT	1	1
RABC - Marine	1	1
- Radio Relay	1	1

USA

Meetings		
Commerce - Intnl. Trade Admin.	2	1
FCC - Chief Engr. Ofc.	6	1
- Intnl.	1	1
Legal Counsel - ARRL	1	1
Natnl. Telecom. & Info. Admin.	6	1
Ofc. of the US Trade Rep.	2	1
Telecom. Industry Assoc.	1	1
Conference Calls		
Natnl. Inst. of Science & Tech.	1	1
Testing Lab (Glen Dash)	1	1

Electrical and Electronic Manufacturers Association of Canada
Association des manufacturiers d'équipement électrique et électronique du Canada

10 Carlson Court, Suite 500, Rexdale, Ontario M9W 6L2 Tel: (416) 674-7410 Fax: (416) 674-7412

February 28, 1990

J.J. O'Shaughnessy
J.J. O'Shaughnessy and Associates
65 Bayhill Ridge
Stittsville, Ontario
K2S 1B9

Dear Jim,

During the course of your recent meeting with EEMAC's Land Mobile Committee on Jan. 29th, there was some discussion of receiver specifications. In general our members would like to see the requirement for these removed from mandatory radio specifications. This would, we believe, help in the harmonization of DOC standards with FCC standards where receiver performance is not specified.

There is no question that there must be mandatory radio standards in Canada. They are needed to maintain an orderly spectrum infrastructure and to protect users from third party harm. EEMAC believes that the Departments SRSP's, RSS's, RSP's, and TRC's etc. serve well in this capacity.

Mandatory specification are required particularly where third party harm is possible. This refers to interference which may be caused to a spectrum user who is neither the transmitter or receiver in a particular communications exchange but is using the spectrum elsewhere. An example of this harm would be transmitter out-of-band emissions. A transmitter with high out-of-band emissions could possibly interfere with a third party user.

The Association would like to see a review of some of the mandatory technical requirements in the Radio Standards Specifications. This review should consider the need for performance specifications as distinct from protection from third party harm.

Many performance specifications determine the quality of the equipment/communication given to a specific user by a specific product. An example would be spurious response attenuation. A product with a lower spurious response attention could, under certain conditions, give a poorer quality of communication. This would not however cause harm to a third party.

It is EEMAC's position that the consumer should have complete flexibility in selecting the quality of equipment required as long as performance does not affect others. For example, an agricultural operation should not be required to pay for expensive equipment with specifications required for use in a highly congested urban area. The user should be able to choose equipment with specifications based on his application and needs.

RSS 119, Issue 3, as an example, should be changed so that the following performance specifications would be considered 'reference only' and not mandatory. These specifications affect the user's ability to select the quality of equipment required but do not promote interference to others.

TRANSMITTER:

Section	7.4	Modulation and Distortion
Section	7.6	Hum and Noise Level

RECEIVER

Section	9.1	Reference Audio Output Power
Section	9.2	Audio Frequency Response
Section	9.3	Sensitivity
Section	9.4	Selectivity
Section	9.5	Spurious Response Attenuation
Section	9.6	Intermodulation Spurious Response Attention

EEMAC has long believed that performance specifications should not be mandatory. There is a continuing need however for the Department of Communications to control emissions from receivers and transmitters to protect innocent third parties. This is necessary as the third party has no control over these emissions

One other matter that was touched on at the meeting was the FCC Transmitting Apparatus Entry Form. This form (form number 740) must be completed when importing any radio (R.F. radiating) equipment into the U.S. It is used to control the importation and subsequent sale of unapproved equipment.

It is important to stop the use of unapproved equipment in Canada so as to prevent destructive interference to authorized users. It is also unfair to suppliers of approved equipments who have to bear the cost of approvals. It is difficult to prevent the sale and use of unapproved equipment once it has entered the country.

Now that the Radio Communications Act gives the Minster power to control the importation and sale of unapproved equipment, EEMAC looks forward to seeing a process similar to Form 740 in Canada to stop this equipment at the border.

I hope these comments both confirm and clarify our position regarding an important aspect of mandatory radio standards. Please call if you need further information.

Yours sincerely,

Ernie Welling
Director of Communications

EW/sf

APPENDIX 4

128 Fred Varley Drive
Unionville, Ontario
L3R 1T3
February 21, 1990

Mr. J.J. O'Shaughnessy, P.Eng.
65 Bayhill Ridge
Ottawa, Ontario
K0A 3G0

Dear Jim

Since talking to you by telephone, I have contacted the interested parties in ITAC concerning your further questions on radio standards. We have agreement with the following ITAC position concerning your questions:

1. There are instances where DOC radio standards address performance, rather than radio interference. One example is RSS 118 - "Mobile Cellular Mobile Systems" which has a clause dealing with linearity of modulation.

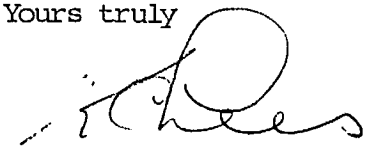
This, in itself, is not considered to be a problem but it should not be propagated when DOC adopts rules for digital cellular systems.

