

AN EVALUATION OF THE EFFECTIVENESS  
OF THE ROYAL COMMISSION OF  
INQUIRY INTO URANIUM MINING



by

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URANIUM MINING

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## ABSTRACT

The purpose of this study is to evaluate a commission of inquiry process in British Columbia to determine how successfully it helps elected representatives reflect more accurately their constituents' preferences in the formulation of government policies.

It is hypothesized that public participation, as solicited by a commission of inquiry, may serve to transmit a wider range of informed public opinion to decision makers than is otherwise possible. Furthermore, members of the public may provide governments with important information. Hence, it seems worthwhile to assess how well commissions of inquiry facilitate the type of public participation that will help elected representatives reflect more accurately their constituents' preferences. In this study, the procedures adopted by the British Columbia Royal Commission of Inquiry into Uranium Mining (RCIUM) are so evaluated. While the analysis is case specific, I make some general recommendations that should be of use to future commissions of inquiry.

The criteria used in the evaluation stem from a participatory model of representative government. They reflect, also, the special nature of both the uranium issue and RCIUM's terms of reference (namely, that the RCIUM Commissioners should recommend standards for worker and public safety as a result of uranium exploitation in British Columbia, first examining existing standards and receiving public submissions on these matters).

The evaluation framework postulates that RCIUM should design a public participation program that meets the following broad criteria:



- 1) secures a relevant body of accurate information;
- 2) informs the public of its findings;
- 3) elicits public views upon its findings;
- 4) communicates its findings and the range of informed public views to the final decision makers.

Since RCIUM was still in the process of collecting information when the thesis research terminated, only the first two criteria are applied.

The most significant RCIUM activities in acquiring a relevant body of accurate information are community and technical hearings. Because of limitations in the general public's ability to participate in the community hearings, RCIUM learned less about local concerns than it might have done. A considerable volume of relevant information is being reviewed at the technical hearings. However, many of the participants at these proceedings are pressed for time and have insufficient funds; hence there are shortcomings in RCIUM's collection and testing of all relevant evidence. Extension of the technical hearings and formation of coalitions between participant groups are recommended as ways of remedying these deficiencies.

It is argued that a commission of inquiry, when faced with an issue as controversial as uranium mining, should perform a thorough public education job. Although the RCIUM Commissioners do perceive their role to be partly one of education, little attempt is being made to instill understanding of the issues in the public. Increased use of the media is recommended; for example, periodic, televised discussions between RCIUM participants.

As an alternative to the procedures adopted by RCIUM, an approach is outlined that involves the public in the design of the RCIUM process. This approach appears to be fairer than that used by RCIUM; probably, it would serve to transmit a more complete and accurate body of relevant information to the final decision makers than will actually be the case with RCIUM.

## TABLE OF CONTENTS

	Page
Abstract .....	ii
Table of Contents .....	iv
List of Figures .....	vi
List of Appendices .....	vii
Acknowledgements .....	viii
Foreword .....	ix

### PART I

#### CHAPTER

I	INTRODUCTION .....	1
	Public Participation & the Representative	
	System of Government .....	1
	Commissions of Inquiry in British Columbia .....	5
	The Royal Commission of Inquiry into C	
	Uranium Mining .....	7
	Why It Was Set Up .....	7
	The Terms of Reference .....	9
	Evaluation .....	10
	The Concept of Evaluation .....	10
	Rationale for the Evaluation .....	11
II	THE EVALUATION FRAMEWORK .....	13
	Background .....	13
	Nature of the Evaluation .....	19
III	COMMISSION ACTIVITIES .....	21
	Introduction .....	21
	Public Sessions .....	21
	Commission Research .....	25
	Visits .....	26
	Library Network .....	27
	Publicity .....	30

### PART II

	Preface to Part II .....	32
IV	CRITERION I: SECURE A RELEVANT BODY OF	
	ACCURATE INFORMATION .....	33
	Introduction .....	33
	Public Sessions .....	33

CHAPTER		Page
	Questions to be Addressed .....	33
	Application of Criterion .....	36
	Limiting Factors .....	63
	Commission Research .....	68
	Questions to be Addressed .....	68
	Application of Criterion .....	69
	Limiting Factors .....	69
	Visits .....	70
	Questions to be Addressed .....	70
	Application of Criterion .....	72
	Limiting Factors .....	75
	Library Network .....	76
	Questions to be Addressed .....	76
	Application of Criterion .....	76
	Limiting Factors .....	78
	Summation .....	79
V	CRITERION II: INFORM THE PUBLIC OF COMMISSION FINDINGS .....	81
	Introduction .....	81
	Public Sessions .....	82
	Questions to be Addressed .....	82
	Application of Criterion .....	83
	Limiting Factors .....	87
	Library Network .....	88
	Questions to be Addressed .....	88
	Application of Criterion .....	88
	Limiting Factors .....	90
	Publicity .....	90
	Questions to be Addressed .....	90
	Application of Criterion .....	91
	Limiting Factors .....	93
	Summation .....	94
VI	RECOMMENDATION AND CONCLUSIONS .....	95
	Introduction .....	95
	Commission Accomplishments .....	96
	Commission Weaknesses: Proposed Remedies .....	97
	Concluding Remarks .....	102
	LITERATURE CITED .....	103
	APPENDICES .....	110
	LIST OF ABBREVIATIONS .....	191

## LIST OF FIGURES

FIGURE		<u>Page</u>
1	TERMS OF REFERENCE .....	9
2	LAYOUT AT COMMUNITY HEARINGS .....	37
3	NUMBER OF WITNESSES AT THE COMMUNITY HEARINGS .....	38
4	TIME DEVOTED TO THE MINING COMPANIES IN THE COMMUNITY HEARINGS .....	40
5	MEDIA COVERAGE OF THE COMMUNITY HEARINGS .....	81
6	ATTENDANCE AT COMMUNITY HEARINGS .....	84

## APPENDICES

APPENDIX	TITLE	PAGE
1	Preliminary rulings .....	110
2	The Commission staff and their advisors: roles and responsibilities .....	136
3	List of witnesses: community hearings .....	141
4	Visits to uranium mines and deposits .....	151
5	First Interim Report on Uranium Exploration .....	154
6	Depository libraries .....	167
7	Participant funding .....	169
8	Public Notice: Participant Funding .....	174
9	Results of interviews with six major participants .....	176
10	Cross-examination of ten witnesses by major participants .....	182
11	Preliminary budget estimate: EAAUM .....	184
12	Items in the Commission library .....	186
13	Public education by six major participants .....	189

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## FOREWORD

On 27 February 1980, the Lieutenant-Governor in Council approved and ordained Order-in-Council No. 442/80. This order, in declaring a seven year moratorium on uranium exploration and mining in British Columbia, terminated the Royal Commission of Inquiry into Uranium Mining. The evaluation presented in this thesis applies to the activities of the Commission up to the end of January 1980 and to the original plans for the remainder of the Inquiry; the analysis is unaffected, therefore, by the Inquiry's sudden termination.

## PART I

### CHAPTER I

#### INTRODUCTION

#### Public Participation and the Representative System of Government

This study evaluates a commission of inquiry process in British Columbia to determine how successful it is in helping elected representatives reflect more accurately their constituents' preferences in the formulation of government policies.

Representative government postulates that elected representatives reflect the preferences of their constituents in the formulation of government policies (Fox 1978). This classical form of democratic government is not measuring up to the strains of modern society (Thompson 1979a). For example, since 1960, economic growth has resulted in devastating environmental pollution. In 1976, public opinion polls in the United States registered widespread public dissatisfaction with the effectiveness of Congress and governmental regulatory agencies in controlling air and water pollution (Zentner 1977); and in Canada, there was a growing lack of confidence in the activities of government agencies in relation to problems of water quality and environmental pollution in the Great Lakes (Lee 1970).

Because of the apparent failure of current procedures of representative government, there has been a clamour for increased public participation in decision making, particularly focusing on environmental issues (Thompson 1979b). Thus, the concerns of government have multiplied in number and complexity with the following effects:



- (1) Because substantial analytical resources are required to make in-depth analyses of alternate environmental policies, a few agencies monopolize the capability to analyse alternatives. Hence, a very limited range of alternatives are examined.
- (2) Various groups have not been fully integrated into the political process and may feel that their interests are not properly represented by elected officials.
- (3) Elected representatives have to rely on civil servants for information on which to base their judgements. However, civil servants do not have a constituency of their own; hence, it is difficult for them to transmit public opinion on which elected representatives should base their decisions (Law Reform Commission of Canada 1977; Fox 1978; Lysyk 1978).

The desire for increased public participation in decision making is also based upon the ethical consideration that people have a right to be consulted on decisions that affect them, and especially on those that involve the expenditure of public funds or that impinge upon individual rights. More and more planning and policy decisions, especially those concerned with environmental quality, are of this type in the resource management field (Sewell 1970). In addition, there is the pragmatic consideration that planning and policy proposals may not garner the necessary public support, or may result in unpredicted consequences, if planners and decision makers do not accurately take public preferences into account (Sewell 1970; Thompson 1979a). Finally, environmental decision making involves both cognitive and evaluative judgements (National Research Council 1977). Since the public is the expert on its own values (Heberlein 1976b), the public must be consulted if rational decisions are to be made.

Modern conditions dictate, therefore, a more populist form of representative government; that is, a governmental system in which elected representatives are required to consult with their constituents between elections. Such a system, it is hypothesized, would enable elected

representatives to reflect more accurately the preferences of their constituents in the formulation of government policies. This is because public participation, as solicited, for example, by a commission of inquiry, may perform the following roles:

- (1) Provide elected representatives and civil servants with a better idea of the public's priorities and preferences (Lysyk 1978; OECD 1978; Connor 1979). Although public participation cannot involve everyone, it should help to communicate more accurately the views of those who do take part (Fox 1978).
- (2) Assure that differing views about a problem and how it might be solved are understood by government officials. This is of great help in seeing that all alternative possibilities for dealing with a problem are considered (Fox 1978; Connor 1979).

In addition, public participation may:

- (3) Provide useful information that the civil service, executive or legislature had not previously come across or conceived of (Lucas 1976; Robbins 1978; Connor 1979).
- (4) Inform, clarify and develop public awareness and understanding of a complex issue (Thompson 1976; Lysyk 1978).
- (5) Increase public confidence in government (Heberlein 1976a; A. Lucas 1976).

In light of this, it seems worthwhile to evaluate commissions of inquiry to determine how successfully they facilitate the type of public participation that will help elected representatives reflect more accurately the preferences of their constituents. In this study, the British Columbia Royal Commission of Inquiry into Uranium Mining (hereafter referred to as RCIUM<sup>1</sup>) is so evaluated. Two major problems with such an evaluation are mentioned below.

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<sup>1</sup>All abbreviations used in this thesis are listed after the appendices; see p. 191.

### Problems of Representation

Those who testify at a public inquiry are not representative of the public at large (OECD 1978; Sinclair 1978; Salter 1979); indeed, as Head (1971, p. 19) points out: ". . . it is almost impossible for any one group to represent the diverse interests of all residents of any area." Furthermore, the views of well-organized, articulate interest groups tend to be given more weight than those of unorganized citizens (Fox 1972; Heberlein 1976a and 1976b; Salter 1979). As Jowell (1979, p. 141) notes: ". . . the hearing. . . provides no way in which the preferences that are revealed may be ordered." Another problem is that the views expressed are often self-interested and parochial (People and Planning 1969; O'Riordan 1976). Salter (1979, p. 9) concludes that: ". . . participation usually comes from a small, conservative, middle class elite anxious to protect a local privilege against what might be a public good." Dion (1968), Emond (1975) and Burch (1976) reach a similar conclusion.

### Problem of Non-Participation

Most people have no interest in participating at public inquiries (O'Riordan 1976; Connor 1979). Of those individuals and groups wishing to participate, some will not, either because they lack the time and/or resources to do so, or because they have little faith in participation (Fox 1978; OECD 1978). Sadler (1978, p. 6) notes that: "Non-participation becomes an issue where there is a demand for involvement, but the public is effectively excluded from review and debate by political bureaucracies."

Commissions of Inquiry  
in British Columbia

Commissions of inquiry are ad hoc, advisory committees established by government; that is, they advise government on policy (Lysyk 1978; Pape 1978; Salter 1979). Normally, their subject matter concerns more than one ministry, and is urgent and controversial enough to warrant special attention (Law Reform Commission 1971; Lysyk 1978). In theory, commissions of inquiry are on equal footing with the other institutions of government and, once appointed, are not under any ministerial control. However, they are dependent on government for funding and their mandates can be revoked by order-in-council (Le Dain 1971; Lysyk 1978).

As an intrinsic part of its appointment by government, a commission of inquiry is given its "terms of reference" (Cartwright 1975). The terms of reference are a statement of the problems the commission is to consider; they are outlined in the order-in-council establishing the commission (Hanser 1965; Chapman 1973).

A commission of inquiry prepares a report containing recommendations. Although commission recommendations are not binding on government, examples are rare where they have been completely disregarded (OECD 1978). Not all governments are legally bound to release the report to the public (as is the British Columbia government) but it is usually expedient politically for them to do so; otherwise the commission itself may release the report if the inquiry proceeds as a public hearing (Ritchie 1973). As Le Dain (1971, p. 80) points out, the report: ". . . . can have important effects on public opinion and attitudes, legislative initiative, and individual rights."

Public participation may or may not be solicited by a commission of inquiry. Most commissions do solicit public participation, usually by

holding public hearings. Witnesses may make depositions in writing, give oral statements, or both (Cartwright 1975; Lysyk 1978).

The primary role of a commission of inquiry is to advise (Berger 1977). In order to do this, a commission must identify the issues within the constraints of the terms of reference, obtain the relevant information and make policy recommendations (Le Dain 1970). Commissions may perform other than an advisory role. For example, when the subject matter of a commission falls in the domain of more than one ministry, it may perform an integrating role that the normal functioning of government cannot adequately perform (Thompson 1977; Lysyk 1978). When there is no general demand for public involvement but it is, nevertheless, required by law or administrative code, a commission performs a ritualistic role (Heberlein 1976a and 1976b; OECD 1978); sometimes, a commission performs an educational role (Hodgetts 1940).

#### The Public Inquiries Act

The legislative authority of the British Columbia Public Inquiries Act (R.S.B.C. 1960, c. 315) provides the structural and functional framework for commissions of inquiry in British Columbia.<sup>1</sup> Under this Act, the Cabinet may establish a commission of inquiry to advise it upon:

" . . . any matter connected with the good government of the Province . . . ." (s. 3). The Act provides for the appointment of commissioners and outlines their duties (ss. 3,9). The Act also outlines the specific powers of commissioners:

- to engage the services of a secretary, clerks and stenographers (s. 8);

---

<sup>1</sup>The federal Inquiries Act (R.S.C. 1971, c. 1-13) also applies in British Columbia but is not discussed since RCIUM was established under the provincial Act.

- to summon witnesses and to call for the production of documents (s. 10);
- to compel attendance of witnesses and to punish for contempt (s. 10).

A natural reading of section 8 of the Act would lead one to believe that the draughtsmen of the statute intended not to authorize commissioners to appoint legal counsel. However, as noted by Schmitt (1979, p. 14):

" . . . the power to appoint legal counsel does exist as a result of the Lieutenant-Governor in Council's power under section 12(e) of the Act to make provisions: '(e) generally, in respect of all such acts, matters and things, as may be necessary to enable complete effect to be given to every provision of this Act.'"

It is the duty of commissioners appointed to conduct any inquiry under the Public Inquiries Act to report their findings to the Lieutenant-Governor in Council. Moreover, every report thus made is submitted to the Legislature and hence becomes a public document (s. 9).

It is apparent that British Columbia's Public Inquiries Act gives to commissioners designated thereunder many of the powers and privileges of a Judge of the Supreme Court of British Columbia. Accordingly, it would appear that inherent in all commissions under this Act is an inquiry process that is public and quasi-judicial in character; that is, conducted in the public view and having regard for the principles of fairness and the rights of individuals (WCELA 1979).

### The Royal Commission of Inquiry into Uranium Mining

#### Why It Was Set Up

The Royal Commission of Inquiry into Uranium Mining (RCIUM) was announced on 16 February 1979. In part, it was set up in response to the controversial nature of the uranium mining industry and increasing public

interest in the uranium question (Hewitt 1979, letter). Uranium deposits have been found in several locations in British Columbia. There is pressure to develop these resources quickly because the price of uranium oxide ( $U_3O_8$ ) has risen from just over \$15/kg. in the early 1970's to about \$125/kg. today (EMR Report 1979). There is a great deal of money to be made. For example, a Canadian mining company, Norcen Energy Resources Limited, has a conditional contract with Korea Electric Company for the sale of 1,965,366 kg. of  $U_3O_8$ , worth \$300 million (News Release, 1979). Total reserves of uranium in Norcen's Blizzard property (53 km. southeast of Kelowna) have been estimated at approximately 4,767,000 kg. of  $U_3O_8$  (Loucks et al. 1979). A number of factors should cause the price of  $U_3O_8$  to fall in the mid-1980's. Therefore, if British Columbia's deposits are to be exploited, mining companies understandably want to do it immediately (Schmitt 1979).

In response to active uranium exploration all over the province, about 27 environmental groups have declared their opposition to nuclear energy in general and uranium exploration in particular (Schmitt 1979). In the case of Genelle, a small rural community in southeastern British Columbia, opposition amounted to non-violent protest and civil disobedience (Terral 1979). The resultant media coverage aroused public interest in the uranium issue and thereby helped spur the provincial government into promising a public inquiry into the issue.

Additional reasons for setting up RCIUM were outlined by Mr. Hewitt (1979, letter) as follows:

- (1) There was a need to provide an assessment: ". . . . of the special conditions in British Columbia, which would be of significance if uranium was mined in the province."
- (2) There were such significant unknowns that a full and open study of the subject [safety, health and environmental protection] was called for."

## The Terms of Reference

On 18 January 1979, the Lieutenant-Governor in Council announced that, pursuant to the British Columbia Public Inquiries Act, three Commissioners had been appointed to: ". . . inquire into the adequacy of existing measures to provide protection in all aspects of uranium mining in British Columbia." (Order-in-Council No. 170/79). The Commissioners are:

- (1) Dr. David V. Bates (chairman), professor of medicine and physiology and associate member of the Department of Health Care and Epidemiology, Faculty of Medicine, University of British Columbia (UBC) with a considerable knowledge of occupation and environmental health hazards;
- (2) Dr. James W. Murray, professor, Department of Geological Sciences, Faculty of Geological Science, UBC;
- (3) Mr. Valter Raudsepp, P. Eng., Civil Engineer, former Deputy Minister in the British Columbia Department of Lands, Forests and Water Resources, and former Chairman of the Pollution Control Board and the Pesticides Control Appeal Board (PCAB) in British Columbia, with a thorough knowledge of water resources and hydraulic engineering

[Uranium Inquiry Digest (UID) 10].

The terms of reference of RCIUM are outlined in Figure 1 below. They are defined further by the Preliminary Rulings (PR) adopted by RCIUM (see Appendix 1).

### FIGURE 1

#### TERMS OF REFERENCE

- (1) to examine the adequacy of existing federal and provincial requirements for the protection of the health and safety of workers associated with exploration, mining and milling of uranium in British Columbia, and for the protection of the environment and of the public, and,
- (2) to receive public input on these matters, and,
- (3) to make recommendations for setting and maintaining standards for worker and public safety as a result of the exploration for the mining and milling of uranium ores.

(Order-in-Council No. 170/79) .



## Evaluation

### The Concept of Evaluation

The term "evaluation" refers to the process of making judgements of worth; it implies some logical or rational basis for making such judgements. Evaluation also encompasses the understanding of the process being evaluated and the redefinition of the process if its worth is found to be low.

The process of evaluation has both objective and subjective elements. Thus, objective criteria are established as standards of performance and judgements are made as to how successful the process being evaluated is in meeting these criteria (Suchman 1967; St. Pierre 1977). Although some of the measurements made in an evaluation are quantitative, as opposed to intuitive (Homenuck et al. 1978), whatever the type of measurement used, a judgement has to be made as to whether the amount measured was sufficient to justify calling the process a success (Weiss 1972; Morgenstern et al. 1979).

A very basic difficulty lies in the evaluation of any public participation program; that is, not everyone will agree with the final outcome. It follows from this that one significant way of judging the success of a public participation program is to assess it as a process rather than to look solely or predominantly at the results (Nelson 1978). Indeed, as Fox (1976, p. 746) notes: "Since institutional performance cannot be assessed in terms of goals, we must make our assessment in terms of the process by which the course of action was decided on." My evaluation of RCIUM is, therefore, an ongoing evaluation; that is, it does not concern itself with the final output of RCIUM but, instead, focuses on the RCIUM process.

### Problems with an Ongoing Evaluation

An evaluation that occurs during the operation of a program has two inherent difficulties:

- (1) the presence of the evaluator may influence the operation of the program, and
- (2) the evaluator may make demands on program personnel (Morgenstern et al. 1979). As Weiss (1972, p. 102 notes:

Often, the evaluator wants the practitioner . . . . to fill out forms or submit to interviews and observation. The practitioner is trying to get a job done. He finds the intrusion time-consuming and disruptive.

### Rationale for the Evaluation

Little effort has so far been devoted to the task of evaluating commission of inquiry processes. This is unfortunate because, without a systematic approach to evaluation, the worth of any such process is determined by the individual impressions of the people who initiated or participated in it. This type of evaluation is fraught with the prejudices and biases of all involved, and contributes little to an understanding of the potential for public participation in commissions of inquiry (Ebbin 1974; Homenuck et al. 1978). By performing an independent evaluation, I hope to make a useful contribution to the current state of the art.

A frequent criticism of evaluations to date is that they lack comprehensiveness (Sewell 1978). As Sewell and Phillips (1979, p. 357) point out:

Most formal evaluations . . . . have been conducted from the standpoint of the sponsoring agency. As a consequence, the tendency has been to emphasize the pursuit of agency goals . . . .

Assuming that the people's ideology is a more populist form of representative democracy, my evaluation is comprehensive.

Any evaluation provides basic information for redesigning a process since it seeks to determine not just whether a process succeeded or failed but why it succeeded or failed and what can be done about it (Suchman 1967; Detomasi 1979). I expect my evaluation, therefore, to suggest ways in which the RCIUM process could be revised, should this seem appropriate, such that it might better facilitate the type of public participation that will help the final decision makers reflect more accurately the preferences of their constituents in the formulation of government policy on uranium mining in British Columbia.

## CHAPTER II

### THE EVALUATION FRAMEWORK

#### Background

As is apparent from Figure 1 (p. 9 above), the terms of reference of RCIUM have three elements. These elements are interrelated. Thus, while the second element, to receive public input, is necessary, as demonstrated below, in order for RCIUM to comply in a fully satisfactory way with the first element (to examine the adequacy of existing requirements related to uranium exploitation), the results of complying with the first and second elements must be weighed by RCIUM to arrive at its conclusions and recommendations as called for by the third element.

The first element of the terms of reference requires the following types of information:

- (1) an identification of the known impacts upon workers, the public and the environment resulting from the exploration, mining and milling of uranium, and
- (2) an evaluation of the known impacts.

When one considers that there are major uncertainties associated with the impacts of uranium exploitation, especially in British Columbia where there is, as yet, no uranium mining, two further categories of information can be recognized:

- (3) an identification of possible impacts upon workers, the public and the environment resulting from the exploration, mining and milling of uranium in British Columbia, and
- (4) an evaluation of the possible impacts.