2. To the best of our knowledge, Form 740 for importing radio equipment into the U.S.A. is intended to be used for limited quantities of equipment to be temperarily imported.

a) We are not concerned by the use of this form by the U.S.A.

b) We do not consider there would be sufficient benefit to Canadian based companies to justify implementation of a similar program in Canada.

Yours truly



K.C. Lees, P.Eng.

cc: Jim Barry - NT
Murray Dynes - Rogers Engineering
Phil Leighton - Cantel
Alex Montgomery - CNCP Telecommunications
Phil Saunders - NT

APPENDIX 5

CERTIFICATION, TESTING AND ENGINEERING BRIEFS

The details of the overall certification process for radio equipment in Canada are provided in RSP 100 and in RSP 100, Appendix III.

In summary form, for certification to be given by the DOC for a particular set of equipment, the equipment must be tested against the DOC approved mandatory standards (RSP 100, Para 1.1.2) at either the DOC Laboratory or at a Private Laboratory.

If the testing is performed by a private laboratory, an Engineering Brief is also required. Although not shown in RSP 100, Appendix III, an Engineering Brief is provided by the DOC Lab, also.

The Engineering Brief is a document signed by a Canadian Professional Engineer "to certify that the equipment performs in accordance with the data submitted in the brief." (Para. 2.1.1.)

It should be noted that RSP 100 implies but does not state that the Engineering Brief must confirm that:

(a) All the tests required in the mandatory standard were carried out.

(b) The test procedures were carried out in accordance with the mandatory standards.

(c) The equipment has met the mandatory standards.

It should also be noted that no where in the Canadian Certification Process does there appear to be a requirement that a lab be approved as qualified or even to have been judged as qualified to carry out the tests outlined in the mandatory standard.

The question should be asked as to whether and why an Engineering Brief is required from the DOC Lab. RSP 100, Para 1.6.21 states that an Engineering Brief is required in all cases. RSP 100, Appendix III shows an Engineering Brief to be required only from a private lab.

Federal Communications Commission
Washington, D.C. 20554

APPENDIX 6 Approved by OMB
3060-0059
Expires 10/31/90

Statement Regarding The Importation of Radio Frequency Devices Capable of Causing Harmful Interference

(Read instructions on back before completing form. Please type or print clearly in ink.)

PART I—ALL BLOCKS MUST BE COMPLETED.

Date of Entry	Entry Number	Port of Entry [1]	TSUSA or Harmonized No.	Quantity of Item (not container) [3]

Description of Equipment	FCC Identifier	Model or Type Number	Trade Name

Manufacturer's Name and Address	Importer's Name and Address

Consignee's Name and Address	Signature of Importer or Consignee	Date
	Printed or Typed Name of Importer or Consignee	

Warning: Any person who knowingly makes a false declaration may be fined not more than $10,000 or imprisoned not more than 5 years, or both, pursuant to 18 U.S.C. 1001.

PART II—With Regard to the Importation of the Described Radio Frequency Device or Subassembly of a Radio Frequency Device, I Declare That: *(Place an "X" in only one box)*

	1. An equipment authorization, as appropriate, has been issued by the FCC. (See instructions.)
	2. The device does not require an equipment authorization, but complies with applicable FCC technical requirements.
	3. I am importing not more than three receivers for my own personal use and they are not intended for sale.
	4. The subassembly (see instructions) is intended to be included in a device ultimately subject to FCC regulations. I further declare that the equipment will be brought into compliance with FCC regulations and that I will obtain the appropriate equipment authorization that may be required before the completed device is offered for sale or otherwise marketed in the U.S.A.
	5. The device or subassembly is imported for the exclusive use of the Government of the U.S.A., or an agency thereof.

SEE SPECIFIC INSTRUCTIONS FOR ITEMS 6 THRU 11 ON REVERSE SIDE.

	6. The device **is being imported in limited quantities under bond** for the display at industry trade shows or for evaluation to determine compliance with technical requirements and will not be sold or otherwise marketed within the U.S.A.
	7. The device is intended solely for export, will not be marketed for use in the U.S.A. and **is being imported under bond.**
	8. The device or subassembly (see instructions) **is being imported under bond** the express purpose of repair or further fabrication. I further declare that the completed device or subassembly shall be exported and shall not be offered for sale or otherwise marketed in the U.S.A.
	9. The device has an equipment authorization application pending before the Federal Communications Commission and **is being imported under bond.** I further declare that the special instructions on the reverse side of this form will be followed and that the device will not be offered for sale or otherwise marketed in the U.S.A. until the necessary equipment authorization has been obtained.
	10. The device is not in conformity with applicable FCC requirements, but will be brought into conformity with such standards and **is being imported under bond.** I further declare that the special instructions on the reverse side of this form will be followed and that the device will not be offered for sale or otherwise marketed in the U.S.A. until brought into compliance.
	11. Neither the importer nor the ultimate consignee possesses sufficient information to make any of the preceding declarations but the importer or ultimate consignee will determine such information, and the device or subassembly **is being imported under bond.** I further declare that the special instructions on the reverse side of this form will be followed and that the device will not be offered for sale or otherwise marketed in the U.S.A. until brought into compliance.