In addition to the above, the first element of the terms of reference requires a fifth category of information, namely:

- (5) an estimation of the capability of existing institutions (laws and agencies) to implement controls for achieving acceptable levels of impacts.

Essentially, categories (1) and (3) above are factual types of information that, presumably, can be derived scientifically. However, as noted by Williams et al. (1976, p. 608): ". . . . most pieces of technical advice come to have at least a penumbra of 'transcience' . . . .," by which term is meant questions arising from the interaction of science-technology and society: ". . . . which can be asked of science and yet which cannot be answered by science." (Weinberg 1972, p. 209).

A great many trans-scientific questions underlie the uranium issue. For example, consider the controversy over the biological effects of low level radiation. Weinberg (1972) describes how, from a practical viewpoint, it is impossible to determine at the 95 per cent confidence level by direct experiment whether 150 millirems (the accepted yearly dose of radiation exposure) will increase the mutation rate by 0.5 per cent (as is predicted by the linear dose-response hypothesis); to do so would require about 8 billion mice! This example transcends science since to get answers, and hence to reduce the level of uncertainty, would be impractically expensive.

In addition to the above, there are two further types of trans-scientific questions, concerning:

- the predictability of individual/institutional behaviour (further uncertainty);
- the problem of establishing priorities in science.

Concerning the latter, Swainson (1976, p. 15) notes that:

Technical specialists inevitably, . . . , have their own views as to what the problems are and where the most likely roads to their solution lie. Their perceptions have a major impact in determining the kinds of data produced, the alternative forms of action or behaviour assessed, the quantum of resources allocated to this assessment, and the division of the resources between the assessments.

And, as noted by Salter (1979, p. 12): ". . . the nature of the expert's paradigm has profound impact upon the findings." This may be further frustrated by the personal, professional and organizational affiliations of the individual (Williams et al. 1976). It is imperative, therefore, that provision be made to ensure that a variety of perspectives are brought to bear upon the insights of the experts in order that they do not skew or misdirect the information generated (Swainson 1976).

As Salter (1979, p. 12) points out: "There are some subjects on which the public is the repository of expertise." For example, local people are the source of special and expert information on the impact of development on community life. In addition, community residents may identify impacts that the experts have overlooked. Clearly, there is an important role for public participation in the identification of the impacts of uranium exploitation in British Columbia.

Information categories (2) and (4) (p. 13 above) require measurement of the significance of impacts. While some impacts can be quantified in commonly accepted measures of value (that is, in dollar terms), others cannot be measured in this way because the market does not function to measure their values in a satisfactory manner. Frequently, these latter types of values are referred to as intangibles. As Berger (1977, p. 229) notes: "If you are going to assess impact properly, you have to weigh a whole series of matters, some tangible, some intangible." Essentially,

this involves the weighing of fundamental values. For example, some of the people living in areas where uranium mining may be undertaken object strongly to the effects of such mining upon the visual character of the landscape. This aesthetic value of the landscape must be weighed against many other values, for example, the monetary value of the  $U_3O_8$  that is to be extracted by the mining companies. Since the public is the expert on its own values (Heberlein 1976b), the public must be consulted directly.

Uranium exploitation involves an important set of intangibles that may be referred to as ethical concerns. For example, because of its radioactive character and the thousands of years it takes to degrade, uranium can have far reaching effects upon living organisms. Is it morally responsible, with regard to members of future generations, to produce a commodity that can have such effects upon their welfare without giving them the choice as to whether or not they should be exposed to such risks? Such ethical dilemmas are unavoidably of general social relevance. Furthermore, given that the futures of British Columbians, and of their children and grandchildren, will be affected by the ultimate decision on uranium exploitation in British Columbia, it is extremely important that the citizens of this province be given the opportunity to voice their opinions on the moral questions.

In a similar vein, it can be argued that public attitudes on acceptable levels of risk and uncertainty must also be determined. There is a great deal of risk and uncertainty underlying the uranium issue (for example, we do not know the exact effects of low level radiation on human health; nor do we know the associated risks). Since it is present and future generations of British Columbians that will have to live with these hazards and unknowns, it is only fitting that the public be consulted.

In summary, public input is important to ensure adequate compliance with the first element of RCIUM's terms of reference for the following reasons:

- (a) RCIUM could overlook important information if it does not cast its net broadly and elicit information from all appropriate sources.
- (b) Scientific analysis is not completely neutral. Hence, differing perspectives are necessary in order to arrive at reasonable judgements about the impacts of uranium exploitation in British Columbia.
- (c) Institutional behaviour is not subject to precise scientific determination. Thus, the views of a wide range of experts must be elicited.
- (d) The assessment of impacts involves the weighing of basic values; the public is the expert on its values and must therefore be consulted.
- (e) What constitutes an acceptable degree of risk and uncertainty, and what are appropriate answers to the moral questions underlying the uranium issue cannot be derived from science. Instead, both must be derived from the public.

In addition to the above, there is another reason why public input is important. Adherence to democratic principles requires that:

- people are informed about the consequences of decisions that will affect them;
- public views upon these consequences are weighed by accountable elected representatives in arriving at the acceptable public policies.

The above implies that RCIUM must make a positive effort:

- to inform British Columbians of its findings;
- to elicit public views upon its findings;
- to communicate the range of informed public views to the final decision makers.



In total, RCIUM should design a public participation program that meets the following broad criteria:

- I. secures a relevant body of accurate information;
- II. informs the public of its findings;
- III. elicits public views upon its findings;
- IV. communicates its findings and the range of public views to the final decision makers.

To elaborate on the above, criterion I involves the identification of:

- the known and possible impacts of uranium exploitation, some of which will be tangible (for example, the economic benefits of uranium mining) and others of which will be intangible (for example, many of the social costs);
- the risks and uncertainty associated with uranium exploitation (including the uncertainty surrounding the capability of institutions to implement controls);
- the moral questions underlying the uranium issue.

Criterion II requires the communication of this information to the public in a comprehensible manner. Criterion III involves the elicitation of informed public views on the above such that:

- the impacts are evaluated according to the range of value systems held by British Columbians;
- the acceptability of the risk and uncertainty is determined;
- attitudes towards the moral questions are understood and appreciated.

Finally, criterion IV necessitates the communication to the final decision makers of:

- the results of the impact evaluations;
- informed public views on the risk, uncertainty and moral questions attached to the uranium issue,

for the range of value systems held by British Columbians.

The objective of this thesis is to evaluate the RCIUM process in terms of how successfully it facilitates the type of public participation that can help final decision makers reflect more accurately the preferences of their constituents in the formulation of government policy on uranium exploitation in British Columbia. It is suggested that the extent to which the RCIUM process meets criteria I to IV above (see p. 18) is the best possible indication of its success in facilitating such participation. Because RCIUM will not be eliciting public views upon its findings (criterion III) nor communicating its findings and the range of public views to government (criterion IV) until after I complete my thesis, I am unable to apply criteria III and IV.

Since the criteria are not expressed in quantitative terms, it is impossible to provide a precise determination of whether or not they are being met by RCIUM. It is possible, however, to describe the processes adopted by RCIUM and to identify the limitations of what is being done in terms of the criteria, and then to suggest ways in which RCIUM could have better arrived at criteria I and II above should such improvement seem appropriate.

### Nature of the Evaluation

#### External Evaluation

I am an external evaluator; that is, I am not hired by RCIUM or by a government agency or by any of the RCIUM participants.

#### Ongoing Evaluation

My evaluation is an ongoing evaluation; that is, it focuses on the RCIUM process rather than on the outcome. I attended all the community hearings (except those held at Fort Nelson) and a select number of the technical hearings. I did not attend the inaugural meetings. My study terminated about half way through the technical hearings' schedule.

### Impartial Evaluation

I am an impartial evaluator. I take no position on the uranium issue in British Columbia; as a matter of principle, I neither support nor oppose uranium mining.

### Comprehensive Evaluation

Assuming that British Columbians desire a more populist form of representative government, my evaluation is comprehensive.

### Information Sources

My information sources are as follows:

- (a) the Commissioners, the RCIUM staff, and the technical advisors;
- (b) RCIUM participants.

During the entire course of the study, I maintained repeated contacts with (a) and (b) above. Interviews with various people in these two categories constituted an important source of information.

- (c) observations made during the hearings;
- (d) conversations with members of the audience at the hearings;
- (e) conversations with people who, while not in attendance at the hearings, have informed opinions on the RCIUM process;
- (f) the RCIUM Transcripts of Proceedings (TP) and associated exhibits and statements of evidence;
- (g) media coverage of RCIUM (newspapers, radio, etc.);
- (h) items published by RCIUM.

### CHAPTER III

#### COMMISSION ACTIVITIES

##### Introduction

Following their appointment, the RCIUM Commissioners established an office in Vancouver and hired a staff (including technical advisors) to aid them in their work (see Appendix 2). Then, in order to satisfy their terms of reference, they decided upon a variety of activities:

- public sessions;
- Commission research;
- visits;
- library network;
- publicity.

This chapter describes each type of activity, thereby laying the ground-work for Part II of the thesis in which I perform the evaluation.

##### Public Sessions

On the 6 and 16th of March 1979, RCIUM conducted inaugural public meetings in Vancouver and Kelowna respectively. The purpose of these meetings was to give members of the public an opportunity: ". . . . to express their views concerning the terms of reference, the timing and conduct of the Inquiry, and to discuss how they might effectively participate in the work of the Commission" (Bates, TP, 1, p. 6).

RCIUM is conducting two different and distinct sets of public hearings; namely, informal community hearings and formal technical hearings.

The rules of procedure for these hearings are outlined in Appendix 1. Community hearings were held throughout British Columbia from 4 June 1979 to 4 July 1979, in communities either close to known uranium deposits or close to areas of interest to the uranium mining industry. The purpose of this first round of community hearings was to enable local concerns to be heard and to obtain information from the mining companies (Bates 1979, interview). In total, seven mining companies presented evidence and about 160 briefs were heard from local groups and individuals (see list, Appendix 3).

Witnesses presented their briefs under oath. After hearing each brief, the Commissioners, and members of the public, if they so wished, questioned the witness and/or commented on the brief. There was no cross-examination and no representation of witnesses by lawyers (with one exception), although opportunity for cross-examination by participants did exist (Letcher 1979, interview). Microphones were used and official reporters were present since a complete transcript of the proceedings at the community hearings was kept. The media were also present.

The technical hearings, which commenced on 25 September 1979 and continue till 27 June 1980, are subdivided into ten phases (see PR No. 5, Appendix 1). They are held at the Devonshire Hotel in downtown Vancouver. Phase X, however, will be held in Victoria. The purpose of these hearings, as explained by Dr. Bates (Vancouver Cable 10's "Nuclear Crossroads", 24 September 1979) is to obtain answers to the "tough" questions, both those suggested by and within the terms of reference and those raised in the community hearings. Dr. Bates (1979b, letter) also sees the technical hearings as constituting: ". . . a major process of mutual education."

Twenty-five groups, referred to as "major participants", participate full-time in the technical hearings (see list, PR No. 5, Appendix 1).

Dr. Bates is hopeful that the major participants will raise, between them, sufficient information to answer the "tough" questions referred to above (Vancouver Cable 10's "Nuclear Crossroads", 24 September 1979).

The procedures adopted at the technical hearings are similar, in many respects, to those of a court of law. Sworn evidence is presented by witnesses who are then subjected to cross-examination by Commission counsel; by major participants, some of whom are represented by lawyers; and by members of the public, if they so desire and if sufficient time is available. The ordering of witnesses and of cross-examination by major participants is at the discretion of the Commissioners (PR No. 1, B.5.2, Appendix 1). Contrary to PR No. 1, B.5.1, a major participant does not re-examine his/her witness following the cross-examination by other major participants. Neither does a major participant examine his/her witness during the hearings and prior to the cross-examination.

Witnesses are allowed 15-20 minutes in which to present a summary of their evidence; their full statements or evidence are filed with RCIUM. No uniform time limit is set for cross-examination although vigorous limitations based on relevance are imposed, and all major participants wishing to cross-examine are required to give a time estimate for their questioning to the Executive secretary. As in the community hearings, official transcript reporters and media representatives are present.

In March 1979, RCIUM created a Technical Advisory Group (TAG) consisting of Mr. Hodge (research coordinator), Mr. Brawner, Dr. Fletcher, Dr. Matthews, Dr. Sinclair and Dr. Morrison (see Appendix 2). In August 1979, TAG was formally dissolved because its initial purpose of identifying witnesses and defining technical questions had come to an end, and the expertise of existing members was recognized as being limited (there were no environmental, biological or social impact experts); hence RCIUM drew

in six additional technical advisors who are unable to meet on a regular basis (Hodge 1980a, interview). Also, in August 1979, RCIUM hired two more research coordinators (Mr. Culbert and Ms. Lexier) in order to reduce the work load of Mr. Hodge. Hence TAG was replaced by a team of three research coordinators and 11 technical advisors (see Appendix 2).

The original technical hearings' schedule recognized only four phases (see PR No. 1, Appendix 1). On 14 July 1979, RCIUM expanded the schedule to ten phases (see PR No. 2) since it was recognized that the issue was becoming increasingly complex as more and more information was made available (Murray 1980, interview). This second schedule was modified in October 1979, in that Phase VII was extended by four days and "overflow" hearings were planned for February 1980.

On 30 October 1979, RCIUM announced an expansion of its technical hearings' schedule from 48 days to 66 days in order to accommodate an increased number of witnesses and to allow for the fact that cross-examination was taking longer than expected (TP, 32, pp. 5016-8). This was met with a request from a large number of major participants to extend the hearings still further to a total of 96 days (TP, 35, p. 5569). In response, RCIUM announced, on 13 November 1979, that the hearings would be expanded to a total of 92 days (see PR, No. 5 for the current schedule).

Major participants were asked to prepare a statement of the conclusions that they reach from the technical hearings. These statements, which will assist the Commissioners in reaching their own conclusions, are to be discussed at a public session after the completion of the technical hearings. A second round of community hearings is scheduled for September and October, 1980. In these hearings, the public's response to the evidence presented in the technical hearings will be ascertained (Bates 1979, speech).

### Commission Research

In March 1979, the RCIUM Commissioners decided upon and initiated five research projects:

- a bibliographic review of low level radiation exposure;
- a study of the geochemistry of uranium in natural and man-made environments;
- a survey of the geology and mineralogy of British Columbia's uranium deposits;
- a review of uranium tailings disposal methods;
- a study of natural radioactivity in biological pathways.

(TP, 1, pp. 13-14).

These projects were made the responsibility of TAG.

In May 1979, the research projects were terminated because they were serving no useful purpose for RCIUM (Hodge 1980d, interview). The sole output of TAG's research was a report on uranium mining and waste disposal and a bibliography on epidemiological data from miners (Bates 1980c, interview).

RCIUM has since authorized about eight research studies. For example:

- (1) An assessment of the environmental impacts through biological pathways of uranium mining and milling in British Columbia by the Batelle Memorial Institute of Richland, Washington.
- (2) An appraisal of the possible benefits of bacterial-assisted ferric iron leaching of uranium ores by British Columbia Research.
- (3) A study on the application of irrigation and fertilizer to post-glacial uranium in the soil by Dr. Lavkulich, Department of Soil Science, UBC.

(Culbert 1980e, interview).



### Visits

In April and May, 1979, the RCIUM Commissioners visited a number of extraprovincial uranium mines in order to acquaint themselves with "contemporary problems" (Bates 1979, speech). Appendix 4 lists some of the observations made during these visits. The Commissioners are planning further visits to uranium mine sites in February and July, 1980. In February, Dr. Bates and Brigadier General Danby (the Executive secretary) will visit the Australian uranium mining industry, while Dr. Murray and Mr. Raudsepp will visit the Japanese uranium mining industry; and, in July, Dr. Bates and Dr. Murray will visit a number of uranium mines in Saskatchewan (Bates 1980b, interview).

Concurrent with the first round of community hearings, the Commissioners, together with certain members of TAG and local environmentalists, visited all uranium deposits in British Columbia; at least, those deposits then known to RCIUM (TP, 6, p. 548). Appendix 4 lists the deposits visited. As explained by Dr. Bates (1980c, interview), the reason the Commissioners wanted to see the deposits for themselves was twofold:

- (1) "The Department of Mines in Victoria had incomplete knowledge of the precise status of exploration activity. We felt it was necessary to know this status."
- (2) "We wanted to be able to form an opinion on the validity of public input about hazards. . . . For example, there was a huge public outcry about risk at Genelle. We went to see if what they were saying was true: for example, was their water supply close to the deposit. . . .?"

On 15 August 1979, the Commissioners sent their First Interim Report on Uranium Mining (hereafter referred to as the Interim Report) to the Lieutenant-Governor in Council. Parts of this report are reproduced in Appendix 5. The Report contains a list of initial recommendations concerning uranium exploration that the Commissioners felt should be brought to

the government's immediate attention. These recommendations are based, in part, on the observations made by the Commissioners at the uranium deposits (see p.71 below).

### Library Network

The RCIUM library (hereafter referred to as 'the Library') was established at the beginning of April 1979 in the same building as the RCIUM office. It contains a collection of:

- books;
- journal articles;
- maps;
- periodicals;
- microfiches;
- Transcripts of Proceedings;
- statements of evidence;
- exhibits;
- legislation;
- videocassettes;
- exploration reports;
- responses to Uranium Exploration Questionnaire.

This collection serves the needs of the Commissioners, the RCIUM staff, the technical advisors, RCIUM participants and interested members of the public (Uranium Information Centre Fact Sheet 1980).

The Library is open from 8:30 a.m. to 5:00 p.m. on weekdays. In addition, as of 2 October 1979, it is open on Tuesday, Wednesday and Thursday evenings from 7:00 p.m. to 9:00 p.m., and on Saturday mornings from 9:00 a.m. to 12:00 noon, of weeks in which the technical hearings are in session (TP, 248, pp. 3235-6).

The RCIUM librarian, Miss McCall, maintains up-to-date Accession Lists of all the items in the Library. Also available is a list of libraries in British Columbia (depository libraries) that hold copies of the Transcripts of Proceedings, statements of evidence, Accession Lists and the Interim Report. Copies of the exhibits are not sent to the depository libraries; the exhibits, however, at least those for the technical hearings, are similar in content to the corresponding statements of evidence (McCall 1980b, interview). Finally, a list of depository libraries that hold edited videocassettes of the first two phases of the technical hearings and facilities for viewing these can be obtained from Miss McCall. Appendix 6 lists the depository libraries.

Books, journal articles and microfiches are added to the Library collection as and when they are referred to or requested by the Commissioners, RCIUM staff, RCIUM participants or interested members of the public (McCall 1979d, interview). The inclusion criterion adopted by Miss McCall is that, while she attempts to reflect all sides of the argument in her selection of materials for the Library, the items must be relevant to RCIUM's terms of reference (McCall 1980a, interview).

There are about fifteen sets of maps in the Library, illustrating such things as:

- the location of mineral claims in British Columbia;
- the level of uranium in stream waters and stream sediments in different parts of British Columbia.

In addition, there is a map prepared by the RCIUM staff entitled: Distribution of Uranium Exploration Mineral Claims and Radioactive Occurrences in British Columbia.

The Library subscribes to about 30 different periodicals reflecting the interests of environmental groups, government agencies, mining

companies and pro-nuclear associations. In addition, the Library receives several science journals and three daily newspapers.

In a letter addressed to WCELA (25 April 1979), Mr. Anthony, Commission counsel, explained that RCIUM was: ". . . . prepared to enter into an agreement with WCELA for the following research services:

. . . . (WCELA) will hire one full time student of law to research the law and practise in effect in British Columbia and selected other jurisdictions as it relates to all of those issues falling with the terms of reference of [RCIUM]. . . . The research will include all federal legislation in Canada, provincial legislation in other provinces of Canada and legislation in the United States of America and other jurisdictions of interest to the Inquiry.

This research was conducted by Ms. Edwards from 1 May to 30 September, 1979. As a result, the Library contains some twenty volumes of legislation.

The Library contains exploration reports from about 80 mining companies that are, or have been, exploring actively for uranium in British Columbia, and the responses of 48 mining companies to a Uranium Exploration Questionnaire (October 1979). This questionnaire was sent, at the end of October 1979, to 54 mining companies that RCIUM had identified as exploring for uranium in British Columbia (Culbert 1980a, interview). Included in the Questionnaire are such requests as:

- "Has your company taken out reclamation permits covering uranium exploration activities in British Columbia?"
- "Are you involved in uranium exploration on or near Indian reservations?"
- "Are alpha and gamma level ground surveys done over sites of disruptive exploration?"

In accordance with PR No. 1, B. 3.1 and B. 3.2 (see Appendix 1), the Library contains lists of documents held by the British Columbia government, the federal government, various boards and agencies, RCIUM major

participants and RCIUM, that are relevant to the subject matter before RCIUM. Enclosed with each list are details of how to obtain documents, at least, those that are public. The documents listed by RCIUM are all in the Library; so too are those listed by the Atomic Energy Control Board, Atomic Energy of Canada Limited (AECL), and the International Commission of Radiological Protection, and that Miss McCall could get access to.

Miss McCall (1980d, interview) was directed:

. . . . not to attempt to retrieve all the documents listed by the major participants but to be aware of where they could be located should it be necessary to use them.

### Publicity

RCIUM sent public notices to all major newspapers in British Columbia announcing:

- the dates and locations of the inaugural public meetings, the community hearings and the technical hearings;
- the purpose of the various public sessions;
- the guidelines for funding of participants;
- the revised schedules of the technical hearings.

In addition, RCIUM distributes fact sheets on the library network (Commission library plus depository libraries) to interested individuals.

In September 1979, RCIUM hired the services of a Mr. Grant and a Mr. Shaw to report on RCIUM's proceedings. Mr. Grant is RCIUM's news release officer. His selection was the responsibility of the advertising agency with which RCIUM placed a contract (Bates 1980c, interview). He is independent of RCIUM, and the information in his releases does not reflect, necessarily, the views of RCIUM. Mr. Grant issues a news release on each day that the technical hearings are in session.

Mr. Shaw writes, and is editor of, the Uranium Inquiry Digest (UID). Like Mr. Grant, he is independent of RCIUM, and undertakes: ". . . . to report, objectively, the varying viewpoints expressed by those making submissions to the Commission." (UID 15). UID is: ". . . . produced and distributed after each phase of the . . . . technical sessions" and ". . . . is . . . . sent to 269 public libraries in B.C. as well as nearly 600 interest groups, individuals, mining companies, news media and major participants in the Inquiry." (UID 1). By issue number 10 (5-15 February 1980), about 1500 people had written to RCIUM asking for a subscription (Bates, 1980c, interview).

The Metro Media Association of Greater Vancouver was contracted by RCIUM to videotape the proceedings at the technical hearings. The unedited videotapes are shown on Vancouver Cable 10, and as of the beginning of December 1979, on cable television in the interior and on Vancouver Island on a one-day delayed basis from 9:00 a.m. to 2:00 p.m. on Wednesday to Saturday inclusive of the weeks in which the hearings are in session (TP, 44, p. 7499). Mr. Culbert, RCIUM research coordinator, is responsible for producing the edited videocassettes of each phase of the technical hearings. As of the end of January 1980, only those for the first two phases had been completed; Mr. Culbert (1980f, interview) had not had time to do more.

RCIUM staff have been interviewed by the media on a number of occasions. For example, Dr. Bates had appeared on Canadian Broadcasting's (CBC's) "Evening News" (9 June 1979); Vancouver Cable 10's "Nuclear Crossroads" (24 September 1979); and Vancouver Cable 8's "Jack Webster Show" (24 January 1980); and both Dr. Bates and Mr. Anthony were interviewed on Vancouver Co-Op Radio's "Legal Services Commission" (26 April 1979). In addition, Dr. Bates made a speech at Simon Fraser's University's (SFU's) "Nuclear Awareness Week" (10 October 1979).

Preface to Part II

The second part of the thesis consists of the evaluation of the RCIUM process against the first two of the four broad criteria listed on p. 18 above. Chapters IV and V contain the evaluations against criteria I and II respectively; Chapter VI contains recommendations and conclusions.

Each of Chapters IV and V are divided into a number of sections. The first section ("Introduction") lists RCIUM activities that are relevant to the criterion under examination. Each of the following sections (one for each relevant activity) are divided into three parts:

- "Questions to be Addressed" in the evaluation;
- "Application of Criterion" (the actual evaluation);
- "Limiting Factors" (an identification of those factors that influence the extent to which the criterion is not being met, if, this is the case).

It is argued that there are two orders of limiting factors, higher order and lower order. Higher order factors include RCIUM's terms of reference; the nature of the uranium issue; political constraints; commissioners' powers as conferred by the Public Inquiries Act; RCIUM's budget; and the provision of government funding for major participants in RCIUM. In cases where these factors operate to limit the degree to which a particular criterion is met, RCIUM cannot be held responsible. Lower order factors include the Commissioners' understanding of the inquiry process; the choice of methods for gathering and receiving information; RCIUM's interpretation of the use of its powers; and the capabilities and biases of the Commissioners, the RCIUM staff and the technical advisors. These limiting factors are self-imposed, and in cases where they reduce the degree to which a particular criterion is met, there are major opportunities for improvement. The final section ("Summation") in each of Chapters IV and V discusses RCIUM's overall success in meeting the particular criterion under examination.

## CHAPTER IV

### CRITERION I: SECURE A RELEVANT BODY OF ACCURATE INFORMATION

#### Introduction

As described on p. 18 above, a relevant body of information consists of the identification of:

- the known and possible impacts of uranium exploitation;
- the risks and uncertainties associated with uranium exploitation;
- the moral questions underlying the uranium issue.

RCIUM's activities pertaining to criterion I are:

- public sessions;
- Commission research;
- visits;
- library network.

#### Public Sessions

##### Questions to be Addressed

With issues that are clearly scientific in nature, the academic system of hypothesis and proof, conducted through scientific congresses and published journals, is used to arrive at scientific conclusions (Thompson 1976). However, as Weinberg (1972, pp 215, 216) notes:

Where the questions raised cannot be answered from existing scientific knowledge or from research which can be carried out reasonably rapidly and without disproportionate expense, . . . . the adversary procedure seems . . . . to be the best alternative.



. . . . this procedure . . . . has considerable merit in forcing scientists to be more honest, to say where science ends and trans-science begins, as well as to help weigh the ethical issues which underlie . . . . [societal] choices . . . .

And as Thompson (1976, p. 20) points out:

. . . . technical . . . . accuracy, and sounder judgment and opinion are more likely to prevail where there has been full disclosure and open challenge in an adversary fashion . . . .

The questions presented by the uranium issue are complex and many of them transcend science. It is argued, therefore, that the adversary process, as is adopted at RCIUM's technical hearings, provides a significant opportunity for arriving at a relevant body of accurate information. For such to occur, the adversary process must exhibit the following characteristics (Thompson 1976, p. 21):

- (1) There must be present effective adversaries who can take advantage of disclosure requirements, assemble competing technological information and persist in the hearings through the procedures of cross-examining witnesses and presenting their own cases.
- (2) All affected interests must be represented by such adversaries.

The questions that arise from the above are:

- (a) Are all affected interests represented during the process by RCIUM participants (adversaries)?
- (b) Are participants able to summon all relevant witnesses?
- (c) Is there opportunity to cross-examine all witnesses?
- (d) Are all relevant documents made available?
- (e) Is there opportunity to assemble and present competing evidence?
- (f) Is there sufficient time in which to study materials, and to prepare witnesses and cross-examination?
- (g) Are adequate resources made available to do the above?

The purpose of the first round of community hearings was:

" . . . . to give the Commissioners the opportunity of understanding the local issues facing these communities that could be affected by uranium mining in British Columbia." (Vancouver Express, 7 May 1979). In other words, there was opportunity to learn from community people about known and possible local impacts of uranium exploitation. Given this purpose, it is fair to ask only question (a) above of the first round community hearings. In addition, it is necessary to ask whether RCIUM devoted sufficient time to hearing local concerns, since although most affected interests may have been represented at the community hearings, they may not have been given the attention they merited.

It was made apparent during the actual proceedings, that the purpose of the first round community hearings was also: " . . . . to provide information to the Commission and to the community on mining activity . . . . " (Anthony, TP, 3, p. 33); that is, the hearings were to have an educative value (Criterion II). It is argued that the information received by RCIUM from the mining companies should be challenged within an adversary format. This, in fact, did occur during the technical hearings (which are fully evaluated against criterion I), although not in the first round community hearings.

Public views on the information presented in the technical hearings are to be elicited in the second round community hearings (see p. 24 above). These hearings do not qualify, therefore, for evaluation against criterion I.

## Application of Criterion

### Community Hearings

Were all affected interests represented? Individuals and organizations wishing to appear before RCIUM at a community hearing were required to:

- (1) write immediately to inform the Executive secretary, and
- (2) prepare a brief to be forwarded to the Executive secretary prior to their appearance before the Commission

(Public Notice, Vancouver Express,  
16 February 1979)

There was opportunity, however, for informal presentation to be made before RCIUM without prior notice being given.

Local people experienced a number of inconveniences concerning the timing of the community hearings. In the Kootenays, the hearings coincided with the ranchers' sprinkling season, while in the Chilcotin (Williams Lake and Vanderhoof), they coincided with the haying season. Daytime sessions were inconvenient for working people; however, evening sessions were held in all the communities visited.

Several participants complained about the formality of the proceedings adopted in the first round community hearings. For example, Mr. Poole of the Committee for the Clear Kettle Valley made the following comments (TP, 9, pp. 1282-3):

We found ourselves in a physical arrangement which, in our opinion, was not designed to encourage dialogue or maximize participation. The position of the Commissioners on a raised platform facing the assemblage suggested adversaries rather than comrades in a common search for truth. The necessity of being called upon and of walking to a microphone before one could speak discouraged spontaneity and overlooked the fact that many people are more comfortable with speaking off the cuff than reading a prepared statement.

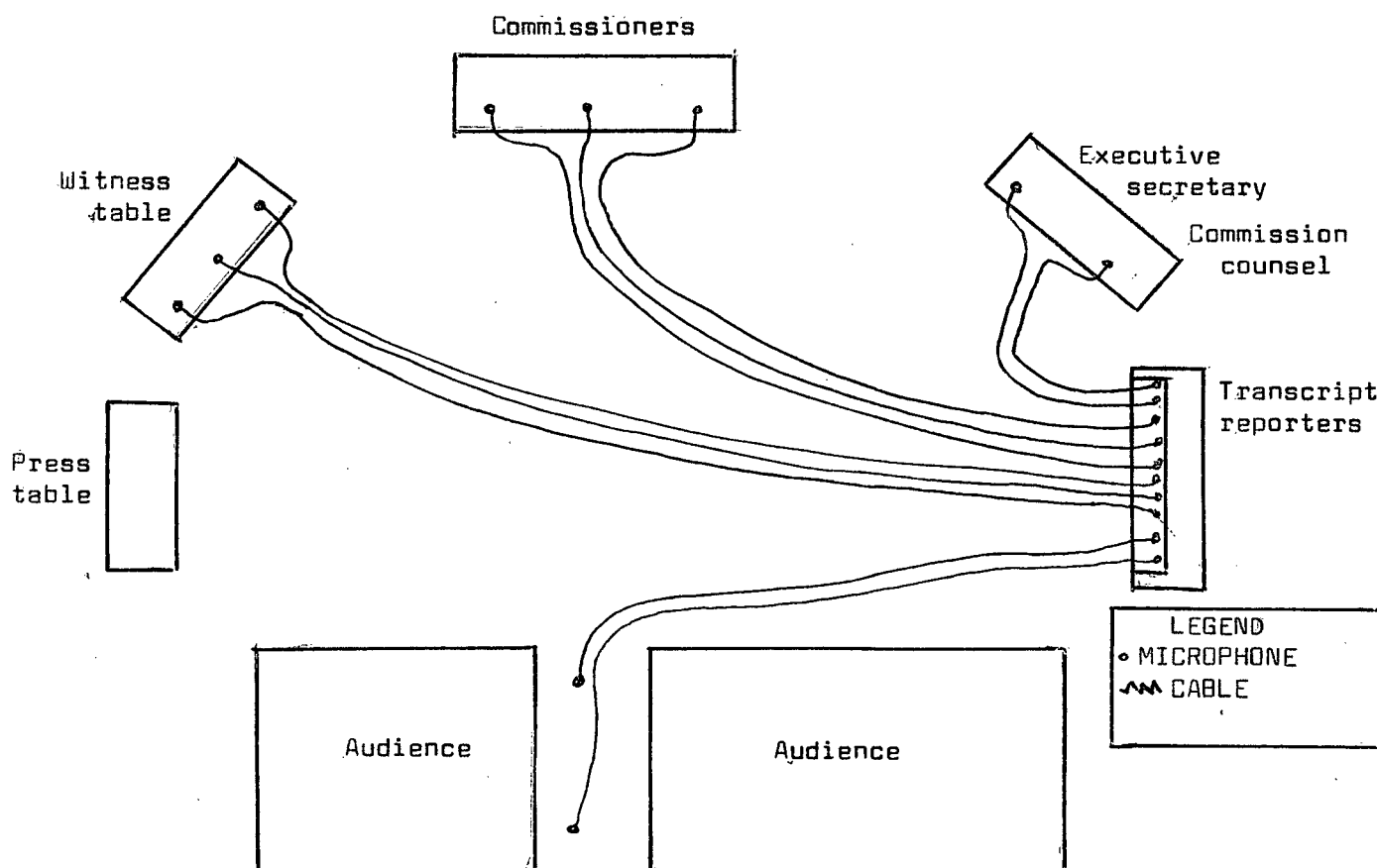
. . . . What we are getting at is [that] the process . . . .  
seems formal enough to intimidate some people.

<sup>1</sup>It is not surprising that such comments were made about the formality of the proceedings. For example, because the transcript reporters, whose presence itself was somewhat daunting, had to see who was speaking, the layout illustrated in Figure 2, below was essential; that is, people could not sit between the reporters and the witness table but had to sit at some distance away from the Commissioners (Bemininster 1980, interview). At Castlegar, there was about 30 feet between the Commissioners and the audience. Additional aspects that contributed to the formality of the proceedings included the following:

- there were press reporters and a videotape crew at most of the community hearings;
- sometimes the Commissioners sat on a raised platform;
- the Commissioners dressed formally (suits and ties).

FIGURE 2

## LAYOUT AT COMMUNITY HEARINGS



Although the witnesses appearing at the first round community hearings represented a wide range of interests (see Appendix 3), except at Williams Lake, Vanderhoof, and Fort Nelson, those participating were few in comparison to the total number of people in the audiences (see Figure 3 below), and since they were few, it is probable that they were different from society as a whole (Heberlein 1976a). Thus, based on my own observations, it seemed that there were three distinct groups of participants:

- professional experts (mining company representatives, professors, lawyers, medical doctors and others) who were not intimidated by the setting;
- private citizens who had sufficiently high motivation to participate (individuals who would be directly and severely affected by uranium mining);
- individuals who were not particularly aware of the behavioural norms of the setting or, if aware, were not intimidated by these norms (their testimonies tended to be long, rambling and often impassioned).

FIGURE 3

NUMBER OF WITNESSES  
AT THE COMMUNITY HEARINGS

Location of hearing	Number of people in audience at most attended session	Total number of witnesses	Number of witnesses as a percentage of audience size
Kelowna	150	28	18.67
Clearwater	200	22	11.00
Kamloops	60	18	30.00
Rock Creek	150	16	10.67
Grand Forks	250	23	9.20
Castlegar	100	26	26.00
Williams Lake	25	9	36.00
Vanderhoof	80	7	8.75
Fort Nelson	6	0	0.00
Atlin	100	17	17.00

To summarize, the formality of the proceedings adopted at the first round community hearings, together with the timing inconveniences, possibly limited the Commissioners' success in hearing about local concerns. In addition those participating were probably not representative of society as a whole.

Was sufficient time devoted to hearing local concerns? Judging from the following comments, the RCIUM Commissioners were more intent upon obtaining information from mining companies than upon hearing local concerns at the first round community hearings:

- (1) CBC's "Evening News", 9 June 1979.

Moderator: Have the major lines of debate come out?

Bates: Yes. The major reason for coming [to the communities] is to understand the communities' interests. All the aspects have come out; for example, tailings, disposal, irrigation water . . . .

Moderator: Has anything surprised you?

Bates: No. Anyone who knows anything about this industry [uranium mining] in British Columbia should realize what all the concerns are [my emphasis].

- (2) Ms. Stairs, RCIUM community relations consultant (1980 interview):

It is my feeling that the Commissioners saw these hearings as technical sessions with a community component.

In addition:

- the mining companies presented their briefs first;
- mining company representatives occupied the witness stand for considerable lengths of time relative to other witnesses (see Figure 4, page 40, below).

FIGURE 4

TIME DEVOTED TO MINING COMPANIES  
IN THE COMMUNITY HEARINGS

Location of hearing	Approximate duration of hearing (mins.)	Approximate length of time devoted to mining companies (mins.)	Percentage of total time devoted to mining companies	Comments
Kelowna	570	205	36.0	Stampede International Co. announced its decision to cease exploration.
Clearwater	315	120	38.1	
Kamloops	300	85	28.3	
Rock Creek	336	142	42.3	
Grand Forks	290	65	22.4	
Castlegar	430	43	10.0	
Williams Lake	130	0	0	No companies appeared.
Vanderhoof	140	0	0	As above.
Fort Nelson	-	-	-	As above.
Atlin	-	-	-	No data.

At the Kelowna hearing, Dr. Bates (TP, 3, p. 35) said that the mining companies presented their briefs first since it was felt that an assessment of the present status of exploration and possible plans for development: ". . . . were essential information to get into the record at the first and earliest stage."

Many participants were confused about the exact purpose of the first round community hearings. For example, at the Kelowna hearing, Mr. Chataway of the Okanagan Greenpeace Foundation expressed the concern that these sessions should not be characterized as public hearings (for which all groups have had the resources with which to prepare briefs), but rather

as community meetings (TP, 3, pp. 8-9). Mr. Anthony, Commission counsel (TP, 3, p. 35) interpreted Mr. Chataway's concern as follows:

. . . . The Okanagan Greenpeace has some serious concerns about their ability to effectively participate in these sessions. . . . while the companies have had the time and the resources to make presentations. . . . these . . . . will stand largely unchallenged by groups who may disagree with even the factual information . . . . and because of that . . . . these sessions . . . . may turn out . . . . to be more of a hearing than an informational session, and the community groups not having the time and the resources could not effectively participate . . . .

Dr. Bates did not acknowledge a difference between public hearings and informational sessions. As a result, many participants understood the first round community hearings to be public hearings, and hence numerous complaints were heard about the difficulty of preparing relevant briefs for these sessions. Several participants complained that the community hearings had been convened too hastily and that they had not been able to prepare adequately (see, for example, TP, 4, p. 461). Indeed, details of the dates and locations of the first round community hearings did not appear in the press until the end of April 1979 (Charlton 1980, interview). In addition, much time was spent hearing about the difficulties involved in obtaining relevant information. For example, at the Kelowna hearing, Mrs. Madsen of the Sierra Club and Mr. Moelaert of the Canadian Coalition for Nuclear Responsibility (CCNR) each took about 30 minutes describing their struggles to obtain information on the uranium exploration activities of mining companies in British Columbia (see TP, 4, pp. 421-2 and pp. 288-95 respectively).

At the inaugural public meetings, Dr. Bates (TP, 1, pp. 3-4) explained how the Commissioners had interpreted RCIUM's terms of reference:



We are committed to ensuring that all the relevant evidence is brought before us relating to the . . . . terms of reference. That does not mean that all of the many issues arising out of the nuclear fuel cycle or the use of nuclear energy are within this Commission's terms of reference.

For example, it seems clear to us that the safety aspects of segments of the nuclear fuel cycle that go beyond mining and milling for uranium such as the safety of nuclear reactors. . . . are not within our terms of reference. Nor are we directed to give advice . . . . on the comparative benefits or hazards of nuclear energy compared with different methods of energy generation.

But having said that, the words in the Order-in-Council . . . . direct us to examine the adequacy of measures designed . . . .

"For the protection of the environment  
and the public"

These are very general words and we certainly have every intention of listening to any issues which any member of the public wishes to present to us bearing on the general question of public well-being and environmental protection arising out of uranium exploration and mining.

Despite these words, the Commissioners listened to numerous briefs during the first round community hearings that were outside RCIUM's terms of reference, at least as interpreted by the Commissioners. They did not point this out during the course of the hearings, but, instead, allowed people to believe that they had not narrowed the debate to the extent indicated at the inaugural meetings. Their reason for so doing, as explained by Dr. Bates (1980c, interview), was as follows:

. . . . We [the Commissioners] had to be patient . . . . hearing views and questions outside our terms of reference if we were not to risk losing important input on matters relevant.

Due to the time spent in hearing:

- the briefs of mining companies;
- the complaints of confused participants;
- briefs that were outside the terms of reference,

less time was spent learning about local concerns, and hence local impacts, than might have been. In addition, because of RCIUM's fairly tight schedule and frequent underestimates of the number of local people wishing to present briefs, it was not uncommon for sessions to run late into the night. Hasty summaries of briefs and condensed question periods resulted.<sup>1</sup>

### Technical Hearings

Are all affected interests represented? The current list of major participants is included in PR No. 5 (see Appendix 1). Mr. Anthony, Commission counsel (Minutes of meeting with major participants, 1979b) explained that a major participant is a group that is active throughout the technical hearings and recognized as such either by its expertise, function, receipt of funds, or expressed intention. Fourteen of the major participants receive participant funding (see Appendix 7). The guidelines for funding are as outlined in Appendix 8 (Public Notice, Vancouver Express, 12 March 1979). RCIUM seems to have recognized all major affected interests in its support of major participants at the technical hearings.

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<sup>1</sup>Ms. Stairs (community relations consultant) was expected to go ahead of RCIUM to help structure first round community hearings (see Appendix 2). However, she spent very little time in the communities before the hearings. Ms. Stairs' (1980, interview) explanation for this was as follows:

I was only hired a few weeks before the hearings started and there wasn't much time. I had time to go to half the places two weeks before and to the rest of the places one day before. No one realized that this role [structuring the community hearings] was important until the hearings were right upon us.

Had Ms. Stairs spent more time in the communities before the community hearings, some of the above problems might have been ameliorated (see pp. 65-66 below).

Are participants able to summon all relevant witnesses? More than half of the witnesses called between 25 September 1979 and 17 January 1980 have been RCIUM witnesses (27 out of a total of 50). Mr. Anthony's (1980b, interview) explanation for this is as follows:

In this inquiry we have a very polarized, two-sided debate . . . . The Commission has to call most of the witnesses because the major participants' witnesses are just there to prove one side of the debate. We [the Commission] have to call witnesses that will reflect both sides of the debate.

On 7 August 1979, Mr. Anthony (Minutes of meeting with major participants, 1979b) informed major participants that:

. . . . the Commission has agreed to consider financing witnesses called by others. It would still be the responsibility of the participants to make the necessary arrangements for the witness. It is unlikely that this assistance will be provided to government or other independently funded organizations. Decisions on funding will be the responsibility of the Commissioners.

As explained by Dr. Bates (1980c, interview), RCIUM agreed to the above in order: ". . . . to save the participants' money." Dr. Bates (1980c, interview) maintains that the criterion used by the Commissioners in decisions on funding is that the witness has "additional, unpublished material" to present to RCIUM. According to many major participants, RCIUM generally pays only for those witnesses that the Commissioners consider to have a high level of technical expertise (Boyce 1979, interview; Minutes of first and second Kelowna meetings of participants, 1979; Clark 1980, interview). Major participants pay for the remaining witnesses if they wish to hear from them still and if they have sufficient funds. From time to time, however, RCIUM has funded witnesses who are not technical experts but have practical experience that is of relevance to RCIUM; for example, Mr. G. Newell of the Pulp, Paper and Woodworkers of Canada who has union experience (Culbert 1980g, interview).

To obtain an idea of major participants' activity in summoning relevant witnesses, I questioned representatives of six major participant groups (see Appendix 9, column I). Their responses are presented in column II of Appendix 9. With the exception of Rexspar's witnesses, almost all the witnesses referred to in column II of Appendix 9 are being paid for by RCIUM (Culbert 1980i, interview).

In total, because of the polarized nature of the uranium issue, RCIUM has decided to call in most of the witnesses. RCIUM pays for witnesses identified by major participant groups that lack independent funds if the Commissioners are satisfied that such witnesses have useful, additional information for RCIUM.

Is there opportunity to cross-examine all witnesses? Certainly, the opportunity exists for major participants to cross-examine witnesses called by others. Column III of Appendix 9 describes the way in which six major participants make use of this opportunity. It seems that most of them use cross-examination to bring out their individual cases and to determine the credibility of witnesses. In contrast, Mr. Anthony (1980b, interview) uses cross examination:

- to obtain more information from a witness;
- to test the accuracy of evidence;
- sometimes, to determine a witness' reaction to conflicting evidence.

At the beginning of the technical hearings, Mr. Anthony told the major participants not to rely on the order of witnesses being as it is laid out in the time-table (Minutes of meeting with major participants, 1979a). Thus the Commissioners had agreed to the major participants' almost unanimous request that there be no time limit on cross-examination of witnesses; hence, in cases where the cross-examination of evidence takes longer than the time provided for in the technical hearings

schedule, the witnesses not heard from are re-scheduled to appear during the "overflow" hearings in February 1980, and, if necessary, precedence is given to witnesses who have to travel great distances to appear before RCIUM (Memorandum to major participants, 1979).

Pursuant to PR No. 1, B.6.2 (see Appendix 1), RCIUM may seek information from parties without them appearing at a hearing. Hence, it is possible that some information is obtained by RCIUM from witnesses who are not cross-examined. The reason for this ruling is as follows. In British Columbia, a number of mining companies are interested in mining uranium. A few of these companies have fairly advanced proposals; for example, Norcen Energy Resources Limited. These companies may give information to RCIUM only if it is kept confidential since otherwise they might lose their competitive advantage. The problem is, as explained by Mr. Anthony (1980d, interview), that:

. . . . the Commission is involved in an on-going competitive field. We are looking into an industry, not just one company . . . . The Commission regarded it [the uranium issue] as broader than just one or two companies and tried to get information from all other companies too.

Mr. Paterson, legal counsel for CCU, does not regard the issue as being very much broader than just one company (Norcen). His opinion is that RCIUM is dealing with the one proposed operating uranium mine in British Columbia for which there is already a contract signed for delivery of the mineral (see p. 8 above and TP, 48, p. 8423). Mr. Paterson would like RCIUM to focus its energies on Norcen's Blizzard property and demand full public disclosure of all relevant information from this company. However, RCIUM's role is to recommend standards for uranium mining throughout British Columbia. As Dr. Bates (TP, 2, p. 12) has said: "Our task is to examine all of the deposits in British Columbia

and consider the particular issues raised by each so that the actual mining begins." If RCIUM were to concentrate solely on Norcen's proposal, it would run the risk of being able to make only specific recommendations and not general ones.