[1] Port of Entry Use Schedule D-Classification of U.S. Customs Districts and Ports for U.S. Foreign Trade Statistics—a four digit code, i.e., New York City, N.Y. 1001.
[2] TSUSA Number—Tariff Schedule United States Annotated.
[3] This quantity must be total number of items, not number of containers.

Instructions For Completion of FCC Form 740

This form must be completed in duplicate for each radio frequency device, or subassembly thereof, as defined in 47 U.S.C. 302 and CFR 2.801, which is imported into the Customs territory of the United States. The original shall be sent to the Commission at the following address on or before the date the shipment is delivered to a U.S. port of entry:

Federal Communications Commission
Washington, D.C. 20554
Attention: Imports

A copy of the completed form must accompany each such entry.

The term subassembly when used in connection with importation shall mean a chassis or other essentially complete device, which requires only the addition of cabinet, knobs, speakers or other similar minor attachments to complete the device for marketing. Subassembly is not intended to encompass individual components, such as coils, condensers, IF strips, transistors, tubes, etc., which are being imported as replacement parts or which require considerable fabrication before a device subject to the FCC marketing rules is produced.

Marketing as used in this form (and 47 CFR 2.1201 et seq.) means sell or lease, or offer for sale or lease (including advertising for sale or lease, or display at a trade show) or import, ship or distribute for the purpose of selling or leasing or offering for sale or lease.

The identification (name and number) of the radio frequency device or subassembly of a radio frequency device, specified on the front of this form must be identical to the name and number inscribed on the device. If an FCC Type Approval number has been assigned, the number should be specified in the model number block in addition to the model number assigned by the manufacturer. If the device being imported requires an equipment authorization (e.g. certification, type acceptance, type approval, or any other form of approval) it is important that the name of the manufacturer, description of the device and identification (name and number) specified on the grant of equipment authorization agree exactly with the same information shown on the front of this form. A discrepancy between the information specified on the FCC documents may result in unnecessary delays and expense.

Typical Examples of devices which require the use of this form: radio and TV receivers, converters, transmitters, transmitting devices, radio frequency amplifiers, microwave ovens, industrial heaters, ultrasonic equipment, receiver chassis, transmitter chassis, transceivers, computers.

Specific Instructions for Items 6 through 11

Entry under provisions 6, 7, 8, 9, 10 and 11 requires the posting of a bond at the time of entry in accordance with U.S. Customs Service regulations. Such entry shall be detained by the importer or consignee and must not be marketed or otherwise disposed of until the District Director of Customs has accepted an appropriate equipment authorization, or a statement certifying compliance, or a statement certifying that other conditions for release have been met.

A radio frequency device conditionally entering under the provisions of items 9, 10 and 11, shall be redelivered to the port of entry within 90 days after such entry, or within such additional time as the District Director of Customs may allow for good cause shown, unless the device is brought into conformity and a copy of the equipment authorization or statement of compliance has been accepted by the District Director.

Failure to comply with these provisions may subject the importer or consignee to criminal prosecution pursuant to 47 U.S.C. 501, 502, as well as the penalties assessed in accordance with U.S. Customs Service regulations.

FCC Form 740 May Be Reproduced Provided the Following Conditions are Met:

1. That private companies reproducing the form use a printing process resulting in a product that is comparable in quality to the original document;

2. That private companies reproducing the form refrain from including therein or attaching thereto any advertising matter or deleting any material from the form;

3. That private companies reproducing the form exercise care to assure that the form being reproduced or distributed is the current edition presently used by the Commission for the type of application involved; such private company to be advised that, though the Commission will endeavor to keep the public advised of revisions in the form, it cannot assume responsibility to the extent of eliminating any element of risk against overstocking, etc.

This request is in accordance with the requirements of P.L. 96-511, the Paperwork Reduction Act of 1980

The data collected will be used to ascertain whether equipment authorization is required, and if so, whether or not it has been granted. Response is required to obtain a benefit.

APPENDIX 7

DOC PARTICIPATION IN CANADA/USA RADIO STANDARDS ACTIVITIES

Frequency coordination and radio standards related activities have been underway for many years between the DOC and a number of US governmental and private sector organizations. Such activities include:

- A senior level "Liason Committee" set up at DOC initiative in 1978 to provide a Forum for senior level DOC and FCC officials to review radio related matters of mutual Canada/USA interest.
- Representation on several committees of the EIA and TIA (the Electronic Industries Association and the Telecommunications Industry Association).
- Representation on several committees of ECSA (the Exchange Carriers Standards Association).
- Representation on several committees of the IEEE (Institute of Electrical and Electronics Engineers).
- Representation on several committees of ANSI (the American National Standards Institute).