Often the Commissioners have told major participants to condense their cross-examination because time is so short (see, for example, TP, 56, p. 10025 and 59, pp. 10689-90). This "hurrying" reduces the opportunity to cross-examine witnesses. It is postulated that the time shortages are the result of the following factors:

- (a) some of the witnesses take a long time to answer during cross-examination by major participants;
- (b) time is wasted with irrelevant and/or repititious cross-examination;
- (c) the Commissioners are in a hurry to finish.

(a) Delays in answering. Ms. Boggild, legal counsel for WCELA (Vancouver Cable 10's "Nuclear Crossroads", 26 November 1979), has noted that:

There's been a lot of cross-examination by major participants who are against uranium mining. But it's the proponents who are taking up the time--they take a long time to answer.

Instances of such answering delays are documented by Ms. Konstantynowicz in her reports on RCIUM to AECL. For example:

It was apparent . . . . that the panel [from the Department of Energy, Mines and Petroleum Resources] was ill-equipped for most of the questioning. They hesitated and paused in answering questions and quite often gave contradictory answers . . . many of the questions were not clearly answered.

(Report No. 1, 11 October 1979).

Mr. Anthony's (1980c, interview) opinion on the above is that the problem can be overcome by the way questions are posed, by which he meant that

sometimes witnesses are asked questions that would be better directed towards other witnesses who have the relevant expertise.

It is the role of the Commissioner who is acting as chairman at a particular session (not always Dr. Bates) to maintain careful control over unnecessary repetition or irrelevant questioning. However, as Ms. Rounthwaite, legal counsel for EAAUM (1980b, interview), pointed out, the Commissioners do not do this very rigorously. It is suggested that this is because the Commissioners possess, between them, very little legal experience. Mr. Raudsepp does have a fair amount of experience in chairing legal procedures (see p. 9 above). However, based on my own observations and calculations, he presided over the proceedings on only about 12 per cent of the total number of hearing days between 25 September 1979 and 16 January 1980 inclusive, the corresponding percentages for Dr. Bates and Dr. Murray being 64 and 24 respectively. On those occasions that he did preside, Mr. Raudsepp imposed rigorous rules of relevancy and proved himself to be the most willing of the Commissioners to rule questioners out of order (see, for example, TP, 23, pp. 2991, 3048-50 and 26, pp. 3636-7, 3780-1).

(b) Time wasted in cross-examination. On 13 December 1979, Mr. Anthony (Minutes of meeting with major participants, 1979c) urged major participants to adopt what he called the "so what test" to cross-examination. This test, as explained by Terral (1980) is:

. . . . a useful test, a way of keeping your eye on the target and reminding yourself what the basic issues are . . . . It goes something like this: suppose you ask your question, and suppose you get your answer. Suppose you get the answer you expected. So what? What does it really mean? What does it matter?

And, as Mr. Anthony (1980c, interview) added: "Does it help you make your case or advance the knowledge of the Commission in a meaningful

way?" Mr. Anthony's concern was that a lot of the major participants' cross-examination is irrelevant; by which he meant that it is not drawing out much additional information.

Dr. Switzer of Rexspar (1980, interview) expressed the opinion that RCIUM has identified too many major participants with the result that a great deal of time is wasted with repetitious cross-examination. But, as noted above, (p. 48), it is the chairman's responsibility to keep a check on unnecessary repetition. Based on my own observations and calculations:

- 50 to 70 per cent of the major participants are in attendance at any given technical session;
- less than half of the major participants cross-examine any given witness (see Appendix 10).

Appendix 10 indicates that the same few major participants (BCMA, BCCUCC, UBCIC, SKID, WCELA and EAAUM) undertake the bulk of the cross-examination. These participants each reflect different concerns (with the exception of WCELA and EAAUM which cross-examined the same witness in just two cases out of the ten exemplified in Appendix 10); hence it is unlikely that there is much overlap in cross-examination. Indeed, as Mr. Culbert, RCIUM research coordinator (1980h, interview), remarked, there is only about 15 to 20 per cent overlap in the questions posed by major participants, and since the groups involved question from different perspectives additional information is sometimes brought out. Both Mr. Rogers of UBCIC (1980d, interview) and Mrs. Boyce of BCCUCC (1980c, interview) agreed, but pointed out that there was more overlap at the beginning of the technical hearings than there was later on.

It is Mr. Culbert's (1980h, interview) impression that the major participants cooperate on a fairly regular basis and thereby considerably reduce the length of RCIUM. Some of the major participants were



meeting once a week at the beginning of the technical hearings to discuss strategy and to ensure that all angles were being covered between them (Boggild 1980b, interview). These meetings broke down soon after they started since they involved too much work and the groups found it easier to work alone (Rogers 1980d, interview). Some major participants continue to meet on a regular basis to discuss general problems, such as the areas that need more attention in cross-examination (Boggild 1980, interview).

(c) Hurrying to finish. Despite Dr. Bates (1979, speech) having said that a government is not permitted to put a time limit on a commission of inquiry, the Commissioners seem to be in a hurry to finish. It is hard to determine exactly why this is the case. Their reasons for the 27 June 1980 deadline on the technical hearings, as is illustrated by the following extract from the minutes of a meeting with major participants (1980), are somewhat confused:

Lois Boyce (United Church) questioned the . . . . deadline asking why it existed and why couldn't technical hearings not continue in the Fall? . . . .

. . . . Jim Murray suggested it was difficult to get witnesses to come in the summer.

Lois Boyce asked again why hearings could not continue in the Fall. It appears that there is a predetermined mould rather than fitting the schedule to the job that must be done.

Jim Murray said the Commissioners had not discussed it in detail but that the difficulty of obtaining additional funding was an important factor.

Cliff Stainsby (EAAUM) asked why it was not possible to agree to end the Commission when the job is done.

Valter Raudsepp pointed out that the Commissioners did have some other commitments and a number of factors had to be considered.

The feeling of several major participants is that the Commissioners' other commitments are sometimes taking priority. This is not meant to be interpreted as a criticism of the Commissioners. Thus, it has to be realized that they have been drawn away from their normal commitments and that RCIUM is taking longer than originally was expected. Hence, they are under a great deal of pressure and seem to have adopted a personal deadline date (Thompson 1980c, interview).

Concerning Phases VI to X, ten major participant groups are happy with the 27 June 1980 deadline providing a minimum of 12 more hearing days are added to the schedule, these groups being: UBCIC, BCCUCC, BCMA, CCU, JCUTH, WCELA, CCNR (Vancouver and Kelowna), YEA and CCBN. Their concern is that at least 12 additional hearing days are required if all the witnesses scheduled for Phases VI to X are to be accommodated (Minutes of meeting with major participants, 1980).

To summarize, most of the major participants interviewed use cross-examination to bring out their individual cases and to determine the credibility of witnesses. In contrast, Commission counsel uses cross-examination to draw out further information from witnesses. Because RCIUM is looking into an on-going competitive field, and because its task is to make general, as well as specific, recommendations, it is conceivable that RCIUM is receiving information in confidence that is not cross-examined.

Since RCIUM is short of time, there is less opportunity to cross-examine witnesses than might otherwise be the case. In large part, the time constraints seem to be due to the 27 June 1980 deadline on the technical hearings. Probably, this deadline will prevent RCIUM from hearing all witnesses. In part, the time shortages are the result of

inadequate chairing of the technical sessions; the shortages do not appear to be caused by overlap in cross-examination by major participants.

Are all relevant documents made available: As described on pp. 29-30 above, the RCIUM library contains lists of documents held by the British Columbia government, the federal government, various boards and agencies, major participants, and RCIUM, that are relevant to the subject matter before RCIUM. These lists, as Mr. Anthony (1979b, interview) remarked: ". . . . may have inadvertently been left incomplete." The problem for Mr. Paterson, legal counsel for CCU (1980, interview), is that he lacks the time to file all relevant documents with RCIUM. Several other participants expressed the same concern.

As outlined in PR No. 1, B.4.1 (see Appendix 1), each major participant, whether presenting evidence him/herself or calling expert witnesses on his/her behalf, is required to file with RCIUM a detailed statement of his/her evidence, together with a list of any reports, studies or other documents to which the witness may refer, and biographical notes on the witness (PR No. 1, B.4.1). This information is distributed to all major participants. Quite possibly, as in the above case, the lists of documents are not always complete.

Under the British Columbia Public Inquiries Act, the Commissioners have the power to summon witnesses and to call for the production of documents (s.10). As explained by Mr. Anthony (TP, 50, pp. 8828-29):

. . . . a subpoena . . . . is a tool of coercion . . . . forcing a witness to attend before the tribunal and requiring him, when he attends to bring all relevant documents with him. In other words, you find out about the documents only when the witness appears.

Mr. Anthony (1979b, interview) maintains that:

Forcing someone to appear is not the best way of getting information since a forced witness will not be particularly forthcoming with information. The subpoena is overrated--it is just the ultimate weapon. It is important to have it because it means that you can always tell reluctant people that they can be subpoenaed--then they usually cooperate.

Mr. Anthony (1979b, interview) has told major participants that they must try to obtain documents themselves. If they cannot, they must contact him and he will try. If he finds difficulties, RCIUM will issue a subpoena. A Task Force representing 21 funded RCIUM participants (1979, letter) expressed the concern that this procedure is too time consuming in practice and the PR No. 1, B.7.1 (see Appendix 1) should be amended as follows:

Subpoenas should be issued by the Commission upon application by any participant provided such participant has demonstrated that the evidence of the witness or the document is relevant to the Terms of Reference of the Commission.

This means that the Commission will issue a subpoena on request, in accordance with normal court procedure; relevancy being the only consideration.

Mr. Anthony's (1980c, interview) reply to the above was that while in court a party can be punished by having costs awarded against him for abuse of the subpoena power; there is no such control in inquiries. But, Dr. Thompson, Commissioner of the West Coast Oil Ports Inquiry (1980c, interview), agrees with the Task Force's request:

The Commission's rule B.7.1 goes too far. It puts the onus on major participants to demonstrate relevancy of a document or witness. This isn't fair. The subpoena should be issued routinely unless the Commission has a good reason not to allow this--such a refusal would have to be argued and would require a ruling.

In other words, RCIUM should have the right to refuse the subpoena if it felt this power was being abused, but the onus should then be on

RCIUM to justify such a refusal. This obviates Mr. Anthony's concern above.

Some of the major participants claim that Mr. Anthony is giving very conservative advice to RCIUM concerning the use of its powers (Roberts 1979, interview; Paterson 1980, interview). Mr. Paterson (1980, interview) believes that:

The subpoena is a normal way of getting information. Mr. Anthony's approach is cooperation. But government departments aren't going to look through all their information just because the Commission asks them to. You have to go in and get it, using the subpoena to find out what's available--and you continue to use the subpoena power if you don't get what you wanted the first time around.

But, as noted above (p. 53), Mr. Anthony does not adhere to the use of the subpoena power as a tool of preliminary discovery. He claims that PR No. 1, B.3.1, B.3.2 and B.4.1 (see Appendix 1) allow for the collection by RCIUM of all relevant documents (Anthony 1980c, interview). Dr. Thompson (1980c, interview), however, acknowledges the use of subpoena for discovery, although he concedes that:

. . . . it is extremely difficult to get information if you don't know what you're looking for . . . . If someone is determined to hide something and if you don't know that it exists, it's really hard to get it. Perhaps, Mr. Anthony is being wise in not using the subpoena to find out what information exists, especially since a favourite tactic is to respond to a subpoena with an avalanche of irrelevant paper.

On 30 October 1979, Mr. Paterson suggested that RCIUM use its subpoena power to find out what documents are in the hands of relevant government agencies and mining companies (TP, 32, pp. 4896-8). Mr. Anthony's reply to Mr. Paterson was that the subpoena had not been necessary thus far, but, should major participants demand one, he would support them (TP, 32, pp. 4899-4901). On 11 December 1979, Mr. Paterson

(TP, 48, p. 8414) made a request of RCIUM, on the behalf of JCUTH, that a subpoena be issued to Norcen to compel it to produce certain documents. And on 17 January 1980, ACA requested the subpoena be issued to developers of a northern British Columbia molybdenum mine (Placer Development Limited) to appear at the hearings (TP, 58, p. 10297). RCIUM turned down both these requests since the companies agreed to provide the information voluntarily. As Mrs. Boyce of BCCUCC (1980b, interview) remarked, although RCIUM has not issued a subpoena: "It has not been denied any witnesses or documents that it went after."

RCIUM's subpoena powers are limited because RCIUM is a provincial rather than a federal inquiry. As Mr. Anthony (1979c, interview) explained:

The Commission can subpoena anything or anybody in B.C.--that's no problem. But there are problems if it wants to subpoena from another jurisdiction. It would have to go to B.C. Supreme Court which might issue a court order. I then take this to ....., for example, the Ontario Court which may go along with the order.

Quite possibly, Mr. Anthony would not consider going to such lengths to obtain an out-of-province witness or document, especially since: "The entire Commission would have to go to Ottawa [or wherever] to hear the witness. He can't be ordered to come to B.C." (Anthony 1979c, interview).

Pursuant to PR No. 1, B.6.3 (see Appendix 1), RCIUM may retain certain privileged information in confidence. Such information is not subjected to cross-examination. The reason for this ruling is the same as that for PR No. 1, B.6.2 (see p. 46 above). The Task Force of funded participants (1979, letter) made the following comments about the ruling on privilege:

We recognize that a claim of privilege could be made during the course of the hearings. We believe that the criteria to be applied to any such claim should be those applied in the British Columbia courts and established in statute or common law. We would ask that you

announce your adoption of these criteria well before the hearings commence.

We further suggest that you rule that any application for privilege be made in a public hearing, on reasonable notice to all major participants, subject to submissions by all major participants, and that the Commission announce its ruling with reasons at a public hearing.

These demands have been met by RCIUM in the two particular instances that the question of privilege came into play. The first of these instances concerned D.G. Leighton and Associates' document on young uranium deposits; the second concerned Norcen's contract with Korea Electric Company (see p. 8 above). Each company announced, in the hearings, that it had the information but insisted on its confidentiality. Hence, RCIUM retained the information in confidence but, later, following requests from major participants, released D.G. Leighton's document and Norcen's contract to RCIUM, although some of the financial aspects of the contract were made available only to members of RCIUM. Mr. Anthony (1980d, interview) assured me that the financial aspects of Norcen's contract is the only item held in confidence by RCIUM.

In total, the lists of documents held by major participants and RCIUM, and the lists of documents referred to in witnesses' statements of evidence, may not always be complete, probably because of time constraints. Mr. Anthony's interpretation of the subpoena power is time consuming in practice and puts the onus on major participants to demonstrate relevancy of a witness or document. Although Mr. Anthony does not adhere to the use of subpoena for discovery, which is perhaps justifiable, RCIUM has not been denied any witness or document that it has asked for. It is unlikely, however, that RCIUM would try to subpoena an out-of-province witness or document because of the difficulties and expense involved.

Because RCIUM is involved in an on-going competitive field, it may have to retain certain information in confidence. This appears to have occurred in just one minor instance.

Is there opportunity to assemble and present competing evidence? A number of major participant groups are performing, or have completed, studies for RCIUM. I questioned six groups about their studies. Their responses are outlined in Column IV of Appendix 9. Apart from UBCIC's study on the Atlin area, all the studies described are for presentation during the technical hearings; hence there is opportunity to cross-examine the authors of these studies.

Is there sufficient time? In accordance with PR No. 1, B.4.1 (see Appendix 1), each major participant is given two weeks in which to review and to prepare cross-examination on the evidence to be presented in any one phase. On 13 November 1979, Mr. Anthony (Minutes of meeting with major participants, 1979c) informed major participants that each statement of evidence, together with the list of reports, studies or documents to which the witness may refer or upon which he/she may rely and the biographical note on the witness, must be circulated three weeks in advance instead of two. This, as Ms. Boggild, legal counsel for WCELA (1980, interview), remarked, puts a great deal of pressure on major participants who are pressed for resources, but as Mr. Hodge, RCIUM research coordinator (1980d, interview), explained, allows more time for the preparation of cross-examination.

Frequently, the RCIUM research coordinators feel pressed for time (Hodge 1980b, interview). This is because RCIUM has called so many witnesses (see p. 44 above) and hence a great deal of time is spent in helping witnesses prepare testimony; relatively little time is left to



prepare cross-examination (Culbert 1980d, interview). Due to time constraints, the effectiveness of cross-examination prepared by the research coordinators for Commission counsel varies. As Mr. Hodge (1980b, interview) commented:

Sometimes our cross-examination is terrible. Sometimes, given the time constraints, we do rather well. There are only two or three sets of cross-examination that we felt satisfied with.

The RCIUM research coordinators' work with RCIUM witnesses in the preparation of testimonies, in that they review the drafts of the statements of evidence and then advise the witnesses as to what revisions, if any, are required. RCIUM's technical advisors also review briefs. The objective is to ensure that the testimonies address the questions that RCIUM is concerned with. However, as noted by Mr. Hodge (1980d, interview):

In some cases, drafts are not submitted on time and there is no time to work with them. Sometimes they are submitted in plenty of time. Reviewing drafts was moderately successful in Phases I to VI. In Phase VII (Worker and Public Health), however, there were difficulties:

- the subject material was out of depth for the research coordinators;
- most of the medical people come from far away and there was insufficient time to go over all their briefs.

All major participants interviewed (see column I of Appendix 9), except Dr. Switzer of Rexspar, experience time constraints. This is because they review, and perhaps prepare cross-examination on, the statements of evidence of so many Commission witnesses. As Mr. Paterson (1980, interview) pointed out: "This puts a considerable burden on major participants." This burden is such that the thoroughness with which major participants review evidence is not always what it could be (see column

V of Appendix 9). The time constraints do not seem to heed major participants in the extent to which they work with their own witnesses in preparing testimony (see column VI of Appendix 9).

Dr. Switzer (1980, interview) is not pressed for time because:

- Rexspar's witnesses are people who are familiar with Rexspar's case and do not have to be helped in preparing testimony;
- very few of the other witnesses are saying things that are critical to Rexspar's position (hence Dr. Switzer questions very few witnesses).

To summarize, the RCIUM research coordinators are pressed for time because they have so many witnesses to prepare. This reduces the effectiveness of cross-examination prepared for Commission counsel. In addition, the research coordinators do not always have sufficient time to work with RCIUM witnesses' draft statements; for example, because some drafts are submitted late. All major participants interviewed, except Dr. Switzer, experience time constraints because they have to review, and perhaps prepare cross-examination on, the statements of evidence of all Commission witnesses. The result is that the effectiveness of cross-examination by major participants is reduced.

Are sufficient resources made available? The Public Notice appearing in the Vancouver Express on 12 March 1979 (see Appendix 8) announced that RCIUM had been provided with limited funds (\$75,000) to assist interest groups in the preparation of briefs. RCIUM divided this first round of funding between 18 groups (see Appendix 7). The money was received at the end of June 1979.

At a community hearing in June 1979, Dr. Bates (TP, 9, pp. 1125-6) made the following announcement:

You may have heard that we requested additional money to help public input into this inquiry and I was very glad . . . . to learn . . . . that the Cabinet has voted us an additional hundred and fifty thousand dollars. This . . . . means that there is a sizeable sum of money now available for us to help organize . . . . groups . . . . present evidence to the Commission . . . .

This second allotment of funds was divided between 21 groups (see Appendix 7); it was not distributed until August 1979.

In reaction to the delay in the receipt of participant funding, the Task Force of funded participants (1979, letter) demanded that:

. . . . [technical] hearings . . . . not commence before 90 days after actual receipt of additional funds . . . . In any event, the commencement date of the . . . . technical hearings is not to take place until November 1st, 1979.

Its reason was that additional time is required for:

- cash outlays required for rental of premises, payment of staff, and preparation of documents.
- receiving information as to which witnesses will be called by the [Commission] in contrast to those that will be called by the participants.

Thus, as noted by Schmitt (1979, p. 3), for major participants that lack independent financial assistance, time and money shortages interrelate, since: "Only when the money has been allocated will the concerned groups be in a position to realistically design their strategies and develop their submissions." Dr. Bates' (1979a, letter) response to the demands of the Task Force was as follows:

. . . . I do not think it entirely reasonable that you should require there be a clear 90 days between the start of technical hearings and the receipt of the additional funds . . . . we [the Commission] are not responsible for sending out the actual cheques and therefore, we can not be held responsible for any delay which occurs between our recommendations being sent to the Government and the actual money becoming available.

As is clear from Appendix 7, none of the major participants received the amount that they requested; at least, not in the first allotment. For

example, EAAUM requested \$32,900 per month plus initial funding of \$5500 (see Appendix 11). EAAUM has received a total of \$45,000 for July 1979 to January 1980 inclusive. This amount represents about \$6,400 per month, approximately one-fifth of the initial request. Mr. Stainsby of EAAUM (1979, interview) made the point that this amount does not permit full participation in RCIUM. But, as Mr. Anthony (1980c, interview) noted, no participant group, not even RCIUM, applied for two full time lawyers, and RCIUM is paying for the communication of information to the communities. In other words, EAAUM deliberately overstated its budget. However, judging from the minutes of the second Kelowna participants' meeting (1979), EAAUM sincerely believed, for example, that there was too much work for one lawyer to handle.

On 30 October 1979, a large number of major participants requested that the hearings be expanded to a total of 96 days (see p. 24 above) and that the provincial government be asked for additional participant funding (TP, 35, p. 5569). The Commissioners agreed to seek additional funds. These, however, if approved, would not be for new research of new participants (TP, 36, pp. 5791-2). No word had been received from the government regarding the additional funds by the end of January 1980. Hence, at this time, groups did not know how much money they would be receiving in the third allotment (Charlten 1980, interview).

As is evident from columns II, IV and V of Appendix 9, all the major participants interviewed, except Dr. Switzer (Rexspar), Mr. Rogers (UBCIC), and Dr. Young (BCMA), complained of a shortage of funds. This limits their ability to bring in witnesses of their choice; to perform independent studies; to thoroughly review the evidence; and to prepare cross-examination.

Mining companies, while not receiving participant funding, do have the benefit of Section 20(1)(cc) of the Income Tax Act (R.S.B.C. 1961, c.1):

20.(1) Notwithstanding paragraphs 18(1) (a), (b) and (h), in computing a taxpayer's income for a taxation year from a business or property, there may be deducted such of the following amounts as are wholly applicable to that source or such part of the following amounts as may reasonable be regarded as applicable thereto: . . . .

(cc) an amount paid by the taxpayer in the year as of on account of expenses incurred by him in making any representation relating to a business carried on by him,

(1) to the government of a country, province or state or to a municipal or public body performing a function of government in Canada  
. . . .

Clearly, the companies' expenses in relations to RCIUM are deductible from taxable income since RCIUM is a: "public body performing a function of government." (Schmitt 1979). Given that Rexspar can expect to make about \$200 million from development of its Birch Island deposit (UID 1), and in light of the above tax deduction, I fail to see how Dr. Switzer can justify his complaints about a lack of financial resources: the potential gains far outweigh the costs.

Neither Mr. Rogers (UBCIC) nor Dr. Young (BCMA) mentioned money as a constraint. However, both the UBCIC and BCMA are large organizations and have other funds to draw upon. But as Mr. Rogers (1980c, interview) pointed out:

Without participant funding we [UBCIC] would not have been involved in the Inquiry. I felt that the money we received was adequate except that it wouldn't have been sufficient for research. However, the Department of Indian Affairs and Northern Development gave us funding assistance for our Atlin and Penticton studies.

Dr. Young has offered his services free of charge to BCMA for the duration of RCIUM (Kansky 1980, interview).

In general, the amount of funding allocated to major participants determines their access to technical expertise. On questioning six major participants about provision of technical assistance during preparation of cross-examination, I obtained the responses presented in column VII of Appendix 9.

Possibly, the complaints of various major participants about funding shortages arise from the following factors:

- (a) The Commission has spread the available government participant funding too thinly. Certainly, the funded major participants interviewed (Mr. Rogers, Ms. Rounthwaite and Mrs. Boyce; see column I of Appendix 9) merit the funds they receive since they reflect different concerns and therefore cross-examine from different perspectives, this sometimes adding to RCIUM's acquisition of relevant information. However, given that many of the other funded major participants have similar concerns to those interviewed (for example, the interests of Greenpeace parallel those of EAAUM, and the concerns of CCNR are similar to those of BCCUCC), RCIUM may have done better had it insisted that more of the interest groups band together (as did three environmental groups to form EAAUM). Each coalition thus formed would then have a sizeable allowance and would be able to do more with it (money saved on legal fees, office rental payments, and so on, could be used to bring in additional witnesses, hire more technical expertise and perform more studies).
- (b) The funding is inadequate however it is distributed. If the available participant funding (\$225,000) had been divided between five coalitions, each coalition would have received \$45,000, assuming that the money was split equally. EAAUM, however, which received \$45,000 (see Appendix 7), finds that this amount allows for its participation only in the Environmental Impact Phase (see column V of Appendix 9). To have

participated in all phases, and hence to have questioned all witnesses from an environmental perspective, would have required at least five times as much funding. To have facilitated the participation throughout RCIUM of five funded coalitions would have necessitated, therefore, \$1,250,000. But only \$225,000 was made available (see Appendix 7).

Neither the RCIUM research coordinators nor Commission counsel have referred to a shortage of funds, but then RCIUM has its own budget estimated at \$2 million (The Vancouver Sun, 28 February 1980).

In summary, the delays in the receipt of participant funding inconvenience major participants, many of whom complain about their monies being inadequate. Lack of funds limits the ability of major participants to bring in witnesses of their choice; to perform studies; to thoroughly review evidence and to prepare cross-examination; and to hire technical assistance. It seems that the funding shortages for major participants arise from two factors. First, the available funds are spread too thinly; and second, the funds are insufficient anyway. RCIUM staff do not appear to be short of funds.

### Limiting Factors

#### Community Hearings

All the factors operating in the first round community hearings to limit RCIUM's success in learning about community impacts from local people appear to be of the lower order (see p. 32 above).

The most significant factor seems to be the choice of public hearings over other mechanisms of public involvement. Essentially, representation at public hearings tends to be biased (Heberlein 1976a). Furthermore, most people at a public hearing do not participate if the proceedings are too formal. As Heberlein (1976b, p. 18) notes: " . . . .

the structural format of communication which is necessary at large meetings inhibits information transfer." Public hearings, however, do serve to transmit information from a project proponent to the public, and, in the case of RCIUM, also to the Commissioners.

It appears that the RCIUM Commissioners viewed the first round community hearings predominantly as technical sessions since mining companies were given priority over local people. In addition, because Dr. Bates confused some participants about the purpose of these hearings, much time was spent listening to people's complaints about not being able to prepare adequately. Furthermore, numerous briefs were heard that were outside RCIUM's terms of reference. Overall, less was learnt about local impacts than might have been.

Due to timing inconveniences, it is conceivable that agricultural interests were underrepresented in the Kootenays and the Chilcotin. In addition, and probably because RCIUM had not appreciated the existence of such a high level of interest in the uranium issue, the numbers of witnesses wishing to appear at many of the hearings were underestimated and the schedule was too tight.

Had the Commissioners appreciated the importance of a community relations consultant sooner than they did, the above factors might have been less significant. Thus Ms. Stairs, had she had more time in the communities, could have:

- ensured, perhaps, the participation in the hearings of more private citizens (possibly, by convincing people that their feelings about uranium mining were important);
- ensured, perhaps, a more representative range of participants at Williams Lake, Vanderhoof and Fort Nelson;
- given potential participants a clearer idea of what the Commissioners wanted to learn from them;
- explained how the Commissioners had interpreted their terms of reference;



- investigated the level of interest in each community prior to the drawing-up of the hearings schedule.

### Technical Hearings

Both higher and lower order factors operate in the technical hearings to limit RCIUM's success in securing a relevant body of accurate information. Since RCIUM calls most of the witnesses, both the RCIUM research coordinators and many major participants are pressed for time; the former because they have to prepare so many RCIUM witnesses, and the latter because they have to review the statements of evidence of all these witnesses. The overall result is that the effectiveness of cross-examination is reduced. In addition, the Commission research coordinators are less able to work with witnesses and ensure that all witnesses' drafts are submitted on time.

Mr. Anthony maintains that the nature of the uranium issue is such that RCIUM has to bring in most of the witnesses since its witnesses will reflect both sides of the debate (see p. 44 above). It is unlikely, however, that an expert on any aspect of uranium exploitation can take a neutral position on the uranium issue. Hence, RCIUM's interpretation of its role (lower order factor) rather than the nature of the issue (higher order factor) is limiting the effectiveness of cross-examination.

The nature of the uranium issue is a limiting factor, but in a different sense. Thus, because RCIUM is looking into an on-going, competitive field, the only way that it can obtain a full body of relevant information may be to accept certain types of information in confidence. Such information is not tested by cross-examination and, therefore, may not be accurate. In addition, the nature of the issue is such that there is less cross-examination to bring out further information from witnesses that might otherwise be the case. Most major participants put a great deal of

effort during cross-examination into establishing their particular cases and into determining the credibility of witnesses who do not support their cases. There is nothing unusual or unexpected about this. As Dr. Thompson (1980c, interview) pointed out: "The notion that intervenors will be impartial searches for truth is unrealistic."

Since the amount of government funding for major participants in RCIUM is so small (higher order factor) and because RCIUM has over-fractionalized it (lower order factor), major participants are limited in their ability:

- to bring in witnesses independently of RCIUM;
- to hire technical expertise;
- to conduct studies;
- to thoroughly review evidence and prepare cross-examination.

In addition, delays in the distribution of funds (higher order factor) limit the effectiveness of funded groups' participation in RCIUM.

The Commissioners' subpoena powers are limited because RCIUM was established under the British Columbia Public Inquiries Act rather than under the federal Inquiries Act (see p. 55 above). Due to the difficulty and expense involved (higher order limiting factor), it is unlikely that RCIUM would go to the trouble of subpoenaing an out-of-province witness.

Mr. Anthony's interpretation of the subpoena power (lower order limiting factor) is time-consuming in practice and puts the onus on major participants to demonstrate relevancy of a witness or document. The interpretation, however, has proved to be successful, and is, perhaps, a wise one given that it is very hard to get information from someone who has something to hide.

The Commissioners' other commitments may well be determining the 27 June 1980 deadline on the technical hearings schedule. It is also

plausible that the government has established an arbitrary reporting time-frame on RCIUM. While the former factor is partly higher order, partly lower order (the Commissioners can only be expected to go so far in reducing their other commitments), the second factor is entirely higher order in nature.

The final limiting factor concerns chairmanship of the technical sessions. It appears that the Commissioners do not chair the proceedings rigorously enough. As a result, more irrelevant and repititious questioning occurs than would otherwise be the case. It is suggested that inefficient chairing is a lower order rather than a higher order factor, given that the Commissioners could do a better job, perhaps by having Mr. Raudsepp chair more frequently or by having procedural rules of relevancy included in the Preliminary Rulings.

#### Commission Research

##### Questions to be Addressed

Research conducted or authorized by RCIUM may contribute to the acquisition of a relevant body of accurate information. This research, if it is original, should be subjected to the adversary process. Hence, the following questions must be addressed in the evaluation of the research activities against criterion I:

- (a) Is the research relevant to RCIUM's terms of reference?
- (b) If it is original research, is it subjected to the adversary process?

If the response to (b) above is affirmative, the evaluation of the technical hearings against criterion I will indicate how thorough is the review of RCIUM's research activities.

## Application of Criterion

Is the research relevant? The five RCIUM research projects (see p. 25 above) were decided upon by the Commissioners while they were reviewing the issues for the first time (Bates 1979, interview). They appear to reflect the interests of the Commissioners, except perhaps, for the last one (study of natural radioactivity in biological pathways). Because of their very general nature, it is unlikely that they would have contributed to RCIUM's acquisition of a relevant body of information. As Dr. Thompson (1980a, interview) remarked, their termination (see p. 25 above) was quite predictable:

TAG's project failed . . . so too did those of NAG [Northern Assessment Group] funded by Justice Berger for the Mackenzie Valley Pipeline Inquiry. NAG went off on its own trip. It had no idea how the information it collected would be used in the Inquiry or of its relevance. A lot of time and money was wasted on this.

The more recently authorized research studies are very specific in focus (see p. 25 above). They were decided upon by the RCIUM research coordinators and technical advisors, in conjunction with the Commissioners. They serve to get answers to particular questions that RCIUM has identified as being relevant to its terms of reference (Culbert 1980h, interview).

Is the research subjected to the adversary process? The authorized research studies, at least those that are original, are for presentation at a technical hearing (Culbert 1980e, interview). The opportunity exists, therefore, to cross-examine the authors of each commissioned research project.

## Limiting Factors

Limiting factors here appear to be the Commissioners' understanding of how TAG's research projects would have been relevant to RCIUM's

terms of reference and the ability of the RCIUM research coordinators and technical advisors to identify questions that RCIUM requires answering. While the former factor is entirely second order in nature, the latter factor is partly first order, partly second order. Thus, even if RCIUM had access to infinite funds such that it could afford to hire all the expertise that it needed, the required expertise may not always be available at the right time. RCIUM does not have infinite funds but, perhaps, could have put more money into hiring relevant expertise.

### Visits

#### Questions to be Addressed

The Commissioners undertook visits to uranium mines in order to acquaint themselves with contemporary problems (see p. 26 above). Not having seen a uranium mine before, it is understandable that they should wish to visit one or two; this, no doubt, would save them some embarrassment at a later stage. Indeed, as Commissioner of the West Coast Oil Ports Inquiry (WCQPI), Dr. Thompson toured several large oil tankers before holding public hearing. His rationale for so doing was that he might better understand and interpret the testimony he was later to hear (Thompson 1980b, interview).

As described below (see pp. 72-3), it seems that the Commissioners collected some relevant information on their uranium mine visits. Since they were selected because of their expertise, they are surely quite competent to assess the accuracy of such information, and quite justifiably, therefore, can make use of this information in drawing conclusions. Hence, the only question to be addressed in the evaluation of the uranium mine visits against criterion I is: "How much relevant information did the Commissioners collect from their visits to uranium mines?"

The Commissioners visited uranium deposits in British Columbia in order to learn the exact nature of these deposits and to form an opinion on the validity of public input about hazards (see p. 26 above). However, they made more use of their observations of uranium deposits than is suggested by the above. Thus, on 15 August 1979, the Commissioners released their Interim Report. The recommendations in this report are based on:

- i) the uranium deposits' observations, as is evidenced by the opening sentences of paragraphs 1, 10 and 12 of the Report (see Appendix 5).
- ii. preliminary data available to RCIUM (paragraph 34 of the Report), this data having been used by RCIUM for:
  - . . . . a study of its [uranium explorations] impact on the environment, and of possible health hazards to exploration crews and to the public.
  - (paragraph 3);
  - and
  - . . . . a preliminary evaluation of the risks to the public which these activities [uranium exploration] might cause.
  - (paragraph 1);
- iii. the existing legislation relating to mineral exploration in British Columbia (section VII of the Report).

It is suggested that the degree to which the information in the Report is accurate and relevant will be reflected in the responses to the following questions:

- (a) How representative were the observations made by the Commissioners during their visits to uranium deposits?
- (b) What preliminary data was available to the Commissioners, how accurate was it, and how accurate was their evaluation of the risks to the public of uranium exploration?
- (c) How accurate was their interpretation of the relevant legislation?

## Application of Criterion

How much information was secured from the uranium mine visits? It is hard to determine how much relevant information the Commissioners secured from their visits to uranium mines since there are no public reports on these visits (the Commissioners' memoranda on these visits are kept as confidential RCIUM documents), and the Commissioners rarely refer to the visits in the hearings.

In the technical hearings' Transcripts, I found only two references to the uranium mine visits, each of which was a mere passing comment by Dr. Bates (see TP, 29, p. 4313 and 32, p. 4983). Generally, in his introductory remarks at the community hearings, Dr. Bates mentioned the fact that these visits were made, and sometimes, briefly alluded to their purpose. For example, at the Kamloops hearing, Dr. Bates (TP, 8A, p. 811) explained why the Commissioners had visited Salt Lake City:

There are many abandoned tailings' sites in Utah and Wyoming, but the particular one in Salt Lake City happens to be of interest and importance because it's in the middle of a built-up area, and therefore we wanted to go and look at that very closely and discuss with people what they plan to do about it.

At the Kelowna hearing, Dr. Bates (TP, 3, p. 4) discussed the visits to the Sherwood and Midnite Mines in Washington State:

They're the closest uranium mines to us . . . . and have special things to teach us, not only because in a geological sense the deposits they're working are almost the continuation of the deposits in British Columbia . . . . but also because one of them [Midnite] was established on an Indian tribal reserve, and the integration of the Indian community into the quite major operation there was a matter of particular interest to this Commission.

In various speeches and interviews, Dr. Bates has been more specific about the types of information that the Commissioners obtained from their visits to uranium mines. For example, in a speech given last fall, Dr. Bates (1979, speech) described how the Commissioners, while visiting the

Midnite Mine, met with Indian council there to discuss the impacts of uranium mining on Indian communities; and, in a recent television interview, Dr. Bates (Vancouver Channel 8's "Jack Webster Show", 24 January 1980) described briefly the French uranium industry's worker protection service. Clearly, the Commissioners collected some relevant information during their uranium mine visits.

How representative were the observations made during the uranium deposits' visits? On 4 October 1979, a map was made available to all major participants and others who were interested. The purpose of the map, according to Mr. Anthony (TP, 26, p. 3697): ". . . . is to present as comprehensive as possible a picture of uranium exploration in British Columbia." Although the map indicates that there are a significant number of uranium deposits in British Columbia not visited by RCIUM, many of these are not regarded as having potential commercial value at this time and are unlikely to be of much interest to the mining industry. However, the deposits in the North Okanagan and near Summerland are of considerable interest to the industry; RCIUM has planned visits to communities near these locations in the fall of 1980 and, no doubt, will visit these deposits at that time (Culbert 1980b, interview).

Overall, RCIUM has visited, or will visit in the near future, most of the commercially viable uranium deposits in British Columbia. If the price of uranium oxide continues to rise, however, some of the deposits not visited may well attain significance.

What preliminary data was available to the Commissioners, how accurate was it, and how accurate was the evaluation of the risks? The preliminary data, apart from a table of radiation levels at rock surfaces and material adjacent to drill holes (see Appendix 5 of the Interim Report),



are not included in the Interim Report. Hence the public has no means of either assessing the accuracy of the data or of determining whether the Commissioners' recommendations are in its interest. Mr. Culbert (1980b, interview) is wondering why the Commissioners made recommendations concerning uranium exploration before the Exploration Phase of the technical hearings.

Judging from the following statements made by Dr. Murray (TP, 25, pp. 3325-6) during the technical hearings, it is unlikely that the Commissioners had access to all the data required to evaluate the risks that they discuss in the Interim Report:

It is very clear to us in the Commission that we must have relevant data. . . . on a number of aspects of exploration and essentially we are unanimously agreed that we need to have data on radon gas surveys before and after drilling progresses.

We need to have data on uranium and radium concentration in surface waters, groundwaters, seeps and hot springs both before and after exploration.

We need data on gamma radiation levels at exploration drill sites and claim blocks before and after exploration. We need . . . . data on radon in working level months in all places of exploration.

We need information on personal dosimetry and we also need general geochemistry background data.

Since Dr. Bates possesses a considerable knowledge of occupational and environmental health hazards, he is presumable quite competent to handle data that are used in the evaluation of health risks and the like. The fact that he was the Chairman and author of the Science Council of Canada report entitled: Policies and Poisons: The Containment of Long-Term Hazards to Human Health in the Environment and in the Workplace (October 1977) and author or co-author of 151 other such published scientific reports gives support to this claim. The unknown factor, however, is the subjective element involved in the interpretation of scientific

information (see p. 15 above). This, together with the facts that: (1) the public was not consulted about the risk assessment; and (2) the Commissioners probably lacked all the relevant data, suggests that the recommendations in the Report are not necessarily in the public interest.

How accurate was the Commissioners' interpretation of the legislation?

As Mr. Anthony (1980a, interview) explained:

The Commissioners heard numerous submissions from many varied sources in the community hearings as to what institutional changes were felt to be necessary. They then examined the existing legislation to see what types of changes were feasible.

But as he went on to say: "Although I advised them as to what the legislation says or doesn't say, the Commissioners didn't always follow my advice." Perhaps we should not be too confident about the Commissioners' interpretation of the legislation given that none of them are lawyers. However, legal advice was available to them whether they chose to follow it or not.

Limiting Factors

The Commissioners based their Interim Report on what appears to have been an untested body of incomplete data. This has led many people to wonder why the Report was produced before the technical hearings commenced. Perhaps the Commissioners were responding to public pressure; perhaps they felt that they should publish a report to prove that they had accomplished something. But whatever the reason, we must question their understanding of the public inquiry process (lower order limiting factor) since their recommendations were not the product of a full public review process.

### Library Network

#### Questions to be Addressed

The RCIUM Library contains a large amount of information that the Commissioners will make use of when they come to write their final report (Bates 1980a, interview). Questions pertaining to the evaluation of the Library material against criterion I are:

(a) Is the information relevant?

(b) Is it complete?

and for information that has been specially generated for RCIUM:

(c) Is it accurate?

To the extent that specially generated information is drawn upon by witnesses in their testimonies at the technical hearings, or, alternatively, is directed at a witness in cross-examination, the opportunity to determine its accuracy does exist.

#### Application of Criterion

Is the information relevant? Most of the information in the Library is highly relevant to RCIUM's terms of reference. Appendix 12, which lists Library items 261 to 269 (received in May 1979) and 1410 to 1416 (received in November and December, 1979) illustrates this point and also supports Miss McCall's (1980a, interview) comment that: "As time has gone by, the literature has become more and more focused as the issues have become more and more clearly defined."

Is the information complete? There is no reason to believe that the information in the Library is complete. We cannot assume that interested parties have requested, between them, all relevant information. In addition, some of the lists prepared by governments, boards, agencies and

major participants, as required by PR No. 1, B.3.1. and B.3.2. (see Appendix 1), are incomplete (see p. 52 above). Furthermore, edited videocassettes have been prepared only for the first two phases of the technical hearings (see p. 31 above). Finally, the Uranium Exploration Questionnaire (see p. 29 above) has not been returned by all mining companies.

Is the information accurate? As noted above (p. 76), it is necessary to ask this question only of information that has been specially generated for RCIUM. The exploration reports, for the most part, and the responses to the Uranium Exploration Questionnaire constitute such information. On 4 October 1979, during the Exploration Phase of the technical hearings, 26 mining companies (who had been identified by RCIUM as participating or having participated in uranium exploration in British Columbia) were in attendance for questioning on their activities, as described in their exploration reports. Only nine of these 26 companies were cross-examined; there was not sufficient time to hear from the rest. It became apparent during the actual proceedings on this day, that a number of major participants had similar questions for each company. Hence, in order to save time, it was agreed that RCIUM would collect these "overlap" questions together and send a standard list of relevant questions to the various mining companies involved in uranium exploration (TP, 26, pp. 3580-2). This list of questions constitutes the Uranium Exploration Questionnaire.

In the "overflow" hearings, RCIUM plans to hear from certain of the mining companies that have responded to the questionnaire. As Mr. Anthony (TP, 26, pp. 3795-6) explained, if major participants feel that the return of a company is necessitated on the basis of their questionnaire responses, RCIUM will consider the recalling of the company; and as he advised the Commissioners:

It's up to you . . . . to decide whether the witnesses should be returned, once you know the nature of the evidence we're [Commission counsel and major participants] seeking and we can demonstrate to you that it would serve the interest of the Commission to have the witness return.

There will be opportunity, therefore, to cross-examine a few mining companies on their questionnaire responses and further on their exploration reports. But due to time constraints, it is unlikely that many companies will be recalled (Schmitt 1980, interview). Mr. Rogers of UBCIC (TP, 26, p. 3594) expressed his doubts about this process and wondered whether: ". . . . we [the Commission and major participants] haven't somehow moved away from the philosophy of what a Public Inquiry is . . . . ", Mr. Anthony had stated at an earlier session that:

It's one thing to receive a report, but there's another thing to be able to question the basis of the report and how that report was prepared and do the other things that cross-examination permits us to do.

Overall, it seems that there will be very little opportunity to cross-examine mining companies on the uranium exploration activities.

#### Limiting Factors

Two lower order factors seem to limit RCIUM's ability to ensure accuracy and relevancy of the material in the RCIUM library. First, RCIUM's interpretation of its role (it has to bring in most of the witnesses, see p. 66 above) is such that members of RCIUM and many major participants are pressed for time. As a result, not all relevant documents are filed with RCIUM and Mr. Culbert has only prepared two edited video-cassettes. Second, the Commissioners' understanding of the inquiry process can be questioned given that the exploration reports and questionnaire responses of many mining companies are not being subjected to the adversary process.

### Summation

The five RCIUM research projects were a waste of time and money, and did little to contribute to the acquisition of a relevant body of information. The more recently authorized research studies are of much more relevance to RCIUM's terms of reference and are for presentation at a technical hearing where they are subjected to cross-examination.

While there is a large volume of relevant material in the RCIUM library, this information is not necessarily complete, and that which was specially generated for RCIUM is hardly subjected to cross-examination.

The Commissioners obtained some relevant information from their visits to uranium mines. It is likely that this information is accurate, given the high degree of expertise possessed by the Commissioners. The recommendations in the Interim Report, which were partly based on the Commissioners' observations of uranium deposits, were not the product of a full public review process and are therefore questionable.

The effectiveness of cross-examination in the technical hearings is less than it might be for the following reasons:-

- (1) RCIUM has brought in most of the witnesses, and hence many parties are pressed for time;
- (2) many of the major participants are under-funded.

(1) above also reduces the RCIUM research coordinators' ability to work with RCIUM witnesses and to ensure that all drafts are submitted on time. (2) above also limits the ability of major participants to bring in witnesses independently of RCIUM; to hire technical expertise; and to perform studies.

It seems that the time shortages faced by RCIUM are due, in large part, to the 27 June 1980 deadline on the technical hearings. The time constraint means that there is less time to cross-examine witnesses than

might otherwise be the case, and that not all witnesses may be heard. In addition, the deadline imposed on the technical hearings increases the time pressures felt by many of the major participants and by the RCIUM staff. The time shortages are partly due to some repetitious and irrelevant cross-examination that could be reduced if the sessions were chaired more rigorously.

The nature of the uranium issue is such that cross-examination by major participants to bring out further information occurs at the expense of cross-examination to determine credibility and to bring out particular cases. Furthermore, because of the competitive nature of the uranium mining industry, RCIUM may be receiving some information in confidence. Such information is not tested in cross-examination. Finally, the Commissioners' subpoena powers are not particularly forceful and may limit, therefore, RCIUM's access to certain types of relevant information.

Concerning the community hearings, RCIUM learned less about local impacts than it might have done. This is largely due to RCIUM's choice of public hearings to learn about local concerns; it is also due to the Commissioners' late appreciation of the importance of a community relations consultant.

## CHAPTER V

CRITERION II: INFORM THE PUBLIC OF  
COMMISSION FINDINGSIntroduction

As outlined in Chapter II (see p. 18 above), the second criterion requires that RCIUM communicate the information it receives to the public in a manner that is comprehensible to all British Columbians. In other words, for this criterion to be fully met, RCIUM must thoroughly educate the public about all aspects of the uranium issue that are within its terms of reference.

It can be argued that it is not a commission's role to communicate the information that it receives to the public; that, instead, it is the role of the media to perform such a function. However, it is a well understood principle that the media are event oriented and that they are ineffective at sustaining interest in a long and drawn-out issue (Thompson 1980b, interview). This is illustrated below.

While very few news reporters attended the first round community hearings (see Figure 5 below), attendance at the technical hearings is even lower. As Terral (1980) notes:

FIGURE 5

## MEDIA COVERAGE OF THE COMMUNITY HEARINGS

Location of Hearing	Number of Reporters
Rock Creek	1
Grandforks	2
Castlegar	4
Williams Lake	2
Vanderhoof	3
Atlin	1



The press table is almost invariably empty. This has led, among other things, to national coverage for . . . . [BCMA's] brief on uranium exploration. The story quoted the brief extensively as if it had in fact been presented to the Commission. But the truth is that the brief was never heard.

Misreporting of the above type has also been referred to during the proceedings at the technical hearings (see for example, TP, 48. pp. 7497-9 and 58, pp. 10302-3).

Since the media cannot be relied upon to cover RCIUM proceedings in a reliable manner, it becomes the role of RCIUM to communicate the information that it receives to the public. Furthermore, it is the role of RCIUM to communicate the information in a comprehensible form in order that people can have informed opinions on the uranium issue. In point of fact, the Commissioners do perceive RCIUM's role to be partly one of education. As Dr. Bates (1980b, interview) commented:

. . . . definitely it's the Commission's role to educate the public; the [RCIUM] process is more important than the outcome.

RCIUM's activities pertaining to criterion II are:

- public sessions;
- Library network;
- publicity.

#### Public Sessions

##### Questions to be Addressed

Those in attendance at a public session may derive some educational benefit from the proceedings. In addition, these people may tell others about what they have learned. A final point is that those who read the Transcripts of Proceedings may learn about the uranium issue. Questions to be addressed in the evaluation of the public sessions against criterion II are as follows:

- (a) How many people attend the public sessions?
- (b) What is the educative value of these sessions?
- (c) To what extent do those in attendance at the sessions tell others about what they have learned?
- (d) How many people read the Transcripts?
- (e) What is the educative value of the Transcripts?

#### Application of Criterion

How many people attend the public sessions? The audiences at the first round community hearings were generally quite large (see Figure 6, p. 84 below). Thus a significant number of people would have learned about the activities of mining companies that presented briefs at these sessions; this, indeed, is what the Commissioners had intended (see p. 35 above).

In contrast to the community hearings, the audiences at the technical hearings are very small. On average only about 15 people attend any given session and hence I feel that the educational benefits to these people is not significant. This, however, ignores the attendance of major participants at the technical hearings who benefit from the "major process of mutual education" that Dr. Bates envisages these sessions as being (see p. 22 above), and those who view the televised proceedings or videocassettes of these sessions.

FIGURE 6

ATTENDANCE AT COMMUNITY  
HEARINGS

Location of Hearing	Date	Time of day of session	Approximate Number of People in Audience
Kelowna	5 June	morning	75
	5 June	evening	150
	6 June	morning	70
	7 June	morning	25
Clearwater	8 June	evening	200
	9 June	morning	30
Kamloops	11 June	morning	30
	11 June	evening	50
Rock Creek	18 June	evening	150
	19 June	morning	50
Grand Forks	20 June	evening	250
	21 June	morning	30
Castlegar	21 June	evening	100
	22 June	morning	35
Williams Lake	26 June	morning	25
	26 June	evening	25
Vanderhoof	27 June	evening	80
Fort Nelson	3 July	evening	6
Atlin	4 July	evening	100

What is the educational value of the public sessions? The information presented by the mining companies during the first round community hearings was not tested by cross-examination and may not, therefore, have been complete and totally accurate. Hence, it's educative value is disputable. The community hearings, however, were obviously not the ones in which to test, through cross-examination, the validity of evidence presented. This would have hindered RCIUM's success in learning about local concerns.

The Commissioners were not intent upon informing or educating the people attending the community hearings themselves; rather they were there to receive information. As Dr. Bates (TP, 17, p. 2300) remarked at the Fort Nelson community hearing:

. . . . as a Commission we spend ninety-nine percent of the time listening and one percent right at the end saying what we think. So that it's a little difficult for us to come and provide information . . . .

For major participants, the educative value of the technical hearings is potentially very high. To the extent that criterion I is met for these sessions, the information presented is accurate and relevant; this, in turn, determining its educative value to major participants.

Those who watch the televised proceedings of the technical hearings may be educated about the uranium issue. However, since the television broadcasts are shown during working hours (with the exception of those on Saturdays), it is unlikely that many people view them. In addition, because the information presented is highly esoteric and technical, it is of little educative value to most lay people. The videocassettes are no more comprehensible than the televised proceedings; furthermore, they provide a very slow means of collating evidence (as of the end of January, only the first two had been produced; see p. 31 above).

In total, the educative value of the first round community hearings was very low. That of the technical hearings is potentially very high for major participants, but is low for those who view the televised proceedings or edited videocassettes of these sessions.

To what extent do major participants educate others?<sup>1</sup> Dr. Bates, (1980 interview) maintains that RCIUM alone is fulfilling the educational

<sup>1</sup>The extent to which RCIUM educates others is the theme of this chapter. This aside, only major participants are discussed here since only they derive significant educational benefit from the public sessions.

role and hence he has not:

. . . . given out [participant funds] specifically for education . . . . [although some] groups have used some money for this; for example, the United Church's witnesses have been used on TV for public education.

However, some money has been allocated to major participants, at least in the first round of funding, for public education (see Appendix 13).

A number of major participants are putting a great deal of energy into public education. Appendix 13 discusses the public education activities of a sample of major participants. In addition to the activities listed in Appendix 13, members of all these groups took part in an "Open Forum on Uranium Mining in British Columbia" during SFU's "Nuclear Awareness Week" (9-13 October 1979).

Apparently there exists a great deal of confusion among major participants concerning the use of participant funds for public education. Whether they use these funds for this or not, all groups interviewed put considerable effort into educating the public. Ms. White (1980, interview) explained that the opponents of uranium mining feel obliged to educate the public: ". . . . because the Commission is doing this so inadequately." This still remains to be seen.

How many people read the Transcripts?<sup>1</sup> Appendix 6 lists the libraries which hold the Transcripts. Major participants are furnished with free copies. Based on Miss McCall's Commission library use statistics (see p. 89 below), it is exceedingly unlikely that many lay people read the Transcripts. Witnesses, major participants and members of RCIUM, however, make considerable use of them.

What is the educative value of the Transcripts? The educative value of the Transcripts is a function of:

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<sup>1</sup>Only the Transcripts of the technical sessions are relevant here since only these sessions are of educative value.

- the extent to which the information presented at the technical hearings is relevant and accurate (criterion I; see Chapter IV);
- the comprehensibility of this information.

Concerning the latter point, it is exceedingly difficult for the lay-person to understand much of the information presented at the technical sessions because it is so esoteric and technical. Additional problems with the Transcripts are:

- they are not perfectly intelligible in all places;
- they are not completely accurate--frequently Mr. Culbert (1980, interview) finds errors in the Transcripts of the technical hearings, especially where testimony is very technical in nature.

#### Limiting Factors

The educative value of the proceedings of the technical hearings and the corresponding Transcripts, edited videocassettes and televised proceedings are limited by the following factors:

- RCIUM's success in meeting criterion I;
- the somewhat boring, esoteric and technical nature of the information presented at the technical hearings;
- the length of time it takes to produce edited video-cassettes;
- the broadcasting of the televised proceedings predominantly on week days.

The second factor above is of the higher order (see p. 32 above). RCIUM's terms of reference and the nature of the uranium issue are such that the Commissioners have to hear a great deal of highly technical and esoteric evidence, much of which is exceedingly dull. The technicalities, in turn, present problems for the Transcript reporters, none of whom are experts on any aspect of uranium exploitation. Hence, occasional inaccuracies in their reporting is understandable.

Mr. Culbert does not have sufficient time to prepare edited videocassettes; this is a result of RCIUM's interpretation of its role (lower order factor; see p. 66 above). The fact that the proceedings of the technical sessions are shown on television predominantly during working hours is presumably a higher order factor; there is a great deal of competition for evening and weekend viewing time. This aside, both the edited videocassettes and the televised proceedings are of limited educative value because of the nature of the uranium issue and RCIUM's terms of reference (higher order factors).

The technical hearings are primarily of educative value to major participants, many of whom take it upon themselves to educate the public. If indeed, RCIUM is doing an inadequate job of educating the public, the major participants' perceived obligation to do this themselves is realistic, and reduction of the confusion (second order limiting factor) surrounding such activities would be beneficial.

### Library Network

#### Questions to be Answered

Basically, a library is a resource for those interested in obtaining information about a given subject. Questions pertaining to the evaluation of the library network against criterion II, therefore, are:

- (a) How many interested individuals make use of the library network?
- (b) What is the educative value of the material distributed throughout the network?

#### Application of Criterion

#### How much use is made of the library network by interested individuals?

According to Miss McCall, the RCIUM librarian (1980c, interview):

About 30-40 people use the Commission library each week. Approximately, 75 per cent of these people are major participants, witnesses or members of TAG; 15 per cent are students; and 10 per cent are reporters (or others). On average, I answer 7-10 letter requests per week. These include requests for documents, out of town loans, general information packages, and so on. Most of these requests come from British Columbians who live outside of the lower mainland area. In addition, I handle about 45-60 telephone reference calls each week. Over half of these calls come from the Vancouver area. Questions range from the very specific to the very general (for example, "When is the Library open?") Also, there are about 5-8 new subscriptions per week to the Accessions Lists. These originally came from British Columbia entirely, but increasingly are now coming from the rest of Canada, the United States, and sometimes from Europe.

I do not have library use statistics for the depository libraries.

In total, Miss McCall feels that the Library is very accessible: "It is used heavily for such a small library," and: "People can even phone in collect within British Columbia" (1980d and c respectively, interviews). However, some of the major Library users (those directly involved in RCIUM) lack the time to read as much Library material as they would like to. For example, Ms. Lexier, RCIUM research coordinator (1980, interview), pointed out that: "I don't use the books and articles in the Library very much. I'd like to, but I don't have time." And while Mr. Hodge, RCIUM research coordinator (1980c, interview), refers to Library material as much as possible when he is preparing cross-examination, he noted that: "There's never enough time to do this as much as I'd like to." Dr. Bates (1980b, interview) is reading Library material: ". . . . all the time."

In summary, most use is made of the Library by those directly involved in RCIUM. Because of time constraints, it is unlikely that these people read as much Library material as they would like to.



What is the educative value of the material distributed throughout the library network? The educative value of the Transcripts, video-cassettes and UID are commented on elsewhere in this chapter. The question remaining, therefore, is: "What is the educational value of the books, journal articles, periodicals, microfiches, exploration reports and Uranium Exploration Questionnaire responses that are in the RCIUM library? Given that the main readers of this material are those directly involved in RCIUM, the educative value is determined by the answers to the questions pertaining to the evaluation of the Library material against criterion I (see pp. 76-8 above); comprehensibility of the material by these users is assumed.

#### Limiting Factors

The factors operating to limit RCIUM's success in educating the public about the uranium issue through the library network appear to include those limiting RCIUM's ability to ensure accuracy and relevancy of the material in the RCIUM<sup>L</sup> Library (see p. 78 above). In addition, RCIUM's interpretation of its role (second order factor) is such that many of those directly involved in RCIUM are pressed for time and hence are unable to do as much reading of Library material as they would wish.

#### Publicity

##### Questions to be Addressed

RCIUM's publicity mechanisms (described on pp. 30-31 above) are:

- public notices;
- library network fact sheets;
- televised proceedings of the technical hearings;
- videocassettes;

- various interviews and speeches;
- news releases;
- UID.

Only the last two of the above warrant consideration against criterion II since these represent RCIUM's attempts to communicate its findings to the public in a comprehensible manner. Questions pertaining to the evaluation of these mechanisms against criterion II are:

- (a) What publics do they reach?
- (b) What is their educative value?

#### Application of Criterion

What publics are reached by the various mechanisms? The news releases are sent to all major newspapers in British Columbia and are used by many press reporters: ". . . . as the kernel of their reports." (Grant 1980, interview). Presumably, the information in the news releases is absorbed by a large number of British Columbians.

UID is read by members of the public who are particularly interested in RCIUM. At least 1500 people are on the UID mailing list. Perhaps, there would be a longer mailing list if RCIUM advertised UID more widely than it does. To my knowledge, Dr. Bates has referred to UID only twice during the technical hearings (see TP, 19, p. 2459 and 44, p. 7499). In addition, Dr. Bates referred to UID during his interview with Mr. Webster on Vancouver Cable 8's "Jack Webster Show" (24 January 1980) and in his speech at SFU (1979). However, he did not explain how members of the public could obtain copies of UID except when asked about this in a "phoned-in" question to the television show. Dr. Bates (1980d, interview) explained that if RCIUM had advertised UID: ". . . . the government may have been extremely upset.", since, as he went on to explain:

You must be very sure that you're not using public money to publicize the proceedings for political purposes . . . . All inquiries have been accused of this.

In total, it is probable that the news releases reach the attention of a large number of British Columbians. The same can not be said of UID, largely because RCIUM is doing an inadequate job of advertising it.

What is the educative value of the various mechanisms? Mr. Grant (1980, interview), RCIUM's news release officer, has made the following comments about his work:

It's hard to make good news out of this inquiry every day. Some of my releases are not as newsworthy as I would have liked but I have to report what happened each day. Sometimes, I feel that I have missed some of the fine points because it's hard to follow all the arguments and the technical language.

The reason why Mr. Grant's releases are sometimes dull is that they are attempting to convey to the public the fact that RCIUM is addressing, in detail, the information that is needed to answer technical questions. They are not editorializing, for example, on the answer to what is an acceptable risk as many press reporters do (see TP, 44, pp. 7497-9), without first investigating what the risk is and how accurately it can be determined. In addition, Mr. Grant's releases are a little "dry" since:

- they rarely acknowledge the presence of uranium mining opponents;
- they focus on the contents of witnesses' briefs and have little to say about the cross-examination that ensues.

In total, while Mr. Grant is reassuring the proponents of uranium mining that their side of the argument is being attended to, the opponents, in all likelihood, are wondering whether anyone is representing their particular concerns at the technical hearings. Given that many news reporters take advantage of Mr. Grant's release (see p. 91 above), this is not a satisfactory situation.

UID provides an easily comprehensible record of the proceedings adopted at the technical hearings. It describes the cross-examination by all parties as well as the witnesses statements of evidence.

To summarize, only UID is of significant educative value to British Columbians.

#### Limiting Factors

The news releases have a low educative value for the following reasons:

- Mr. Grant misses some of the "fine points";
- they are one-sided (focus on the proponents' arguments);
- they say little about cross-examination.

It is suggested that RCIUM's terms of reference and the nature of the uranium issue (both higher order factors) are such that the relevant evidence is highly esoteric and technical, and thereby limit Mr. Grant's ability to report fully the proceedings of the technical hearings. In addition, Mr. Grant faces the dilemma that his news releases will be unacceptable to the majority of newspaper editors unless they contain information that will catch the public's attention; he would be wasting his time, therefore, if he attempted to write very detailed accounts of the proceedings at the technical sessions.

RCIUM does an inadequate job of advertising UID. Dr. Bates' rationale for this (see pp. 91-2 above) is unacceptable; there is little point in using public money to produce a digest if it is then not advertised. In total, it is suggested that a lower order factor limits RCIUM's success in educating the public; namely the Commissioners' understanding of how they should attempt to do this.

### Summation

RCIUM is doing a very poor job of educating British Columbians about its findings. The proceedings at the technical hearings are only satisfactorily summarized and presented in layperson terms by Mr. Shaw in UID. UID is inadequately advertised by RCIUM and is read probably by no more than 2000 interested individuals.

Given the above, it is not surprising that major participants put so much effort into public education. It would be preferable, however, if RCIUM bore this responsibility more fully since it is not advocating a particular case and is in the best position, therefore, to inform the public about all aspects, including all sides of the argument, of the uranium issue.

## CHAPTER VI

### RECOMMENDATIONS AND CONCLUSIONS

#### Introduction

As described in Chapter I (see pp. 2-3 above), the participation of the public in a commission of inquiry may result in elected representatives reflecting more accurately their constituents' preferences in the formulation of government policies. Concerning RCIUM and provincial government policy on uranium exploitation in British Columbia, it was postulated that this will occur if four broad criteria are met. These criteria (described on p. 18 above) stem from a participatory model of representative government; they reflect, also, the specific nature of RCIUM's terms of reference.

Because of the time frame for my thesis research, I was unable to apply two of the four criteria. Hence, I evaluated the RCIUM process only in terms of its success in:

- (1) securing a relevant body of accurate information; and
- (2) informing the public of its findings.

For these two aspects of RCIUM, I was able to identify a number of major accomplishments and weaknesses.

The remainder of this chapter is divided into three sections. In the first section, I discuss the accomplishments of RCIUM; as much can be learned from these as can be learned from RCIUM weaknesses. In the second section, I discuss major weaknesses in the RCIUM process, focusing on those that arise from lower order limiting factors since for these

there are major opportunities for improvement. Recommendations are made as to how the deficiencies might be remedied. Rather than make specific recommendations, applicable only to RCIUM, I make general recommendations that should be of use to future commissions of inquiry. The final section presents some brief concluding remarks.

### Commission Accomplishments

RCIUM should be commended for its use of a diverse range of activities to fulfil its terms of reference. Thus it is holding community and technical hearings; authorizing research; visiting uranium mines and deposits; maintaining a library network; and publicizing its proceedings.

Certainly, the first round community hearings were a positive element in the total RCIUM process since they made it possible for many interested groups and local people to participate. However, as pointed out in the following section, these hearings were not as effective as they might have been in securing community involvement.

RCIUM seems to have recognized all major affected interests in its support of full-time participants at the technical hearings. In addition, RCIUM's requests for additional government funds enable the participation in RCIUM of groups that lack independent financial assistance.

RCIUM is receiving evidence from a large number of highly qualified witnesses. Its expansion of the technical hearings, at which there is the opportunity to cross-examine witnesses, recognizes the complexity of this evidence. Although Commission counsel has narrowly interpreted RCIUM's subpoena power, RCIUM has not been denied any witness or document that it has gone after. Neither has it sheltered very much information from public disclosure, despite the competitive nature of the industry that RCIUM is investigating.

Some major participants groups are performing studies, which, together with those authorized by RCIUM, are almost all for presentation at a technical hearing. Hence, there is opportunity to cross-examine the authors of most of the studies. In addition, RCIUM is collecting a significant amount of relevant information in its Library and from its visits to uranium mines and deposits. Overall, RCIUM is gathering and testing a large body of relevant information. Certainly, it will be able to advise the provincial government on expert solutions to the uranium issue in British Columbia.

The Commissioners do perceive RCIUM's role to be partly one of education, and, for this reason, have established a library network and publicized their proceedings. However, as the following section suggests, these activities have not been very successful.

#### Commission Weaknesses: Proposed Remedies

##### Securing a Relevant Body of Accurate Information

#### Community Hearings

As a mechanism of public involvement, community hearings of the type conducted by RCIUM have several disadvantages. For example, because of their formal nature, many people are inhibited from participating. Furthermore, those who do participate probably represent only very narrow bands on the spectrum of public interests. Additional problems with RCIUM's community hearings were as follows:

- some participants were confused about the purpose of these hearings and what was required of them;
- summer time hearings were inconvenient for various agricultural interests;
- mining companies were given priority over local people; for example, companies presented their briefs first.



Overall, less was learned about local impacts than might have been.

At the commencement of a commission of inquiry, three activities seem to be required:

- (1) The public should be informed of the commission's existence.
- (2) The public should be alerted to the issues that the commission is to investigate and advise upon. In the case of RCIUM, British Columbians should be informed about the uranium exploration activities of mining companies in their province.
- (3) The public should be consulted about appropriate procedures for:
  - collecting and testing relevant information;
  - communicating information to the public;
  - eliciting informed public views.

In other words, members of the public should be asked to comment on such things as:

- how to ensure the fullest representation of the public as possible;
- how to interpret the terms of reference;
- how much funding is required for interested groups;
- what rules of procedure are required.

Overall, the preliminary stages of an inquiry should be concerned with laying the groundwork for a fair public process.

The following approach is suggested as an alternative to that adopted by RCIUM in its early stages. First, RCIUM would hold one or more workshops at which tentative rules of procedure would be drafted. About 15 people, both representatives of interested groups and individuals from areas likely to be affected by uranium mining in British Columbia would be invited to each workshop. The small size of these meetings would serve to promote an uninhibited exchange of ideas.

Following the workshops, a first round of community hearings would be held throughout British Columbia. At these sessions, the public's response to suggested rules of procedure would be elicited. RCIUM community relations' consultants would ensure that community people knew about the community hearings and what type of public involvement was required. Also at the first round community hearings, mining company representatives would present brief submissions, in layperson's terms, on their uranium exploration activities to date. Lastly, based on the proceedings at the community hearings, a finalized version of the rules of procedure (Preliminary Rulings) would be produced. These rules would be widely distributed throughout the Province.

It is recognized that local people can provide RCIUM with a significant amount of relevant information. Hence it is necessary for RCIUM to conduct a second round of community hearings to tap this reservoir of experiential knowledge. Perhaps these community hearings could be held concurrently with the technical hearings. RCIUM could break off its technical sessions from time to time to conduct a number of second round community hearings; at these hearings additional information could be collected, and, in addition, public views on the information being presented at the technical sessions could be elicited. In order to ensure a wide range of participants at the second round community hearings, community relations' consultants could visit the communities ahead of RCIUM, encouraging people to participate and ensuring that potential participants understood what is required of them.

#### Technical Hearings

A basic deficiency in RCIUM's technical hearings is a lack of adequate funding for many major participants. Funding constraints limit the ability of groups.

- to bring in witnesses independently of RCIUM;
- to hire technical expertise;
- to conduct studies;
- to thoroughly review evidence and prepare cross-examination.

The effectiveness of the participation in a commission of inquiry by public interest groups that lack independent financial assistance could be enhanced by encouraging the formation of coalitions since less money would then be required for hiring legal assistance, renting office space, photocopying documents, and so on. In the case of RCIUM, there is a fairly diverse range of interests; hence, at least five coalitions could have emerged representing the following concerns:

- well-being of residents in communities close to proposed uranium mines;
- well-being of native Indian populations living close to proposed uranium mines;
- health of miners and the general public;
- ethics;
- environmental protection.

Mining interests would support themselves.

Because RCIUM is calling most of the witnesses, both the RCIUM research coordinators and most major participants are pressed for time with the result that the overall effectiveness of cross-examination is reduced. The 27 June 1980 deadline on the technical hearings aggravates this problem, with the consequence that there may not be sufficient time for cross-examination of all witnesses, including many mining companies on their uranium exploration activities in British Columbia.

It is suggested that the responsibility of bringing in witnesses should fall more or less equally on the staff of a commission of inquiry and its full-time inquiry participants. In addition, participants should

be funded to call witnesses independently of the commission. Having recognized participant groups, it is only fair that a commission fully trust groups with this responsibility. Otherwise, the commission of inquiry process is not as public as it should be. Finally, a commission of inquiry process cannot function within arbitrary deadlines if it is to receive and cross-examine all relevant information. Certainly, in the case of RCIUM, the technical hearings' schedule should be extended by at least 12 days so that all witnesses can be heard.

### Informing the Public

RCIUM's public education activities are not successful. While the televised proceedings of the technical hearings and the edited video-cassettes have little educative value, RCIUM's news releases are dull and UID reaches only a tiny fraction of British Columbians. In addition, the RCIUM library is used by very few members of the public. Lacking a thorough public education job, it is unlikely that RCIUM will be able to elicit informed public views on the uranium issue and transmit these to the final decision makers.

When faced with an issue as controversial as the future of uranium mining, a commission of inquiry must recognize the importance of performing a thorough public education job and should allocate a sizable fraction of its budget to this activity. While it is recognized that it is extremely difficult to gain news coverage in a free media situation, a conscientious effort should nevertheless be made to utilize the media more effectively. For example, the following could merit more attention:

- radio broadcasts of summaries of the evidence presented at each technical session;
- periodic, televised discussions between inquiry staff and participants about the proceedings at the technical sessions,

both at convenient times to members of the public. Perhaps, in the case of RCIUM, the news release officer could have been made responsible for arranging the above, rather than issuing bland press releases.

### Concluding Remarks

Without doubt, RCIUM has had some major achievements and, as a result, will be able to supply the provincial government with a considerable volume of informed advice on uranium mining in British Columbia. However, previous sections in this chapter have identified a number of lost opportunities. First, there were shortcomings in the general public's ability to participate in the first round community hearings; second, the effectiveness of the participation by interest groups in the technical hearings is reduced because of funding and time constraints, and lack of ability to bring in witnesses independently of RCIUM. Finally, there are major shortcomings in the public education activities of RCIUM.

As Berger (1977, p. 224) notes:

. . . . commissions of inquiry have become an important means for public participation in democratic decision-making as well as an instrument to supply informed advice to government . . . .

Hence, it is important to consider the way in which commissions of inquiry are conducted and whether or not they have fulfilled the above functions. It is hoped that future commissions of inquiry will profit from the evaluation presented in this thesis and will give serious attention to the recommendations contained therein; here, it is suggested, is an opportunity to learn.

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**APPENDIX 1****Preliminary rulings**



Province of  
British Columbia

ROYAL COMMISSION OF INQUIRY  
HEALTH AND ENVIRONMENTAL PROTECTION  
URANIUM MINING

ADDRESS ALL CORRESPONDENCE TO THE SECRETARY

COMMISSIONERS:

DAVID V. BATES, M.D.(CANTAB), F.R.C.P., F.R.C.P.(C), F.A.C.P., F.R.S.(C), CHAIRMAN  
JAMES W. MURRAY, PH.D., F.G.S.E., F.G.S.A., F.G.S.  
VALTER RAUDSEPP, P.ENG.

EXECUTIVE SECRETARY:

BRIG.-GEN. E. D. DANBY (RETIRED)

May 14, 1979

COMMISSION COUNSEL:

RUSSELL J. ANTHONY, B.A., LL.B., LL.M.

PRELIMINARY RULINGS NO. 1

RULES OF PROCEDURE

In fulfilling its Terms of Reference as outlined in Order in Council No. 170 dated January 18th, 1979, the Royal Commission of Inquiry Into Uranium Mining will hold public hearings throughout the Province of British Columbia. To ensure maximum participation the Commission will gather evidence and receive public comments regarding the matters described in its Terms of Reference by holding public hearings, consisting of formal hearings and local hearings, and by receiving written briefs.

A. PROCEDURE FOR LOCAL HEARINGS

1. The Commission will, through the Executive Secretary, advise the various communities likely to be affected by proposed uranium exploration, mining or milling in British Columbia and the major participants of the locations and times for local hearings. The dates, location and time of the community public hearings will be advertised through the local media well in advance of the hearings.
2. Apart from rules of decorum and courtesy there will be no formal rules governing the local hearings. Those who have something to say will be asked to come forward and be sworn and then can give their evidence in whatever way they are most comfortable. Several persons may make their presentation in a group rather than individually if they so wish. Individuals presenting detailed or technical evidence are encouraged to file their presentations with the Commission in advance.
3. The Commission members will be entitled to ask questions of persons making presentations but no one else will be accorded this privilege. If someone wishes a matter clarified he may request the Commission to seek such clarification of the person making the presentation or request the attendance of such witness at the formal hearings where the evidence can be tested under cross-examination.

## B. PROCEDURE FOR FORMAL HEARINGS

### 1. Participants

- 1.1 Any person who advises the Commission in writing of his intention to appear and give evidence at any formal hearing or who actually appears, gives his name and address to the Commission and states his intention to give evidence will be deemed a participant.
- 1.2 The Executive Secretary shall maintain a list of participants and the list shall be available for public inspection at the Commission's office.
- 1.3 The Commission shall, from time to time, identify certain parties as "major participants" in the proceedings in the sense that they either have indicated an intention to participate in the proceedings on a more or less regular basis or have been identified as possessing information of particular interest and relevance to the work of the Commission. The participation of these major participants shall be governed by further procedural rules of the Commission.

### 2. Phasing of Formal Hearings

- 2.1 The formal hearings shall be divided into the following phases:



### Phase I: Overview

This phase will consist of evidence called by Commission Counsel designed to deal generally with the occurrence and geochemistry of uranium and the physical environment of identified uranium deposits in B.C.; describe exploration, mining, milling, transport, and disposal techniques and outline the jurisdiction and authority of monitoring and regulating bodies.

The purpose of this Overview is to present information of a background and introductory nature and is designed primarily as a public information session. For that reason cross-examination, except for questions by the Commissioners themselves, will not be allowed. All issues raised in the Overview will be reviewed at the appropriate time during the subsequent formal hearings of the Commission and, at that time, further evidence and cross-examination will be allowed. A copy of the witnesses' statements shall be circulated for comment before the witnesses appear. This phase of the Inquiry will be held in Vancouver.

### Phase II: Project Descriptions

Included will be a description of the geology and physical environment at specific sites; a description

of the present and proposed project development plans, including consideration of the design, engineering and construction techniques proposed and an examination of alternatives.

**Phase III: Impact of Uranium Exploration, Mining  
and Milling on the Physical and Living  
Environment**

---

This phase will examine the impact on the environment of each of the major activities associated with uranium mining - exploration, mining, milling, processing, tailings and waste disposal and transportation; identify the impacts on the atmosphere, biosphere, hydrosphere and terrasphere, in both the short and long term; review the techniques available for environmental protection, conservation and reclamation and examine the adequacy of environmental monitoring and regulation.

**Phase IV: Impact of Uranium Exploration, Mining  
and Milling on the Human Environment**

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This phase will examine the potential impact on individuals and society at large of the various aspects of uranium exploration, mining and milling. This will include an identification of hazards to workers, the effects on the public at large particularly the communities adjacent to uranium sites, an analysis of the

proposed monitoring and protective measures respecting the human environment and the social and economic impact of proposed uranium mining.

2.2 The division of the formal hearings into phases is for purposes of convenience only. Commission Counsel will invite participants to consult with him from time to time to determine whether there should be any further divisions of the hearings within each phase, whether additional phases are required or otherwise determine the most efficient and fairest way to have all the relevant evidence presented before the Commission.

2.3 The Commission will determine the place and date for the commencement of hearings for each of the phases as soon as it is in a position to do so. After the date and place for a particular phase are determined the Executive Secretary will send to each participant a notice of hearing. In addition, the Executive Secretary will, through the news media, advise the public generally of the commencement date of each phase, the place of hearing and the matters to be considered during such phase.

3. Production of Studies, Reports and Other Documents

3.1 Commission Counsel will be responsible for requesting that reports and documents of interest to the Commission

in the possession or power of the government of British Columbia, the Federal Government and various boards and agencies, both provincial and federal, are made available. To that end, Commission Counsel will communicate with these various governments and boards and arrange for them to provide the Commission with the documents and reports required.

3.2 All of the major participants and the Commission Counsel shall, no later than June 15, 1979, file with the Commission and circulate to the other major participants a list of the reports, studies and other documents within their possession or power which are relevant to the subject matter before the Commission, including those for which privilege may be proposed to be claimed.

3.3 Supplementary lists are to be filed from time to time as further reports, studies or other documents come to the attention of major participants.

3.4 Each list of reports shall to the extent possible identify the study, report or document by stating,

- (a) the name of the person or persons who made or compiled it;
- (b) The date it was made or compiled;
- (c) A brief description of the subject matter with which it is concerned;

- (d) Whether the study, report or document is available to the general public and, if it is, the name and address of the publisher or distributor;

The list shall also contain the name, address and phone number of the person to be contacted to review the documents listed.

3.5 The list of documents shall be available for inspection by any participant and, upon notice to Commission Counsel and to the major participant filing the list, any participant may demand production of any document on the list for review.

3.6 Upon reasonable notice being given to the Commission and to Commission Counsel, any participant may bring before the Commission an application for production of any listed document if production has been refused or for a further or better list of documents. A participant may, in addition, request production of any reports, study or document relevant to the subject matter before the Commission known to them and in the possession or power of any of the participants.

3.7 If any dispute arises as to any claim of privilege or confidentiality made respecting a document, such dispute shall be referred to the Commission for a ruling.

3.8 For purposes of Rule 3 only (Production of Studies, Reports and Other Documents) the following shall be regarded as major participants required to file a list of documents:

- (1) Commission Counsel, on behalf of the Commission staff and Government Departments and Agencies;
- (2) Alliance Against Uranium Mining
- (3) The Atlin Council
- (4) Boundary Environment and Outdoor Club (Grand Forks)
- (5) British Columbia & Yukon Chamber of Mines
- (6) Canadian Coalition for Nuclear Responsibility (Kelowna)
- (7) Canadian Kelvin Resources Limited
- (8) Committee for a Clean Kettle Valley
- (9) Consolidated Rexspar Minerals & Chemicals Ltd.
- (10) E & B Explorations Ltd.
- (11) The Greenpeace Foundation (Vancouver)
- (12) Greenpeace (Okanagan) Foundation
- (13) Indigenous Peoples of the Western Hemisphere
- (14) The Kootenay Nuclear Study Group
- (15) The Mining Association of British Columbia
- (16) Noranda Exploration Company Limited
- (17) Norcen Energy Resources Limited
- (18) Placer Development Ltd.
- (19) PNC Exploration (Canada) Co. Ltd.
- (20) Shell Canada Resources Limited
- (21) South Okanagan Environmental Coalition
- (22) Union of B.C. Indian Chiefs
- (23) The United Church of Canada - The British Columbia Conference
- (24) United Fishermen and Allied Workers' Union
- (25) West Coast Environmental Law Research Foundation
- (26) Yellowhead Ecological Association - Clearwater
- (27) Yellowhead Ecological Association - Kamloops
- (28) Chinook Construction & Engineering Ltd.'
- (29) Stampede International Resources Ltd.
- (30) Solar Alternatives to Nuclear Energy

#### 4. Notice of Evidence to be Presented

4.1 Every participant before giving evidence or calling witnesses on its behalf at the formal hearings shall file with the Commission (5 copies) and circulate to the major participants and Commission Counsel, at least two weeks before giving or calling such evidence, a text or full synopsis of that evidence, a text or full synopsis of that evidence together with a list of any reports, studies or other documents to which the witness may refer or upon which he may rely and a biographical note on the witness.

4.2 Where a witness is called by subpoena the participant requesting the subpoena shall comply with Rule 4.1 as much as possible indicating the issue the witness is expected to address and his qualifications.

4.3 If a participant cannot comply with the two week rule that will not necessarily preclude the taking of evidence of the witness in question but it may mean the witness will have to be recalled later for cross-examination.

#### 5. Examination of Witnesses

5.1 The participant calling a witness shall be permitted to examine him first. The witness shall then be cross-examined by Commission Counsel and by the other participants. The participant calling the witness shall be entitled to re-examine.

5.2 The order for presenting evidence and cross-examining will be determined by the Commission from time to time as the nature of the evidence requires. Generally, Commission Counsel will lead off the cross-examination to be followed by Counsel for other major participants and finally by any other participant.

5.3 Witnesses may give evidence individually or as part of a group or panel testifying concurrently. In the Commission's discretion, any witness or witnesses may be called more than once.

6. Documentary Evidence

6.1 Any study, report or other document relied upon in the evidence of any witness shall be filed as an exhibit at the hearing unless the Commission otherwise directs.

6.2 Where appropriate, the Commission may seek information from parties, whether they are participants or not, by having Commission Counsel communicate with them. The questions posed and the answers received shall then form part of the evidence before the Commission. The Commission may, in its discretion, require that the person providing such answers appear at a hearing to verify his evidence and be cross-examined.



6.3 Where a participant claims that a study, report or other document, or any part thereof, is of a confidential or privileged nature, the participant shall produce such study, report or other document for inspection by the Commission and the Commission, without disclosing the contents thereof, shall rule upon the claim.

6.4 The Commission may, in their discretion and if they think it just and necessary for carrying out their Terms of Reference, consider as part of the evidence before them any study, report or document or any part thereof though it may be ruled to be confidential or privileged.

7. Applications to the Commission

7.1 Subpoenas may be issued by the Commission, at its discretion, upon application by any participant provided such participant has demonstrated he has attempted to obtain the attendance of the witness or the documentary evidence without success, that a subpoena is necessary to obtain the witness or document, and that the witness or document is necessary and relevant to the Terms of Reference of the Commission.

7.2 Notice of an application for a subpoena to obtain the attendance of a participant or an employee of or consultant to a participant or for production of a document in the possession or power of a participant shall be given to that participant.

7.3 An application may be made by a participant to the Commission for any relief whatsoever provided it is made upon reasonable notice to the Commission, Commission Counsel and the major participants as well as any other participants that may be affected.

8. Changes in These Rules

8.1 The Commission retains the power to add to, alter or modify these rules, to suspend the operation of any or part of them or to require any participant not already bound by them to comply in whole or in part, as well as the power to exempt any participant from complying with these rules in whole or in part, as the justice of the situation demands.

C. RULES RELATING TO WRITTEN BRIEFS

1. The Commission shall at any time accept written briefs from anyone, whether a participant in the proceedings or not. If possible, the brief should be typewritten and five copies provided.
2. The Commission may request that the person or group presenting a written brief attend before it so that the issues raised in the written brief may be explored before a public hearing.



Province of  
British Columbia

ROYAL COMMISSION OF INQUIRY  
HEALTH AND ENVIRONMENTAL PROTECTION  
URANIUM MINING

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JAMES W. MURRAY, PH.D., F.G.S.E., F.G.S.A., F.G.S.  
VALTER RAUDSEPP, P.ENG.

EXECUTIVE SECRETARY:

BRIG.-GEN. E. D. DANBY (RETIRED)

July 24, 1979

COMMISSION COUNSEL:

RUSSELL J. ANTHONY, B.A., LL.B., LL.M.

PRELIMINARY RULINGS NO. 2 - TECHNICAL HEARINGS

The following Rulings are supplementary to the Preliminary Rulings  
No. 1 - Rules of Procedure, issued on May 14th, 1979.

1. Where the words "formal hearings" were used they shall be replaced by the words "technical hearings". This does not denote any change in the nature of the hearings.

2. Pursuant to Technical Hearing Rule No. 1.3 the following are hereby declared as major participants for the Technical Hearings. From this date these organizations will be regarded as major participants and, as such, are entitled to receive the filed statements of evidence circulated pursuant to Rule No. 4.1 and otherwise be bound by the Procedural Rules as they apply to major participants.

MAJOR PARTICIPANTS LIST

- (1) British Columbia and Yukon Chamber of Mines  
840 West Hastings Street  
Vancouver, B.C.  
V6C 1C8 681-5328
- (2) British Columbia Conference, United Church of Canada  
200 - 1955 West 4th Avenue  
Vancouver, B.C.  
V6J 1M7
- Att: Michael Lewis, Chairman  
Uranium Working Group
- (3) B.C. Department of Energy, Mines and Petroleum Resources  
c/o Mr. George Cumming, Q.C.  
Cumming, Richards, Underhill, Fraser, Skillings  
Barristers and Solicitors  
Suite 600 - 900 West Hastings Street  
Vancouver, B.C.  
V6C 1G1 682-3664
- (4) B.C. Federation of Labour & United Steelworkers of America  
3110 Boundary Road  
Burnaby, B.C.  
V5M 4A2 430-1421
- Attn: Mr. David Rice
- (5) Canadian Association of Industrial, Mechanical and Allied Workers (CAIMAW)  
c/o Sun, Paterson & Brail  
Barristers and Solicitors  
305 Dominion Building  
207 West Hastings Street  
Vancouver, B.C.  
V6B 1H7 669-7311
- Attn: Mr. Craig Paterson
- (6) Canadian Coalition for Nuclear Responsibility  
Kelowna Branch  
P.O. Box 1093  
Kelowna, B.C.  
V1Y 7P8 764-4949
- Attn: Mr. John Meolaert, Chairman
- (7) Consolidated Rexspar Minerals and Chemicals Ltd.  
P.O. Box 11575  
650 West Georgia Street  
Vancouver, B.C.  
V6B 4N7 669-2226
- Attn: Mr. Bruce Switzer

- (8) Environmental Alliance Against Uranium Mining  
 #405 - 207 W. Hastings Street  
 Vancouver, B.C.  
 V6B 1H7 688-8361

Attn: Mr. David Garrick

- (9) Joint Committee - Uranium Technical Hearings  
 c/o Andrew Orkin  
 Box 30  
 Rock Creek, B.C.  
 V0H 1Y0 446-2392

- (10) Kootenay Nuclear Study Group  
 Box 205  
 Nelson, B.C.  
 V1L 5P9 354-4195 & 359-7618

Attn: Mr. Brian Carpendale

- (11) Mining Association of British Columbia  
 480 - 1066 West Hastings Street  
 P.O. Box 12540  
 Vancouver, B.C.  
 V6E 3X1 681-8429

Attn: Miller H. Mason, Counsel

- (12) Norcen Energy Resources  
 c/o Russell & DuMoulin  
 Barristers and Solicitors  
 17th Floor - 1075 West Georgia Street  
 Vancouver, B.C.  
 V6E 3G2 688-3411

Attn: D.M.M. Goldie, Q.C.

- (13) Placer Development Limited  
 700 - 1030 West Georgia Street  
 Vancouver, B.C.  
 V6E 3A8 682-7082

Attn: Mr. Ian Marshall, Legal Counsel

- (14) PNC Exploration (Canada) Co. Ltd.  
 3060 - 650 West Georgia Street  
 Box 11571, Vancouver Centre  
 Vancouver, B.C.  
 V6B 4N8 681-6151

- (15) Union of B.C. Indian Chiefs  
 3rd Floor - 440 West Hastings Street  
 Vancouver, B.C.  
 V6B 1L1 684-0231

Attn: Rosalee Tizya, Administrator

- (16) Yellowhead Ecological Association  
 Box 23  
 Clearwater, B.C.  
 V0E 1N0 674-3330

Attn: Ms. Colleen Foster, Secretary

- (17) Commission Counsel  
 1900 - 1030 West Georgia Street  
 Vancouver, B.C.  
 V6E 3E9 689-1811

Attn: Mr. Russell J. Anthony

Participants earlier named as major participants for purposes of filing a list of documents are no longer regarded as major participants but are required, in any event, to file supplementary lists of documents as further documents come into their possession.

3. Procedural Rule No. 2.1 outlining the phases of the Technical Hearings is hereby deleted and the following phases are established. Also, pursuant to Procedural Rule No. 2.3 the dates and times for hearing evidence at each phase will be as set out below.

PHASE I - Overview

September 25th - 28th, 1979

PHASE II - Exploration

October 2nd - 5th, 1979

PHASE III - Mining

October 16th - 19th, 1979

PHASE IV - Milling and Chemical Extraction

October 30th - November 2nd, 1979

PHASE V - Waste

November 13th - 16th, 20th - 23rd, 1979

PHASE VI - Environmental Impact

December 4th - 7th, 11th - 14th, 1979

PHASE VII - Public and Worker Health Protection

January 8th - 11th, 1980

PHASE VIII - Social Impact

January 22nd - 25th, 1980

PHASE IX - Ethical Questions

January 22nd - 25th, 1980

PHASE X - Jurisdiction, Regulation and Enforcement

February 5th - 8th, 1980

Phases I through IX will be held in Vancouver, B.C., at the Devonshire Hotel, 849 West Georgia Street. Phase X will be held in Victoria, B.C.. at the Empress Hotel, 721 Government Street. All sessions will commence at 9:00 a.m. and conclude at 4:00 p.m. each day.

Participants may call evidence and cross-examine witnesses called by others in all of the ten Phases.



Province of  
British Columbia

ROYAL COMMISSION OF INQUIRY  
HEALTH AND ENVIRONMENTAL PROTECTION  
URANIUM MINING

ADDRESS ALL CORRESPONDENCE TO THE SECRETARY

COMMISSIONERS:

DAVID V. BATES, M.D.(CANTAB), F.R.C.P., F.R.C.P.(C), F.A.C.P., F.R.S.(C), CHAIRMAN  
JAMES W. MURRAY, PH.D., F.G.S.E., F.G.S.A., F.G.S.  
VALTER RAUDSEPP, P.ENG.

EXECUTIVE SECRETARY:

BRIG.-GEN. E. D. DANBY (RETIRED)

September 11, 1979

COMMISSION COUNSEL:

RUSSELL J. ANTHONY, B.A., LL.B., LL.M.

PRELIMINARY RULINGS NO. 3 - TECHNICAL HEARINGS

The following Rulings are amendments to Preliminary Rulings No. 2,  
issued on July 24, 1979.

1. Pursuant to Technical Hearing Rule No. 1.3 the following are  
changes to the list of major participants:

Added to Major Participants

B.C. Medical Association

West Coast Environmental Law

Removed as Major Participants

Placer Development Limited





Province of  
British Columbia

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JAMES W. MURRAY, PH.D., F.G.S.E., F.G.S.A., F.G.S.  
VALTER RAUDSEPP, P.ENG.

EXECUTIVE SECRETARY:

BRIG.-GEN. E. D. DANBY (RETIRED)

October 10, 1979

COMMISSION COUNSEL:

RUSSELL J. ANTHONY, B.A., LL.B., LL.M.

PRELIMINARY RULINGS NO. 4 - TECHNICAL HEARINGS

The following Rulings are amendments to Preliminary Rulings No. 3,  
issued on September 11, 1979.

1. Pursuant to Technical Hearing Rule No. 1.3 the following are  
changes to the list of major participants:

Added to Major Participants

B.C. Ministry of the Environment

B.C. Ministry of Health

Greenpeace Foundation

Confederation of Canadian Unions (CCU) is to be recog-  
nized as a Major Participant in place of Canadian  
Association of Industrial, Mechanical and Allied Workers  
(CAIMAW).



Province of  
British Columbia

ROYAL COMMISSION OF INQUIRY  
HEALTH AND ENVIRONMENTAL PROTECTION  
URANIUM MINING

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COMMISSIONERS:

DAVID V. BATES, M.D.(CANTAB), F.R.C.P., F.R.C.P.(C), F.A.C.P., F.R.S.(C), CHAIRMAN  
JAMES W. MURRAY, PH.D., F.G.S.E., F.G.S.A., F.G.S.  
VALTER RAUDSEPP, P.ENG.

EXECUTIVE SECRETARY:

BRIG.-GEN. E. D. DANBY (RETIRED)

November 21, 1979

COMMISSION COUNSEL:

RUSSELL J. ANTHONY, B.A., LL.B., LL.M.

PROCEDURAL RULINGS NO. 5 - TECHNICAL HEARINGS

The following Rulings are further to Preliminary Rulings No. 1 to 4 following the initial Rules of Procedure issued May 14th, 1979.

- (1) Pursuant to Technical Hearing Rule No. 1.3 the Yellowhead Ecological Association (Kamloops) is added as a Major Participant.
- (2) Pursuant to Technical Hearing Rule No. 1.3 the Coalition of Concerned Citizens of the Bulkley-Nechako is added as a Major Participant. Attached is an updated and revised List of Major Participants.
- (3) Technical Hearing Rule No. 2.1 setting out the phases of the Technical Hearings is deleted in its entirety and the following phasing is substituted therefor:

- |            |  |
|------------|--|
| Phase I    | - Overview                                 |
| Phase II   | - Exploration                              |
| Phase III  | - Mining                                   |
| Phase IV   | - Milling and Chemical Extraction          |
| Phase V    | - Waste Disposal                           |
| Phase VI   | - Environmental Impact                     |
| Phase VII  | - Public and Worker Health                 |
| Phase VIII | - Social Impact                            |
| Phase IX   | - Ethical Questions                        |
| Phase X    | - Jurisdiction, Regulation and Enforcement |

## TECHNICAL HEARINGS

MAJOR PARTICIPANTS LIST

- (1) Atlin Community Association  
Box 125 651-7648  
Atlin, B.C. V0W 1A0  
  
Attn: Ms. Ann Wright
- (2) British Columbia and Yukon Chamber of Mines  
840 West Hastings Street 681-5328  
Vancouver, B.C. V6C 1C8  
  
Attn: Mr. F.G. Higgs
- (3) British Columbia Conference, The United Church of Canada  
c/o Mrs. Lois Boyce, Secretary 277-4527  
Uranium Working Group  
8971 Heather Street  
Richmond, B.C. V6Y 2R7
- (4) B.C. Federation of Labour & United Steelworkers of America  
3110 Boundary Road 430-1421  
Burnaby, B.C. V5M 4A2  
  
Attn: Mr. David Rice
- (5) B.C. Medical Association  
Academy of Medicine Building 736-5551  
1807 West 10th Avenue  
Vancouver, B.C. V6J 2A9  
  
Attn: Dr. Eric Young
- (6) B.C. Ministry of Energy, Mines and Petroleum Resources  
c/o Mr. George Cumming, Q.C. 682-3664  
Cumming, Richards, Underhill, Fraser, Skillings  
Barristers and Solicitors  
Suite 600 - 900 West Hastings Street  
Vancouver, B.C. V6C 1G1
- (7) B.C. Ministry of Environment  
Pollution Control Branch 387-5321  
1106 Cook Street  
Victoria, B.C. V8V 1X4  
  
Attn: Mr. Joe Negraeff  
Mr. Kelvin Hicke

- (8) B.C. Ministry of Health  
828 West 10th Avenue  
Vancouver, B.C. V5Z 1L8  
Attn: Dr. Wayne Greene  
874-2331
- (9) Canadian Coalition for Nuclear Responsibility  
Kelowna Branch  
P.O. Box 1093  
Kelowna, B.C. V1Y 7P8  
Attn: Mr. John Moelaert  
764-4949
- (10) Coalition of Concerned Citizens of the Bulkley-Nechako  
Box 61  
1636 Columbia Street  
Vanderhoof, B.C. V0J 3A0  
Attn: Mr. Bruce Kanary  
567-9451
- (11) Confederation of Canadian Unions (CCU)  
c/o Sun, Paterson & Brail  
1400 Dominion Building  
207 West Hastings Street  
Vancouver, B.C. V6B 1K5  
Attn: Mr. Craig Paterson  
669-7311
- (12) Consolidated Rexspar Minerals & Chemicals Ltd.  
P.O. Box 11575  
650 West Georgia Street  
Vancouver, B.C. V6B 4N7  
Attn: Mr. Bruce Switzer  
669-2226
- (13) Environmental Alliance Against Uranium Mining EAAUM  
c/o Ms. Del White  
Suite 405 - 207 West Hastings Street  
Vancouver, B.C. V6B 1H7  
688-8361
- (14) Greenpeace Foundation  
c/o Environmental Alliance Against Uranium Mining  
Suite 405 - 207 West Hastings Street  
Vancouver, B.C. V6B 1H7  
Attn: Mr. Peter Chataway  
688-8361
- (15) Joint Committee - Uranium Technical Hearings  
Suite 405 - 207 West Hastings Street  
Vancouver, B.C. V6B 1H7  
Attn: Mr. Ralph Torrie  
688-8361
- (16) Kootenay Nuclear Study Group  
#2 - 2828 West 6th Avenue  
Vancouver, B.C. V5M 1R8  
Attn: Mr. Jim Terral  
731-3287

- (17) Mining Association of British Columbia  
480 - 1066 West Hastings Street 681-8429  
P.O. Box 12540  
Vancouver, B.C. V6E 3X1  
  
Attn: Mr. Miller H. Mason, Counsel
- (18) Norcen Energy Resources  
c/o Russell & DuMoulin 688-3411  
Barristers and Solicitors  
17th Floor - 1075 West Georgia Street  
Vancouver, B.C. V6E 3G2  
  
Attn: Mr. John B.L. Robertson
- (19) PNC Exploration (Canada) Co. Ltd.  
c/o Russell & DuMoulin 688-3411  
Barristers and Solicitors  
17th Floor - 1075 West Georgia Street  
Vancouver, B.C. V6E 3G2  
  
Attn: Mr. John B.L. Robertson
- (20) South East Kelowna Irrigation District  
c/o Robin Luxmoore 763-6011  
City Hall - Engineering Department  
1435 Water Street  
Kelowna, B.C. V1Y 1J4
- (21) Union of B.C. Indian Chiefs  
3rd Floor - 440 West Hastings Street 684-0231  
Vancouver, B.C. V6B 1L1  
  
Attn: Rosalee Tizya, Administrator
- (22) West Coast Environmental Law Association  
#1012 - 207 West Hastings Street 684-7378  
Vancouver, B.C. V6B 1H7  
  
Attn: Mr. Kim Roberts
- (23) Yellowhead Ecological Association (Clearwater)  
c/o Dr. Robert MacKenzie  
Brookfield Medical Centre  
Clearwater, B.C. V0E 1N0
- (24) Yellowhead Ecological Association (Kamloops)  
c/o Mr. L. Isert 578-7537  
R.R. #3  
4868 Spurraway Road  
Kamloops, B.C. V2C 5K1
- (25) Commission Counsel  
1900 - 1030 West Georgia Street 689-1811  
Vancouver, B.C. V6E 3E9  
  
Attn: Mr. Russell J. Anthony

## ROYAL COMMISSION OF INQUIRY INTO URANIUM MINING

Revised Schedule of Hearings

As of November 13, 1979

Devonshire Hotel, Vancouver1979

Nov. 13-16; 20-23: Phase V: Waste Management

Dec. 4-7; 11-14: Phase VI: Environmental Impact: Ground-water, Surface Water, Biological Pathways.

1980

Jan. 8-11; 15-16;  
Jan. 29 - Feb. 1 Phase VII: Public and Worker Health

Feb. 5-8; 12-15: Continuation of Phases: II-Exploration; III-Mining; IV-Milling; V-Waste Management

Mar. 4-7; 11-14; 25-28;  
Apr. 1-3: Phase VI: Environmental Impact: Biological Pathways, Atmosphere, Decommissioning, Reclamation, Long Term Control, Emergency Measures

Apr. 15-18; 22-25;  
May 27-30: Phase VII: Public and Worker Health

Jun. 3-6: Phase VIII: Social Impact

Jun. 17-20: Phase IX: Ethical Questions

Jun. 24-27: Phase X: Jurisdiction, Regulation and Enforcement

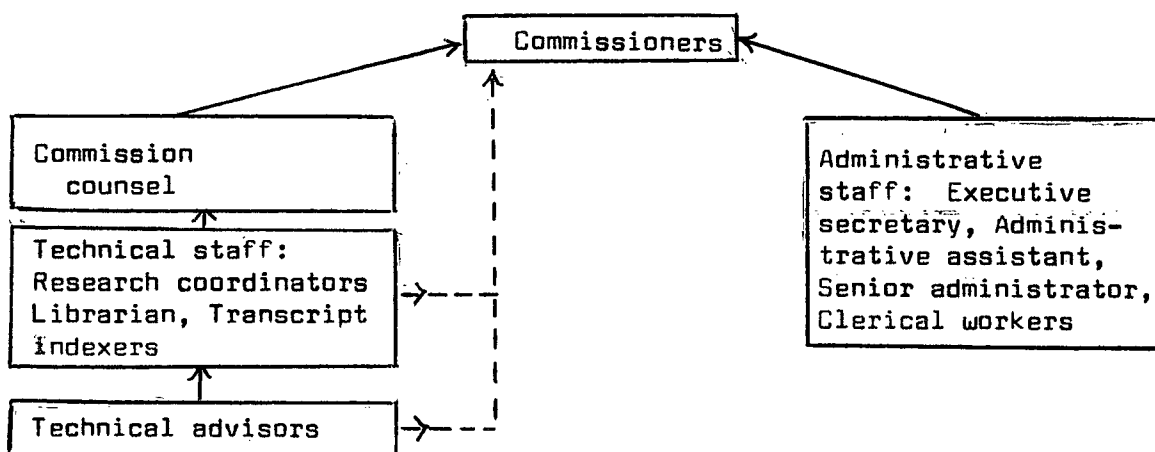
Community hearings will be rescheduled to September and October, 1980.

## APPENDIX 2

The Commission staff and their  
advisors: roles and responsibilities

FIGURE 1

RELATIONSHIPS BETWEEN COMMISSIONERS,  
COMMISSION STAFF AND THEIR ADVISORS



Commission counsel

1. Senior Commission counsel: Mr. Russell Anthony, whose role it is:
  - (a) to advise RCIUM on procedural matters and any other "legal issues";
  - (b) to set up and structure the technical hearings in conjunction with the Commissioners;
  - (c) to meet with RCIUM participants to schedule witnesses for the technical hearings;
  - (d) to work with the Technical Advisory Group to identify problems and RCIUM witnesses;
  - (e) to arrange to have RCIUM witnesses attend;
  - (f) to attend technical hearings to cross-examine witnesses;
  - (g) to help write and review the final report (Anthony 1979a, interview). Mr. Anthony represented a public interest group (Canadian Arctic Resources Committee) before the Mackenzie Valley Pipeline Inquiry, appeared for the provincial Fish and Wildlife Branch in the Revelstoke hearings, and was Commission counsel for the West Coast Oil Ports Inquiry.
2. Associate Commission counsel: Mr. Gary Letcher, whose role it is to assist Mr. Anthony. Mr. Letcher attends certain phases of the technical hearings in the place of Mr. Anthony.



### Technical staff

1. Research coordinators: whose role it is to assist RCIUM in:
  - (a) the structuring of the technical hearings; (b) the definition of the technical questions that must be addressed by RCIUM; (c) the testing of the evidence in the technical hearings; (d) the identification, hiring and organization of RCIUM witnesses; (e) the writing of the final report. The three research coordinators are:
    - (1) Mr. R.A. Hodge who has a background in engineering geology and groundwater;
    - (2) Mr. R. Culbert who has a background in civil engineering and works for a consulting firm (Talisman Projects) in Vancouver;
    - (3) Ms. J. Lexier who has a background in geological engineering.
2. Librarian: Miss Keltie McCall.
3. Transcript indexers: Ms. Marilyn Kansky and Ms. Karin Kanstantynowicz.

### Technical Advisors

The role of the technical advisors is to give technical advice to the research coordinators. The specific responsibilities and backgrounds of the 11 technical advisors are as follows:

Dr. B. Morrison: low level radiation exposure. Dr. Morrison is a statistician with a background in cancer research. She is a medical doctor and works in the Faculty of Medicine at UBC.

Mr. Frank Everard: milling of uranium. Mr. Everard has a background in milling and metallurgy and has his own consulting firm in Toronto.

Dr. Pervez Umar: mining of uranium. Dr. Umar is a mining engineer and has his own consulting firm in Toronto.

Dr. Lloyd Skarsgard: effects on health of uranium exploitation. Dr. Skarsgard has a medical background.

Dr. J. Miller: effects on health of uranium exploitation. Dr. Miller has a background in medical genetics.

Mr. C.O. Brawner: uranium mine waste disposal. Mr. Brawner established Golder Associates, a geochemical engineering firm, and recently entered the Mining Engineering Department at UBC.

Dr. W.K. Fletcher: geochemistry of uranium. Dr. Fletcher is a geochemist in the Department of Geological Sciences at UBC.

Dr. W.H. Matthews: physical environmental studies and impact of uranium on the natural environment. Dr. Matthews has a background in engineering geology, ground-water and environmental studies; he works in the Department of Geological Sciences at UBC.

Dr. A.J. Sinclair: geology and mineralogy of uranium deposits in British Columbia. Dr. Sinclair is a geological engineer with a background in mineral deposits and geostatistics. He works in the Department of Geological Sciences at UBC.

Mr. C.T. Hatfield and Mr. J. Villamere of Hatfield Consultants Limited. This company, which specializes in environmental and pollution management, assists in the cross-examination of various witnesses in Phases I-VI of the technical hearings.

Dr. Arthur Scott: radiological aspects of uranium exploitation. Dr. Scott has a background in nuclear physics and has his own consulting firm in Toronto.

In addition, RCIUM has a community relations' consultant, Ms. Sonia Stairs. Ms. Stairs is: "half staff, half advisor" (Hodge 1980d, interview). While her role in the community hearings is to intervene between the community participants and RCIUM, and to thereby keep the participants informed of RCIUM's activities (Stairs 1979a, interview), her role in the technical hearings is: (a) to assist community participants through orientation to both the procedure and the information; (b) to advise, to some extent, on the dissemination of appropriate and useful information to the communities (Stairs 1979b, interview). Ms. Stairs, as a member of the Secretariat of the Canadian Council of Resources and Environment Ministers, undertook the conceptual design and initial planning of the Man and Resource Conference Program. She also helped set up the Community Relations Department and the inter-departmental work groups of the British Columbia Hydro and Power Authority.

Administrative staff

1. Executive secretary: Brigadier General E.D. Danby (retired), whose role it is:

- (a) to act as the Commissioner of Oaths;
- (b) to take responsibility for the exhibits;
- (c) to contact participants, certain other organizations and expert witnesses to arrange for their appearance at a suitable time and place; and
- (d) to supervise the activities of the rest of the staff.

In Dr. Bates' words: "Brigadier General Danby . . . . is responsible for organizing the work of the Commission so that it is done efficiently and done well." (TP, 1, p. 5). Brigadier General Danby has been responsible for the administration of numerous commissions and inquiries, including the Royal Commission of Inquiry on Property Assessment and Taxation.

2. Administrative assistant: Mr. John Erb, whose role it is to assist General Danby during the public sessions. In General Danby's absence, Mr. Erb acts as the Commissioner of Oaths.
3. Senior administrator: Mrs. Lora Charlten, an administrator, personnel manageress and coordinator of information flow in the RCIUM office.
4. Clerical workers.

APPENDIX 3

List of witnesses:

community hearings

## Kelowna - June 5 and 6

PresentationsWitnesses

Placer Development Ltd.

Mr. D. Howard

PNC Exploration (Canada) Co. Ltd.

Mr. W. Bulmer, Mr. B.  
Jenkins, Mr. M. Suginoara

Norcen Energy Resources Ltd.

Mr. W.A. Loucks, Mr. D.A.  
Sawyer, Mr. J. Neville,  
Mr. P.G. SagertVernon Branch of SPEC  
verbal presentation

Ms. L. Warrington

South Okanagan Environmental  
CoalitionMr. J. Beattie, Mr. J. Lewis,  
Mr. J.W. Warnock, Mr. C.  
JohnsonGreenpeace (Okanagan) Foundation  
verbal presentation

Mr. P. Chataway

British Columbia Conference -  
The United Church of Canada

Dr. T.R. Anderson

Inter-Church Committee  
Anglican Church

Mrs. D. Burnstill

South and East Kelowna Okanagan  
Mission Local of the B.C. Fruit  
Growers Association

Mr. M. Irwin

South East Kelowna Irrigation  
District

Mr. R. Luxmoore

Canadian Coalition for Nuclear  
Responsibility - verbal  
presentation

Mr. J. Moelaert

St. Paul's United Church - Kelowna  
cerbal presentation

Mr. J. Oakes

International Association of  
Machineists - verbal presentation

Mr. A.E. Beaulier

Personal

Rev. S.W. Rowles

Kelowna Chapter of Registered  
Nurses Assoc. of B.C.  
verbal presentation

Mrs. C. Fletcher

South Okanagan Similkameen Union Board of Health	Dr. D.A. Clarke Ms. E. Clarke
Canadian Public Health Association	Mr. W. McGrath
Personal	Mr. W. Gilmour
Holy Spirit Parish	Rev. J. Smith
International Hostess Service verbal presentation	Mrs. J.R. Donati
Sierra Club of Western Canada Okanagan Group	Ms. K. Madsen
Union of B.C. Indian Chiefs verbal presentation	Miss L. Basil, Mr. J. Rogers
Verbal presentation	Mr. W.A. Gray
Summerland United Church - read into the record by Brig. Gen. E.D. Danby	Ms. L. Reinertson
Kelowna Business and Professional Women's Club - read into the record by Brig. Gen. E.D. Danby	Ms. M. Fedison
Personal	Mr. F. Snowsell
Personal - read into the record by Brig. Gen. E.D. Danby	Mr. D. Cursons
Verbal presentation	Mr. A. Proudfoot

#### Clearwater - June 8 and 9

Consolidated Rexspar Minerals & Chemicals Ltd.	Mr. B. Switzer, Mr. J. Mitchell Mr. J. Kerr
B.C. Medical Association	Dr. R.F. Woollard
Personal	Dr. R.F. Woollard
Upper North Thompson Livestock Association	Mr. W.H. Sedgewick
B.C. Federation of Labour and United Steelworkers of America	Mr. K. Graham, Mr. E. Steele
Yellowhead Ecological Association - Clearwater	Dr. R.E. MacKenzie

North Thompson Chapter of  
Registered Nurses Association of B.C.

Ms. H. MacKenzie

Clearwater Secondary School  
Students' Council - verbal  
presentation

Ms. G. Watson

Verbal presentation

Mr. L.W. Sakals

Verbal presentation

Mr. G. Briggs

Verbal presentation

Sister Regina Jacek

Personal

Mrs. J. Nistor

Verbal presentation

Mr. W. MacLennan

Verbal presentation

Ms. H. MacLennan

Verbal presentation

Mr. K.D. Simmerling

Verbal presentation

Dr. R.E. MacKenzie

Personal - read into the record  
by Brig. Gen. E.D. Danby

Mr. and Mrs. Voysey

Personal - read into the record  
by Brig. Gen. E.D. Danby

Mr. D. Boudreau

Personal

Dr. C. Lam

Verbal presentation

Mr. G. Blidook

Verbal presentation

Mr. L. Bishop

Personal

Mr. R. Jackson

#### Kamloops - June 11

##### Presentations

Consolidated Rexspar Minerals  
& Chemicals Ltd.

Yellowhead Ecological Assoc.  
Kamloops

North Shuswap Environmental  
Committee

Canadian Union of Public  
Employees, Local 900

##### Witnesses

Mr. B. Switzer, Mr. J. Mitchell,  
Mr. J. Kerr

Mr. L. Isert, Mr. J. Stewart

Mr. D. Charlton

Mr. B. Ferguson  
Ms. M. Bentley

Beaverdell Concerned Citizens	Mr. C. Holly
Committee for a Clean Kettle Valley	Mr. W. Poole
Diocese of Kootenay, Anglican Church	Rev. T. Mumford
Personal	Mr. R. Rexin
Verbal presentation	Mr. A.J. Orkin
Verbal presentation	Mr. F. Cromwell
Hydrological Map - Norcen Property	Mr. J. Neville Mr. D.A. Sawyer
British Columbia Conference United Church of Canada	Dr. E.G. Miller
Verbal presentation	Dr. C. Levitt
Personal	Ms. S. Stairs Clemons
Verbal presentation	Mrs. N. McGarvie
Personal	Mr. G. Dihm
Verbal presentation	Ms. L. Taylor
Rock Creek Women's Institute verbal presentation	Ms. M. Cannon

Grand Forks - June 20 and 21

<u>Presentations</u>	<u>Witnesses</u>
Chinook Construction & Engineering Limited	Mr. T. Schorn
Radiation Protection Service, Ministry of Health, Government of B.C..	Dr. W. Greene
Boundary Environment and Outdoor Club	Dr. L. Olsen
Personal	Mr. B. Bloom
Committee for a Clean Kettle Valley verbal presentation	Mr. D. White
Verbal presentation	Mr. J. Kelly



Personal - read into the record by Brig. Gen. E.D. Danby	Ms. C. Foster
Mount Paul United Church	Rev. P. Rolston
Thompson-Nicola Regional District	Mr. K. Simmerling
Verbal presentation	Ms. J. Lee
Kamloops Medical Society verbal presentation	Dr. C.L. Webster
Hospital Employees Union, Local 180	Mr. H.A. Theobald
Personal	Mr. L.P. Jensen
Personal	Mr. J.R. Kerr
Personal	Mr. L. Isert
B.C. Honey Producers' Association verbal presentation	Mr. A.E. Hooper
Personal	Mr. P. Jones
Personal	Mr. P. Bamford
PROBE - BRITISH COLUMBIA	Mr. D. Ellsay
City of Kamloops - read into the record by Dr. D.V. Bates	Mayor R.M. Latta
Personal - read into the record by Brig. Gen. E.D. Danby	Ms. B.M.A. Wheatcroft
Kamloops and District Labour Council verbal presentation	Mr. D. MacPherson
Personal - read into the record by Mr. K.M. Wyllie	Mrs. J. Jensen

Rock Creek - June 18 and 19

Presentations

Witnesses

PNC Exploration (Canada) Co. Ltd.	Mr. W. Bulmer
Norcen Energy Resources Ltd.	Mr. J. Neville Mr. D.A. Sawyer
Kettle River Stockmen's Assn.	Mr. W.H. Price, Mr. J. Eek, Mrs. D. Bubar

Personal	Mr. D. Planedin
Boundary Environment and Outdoor Club	Mr. P. Tchir
USCC Union of Youth (Union of Spiritual Communities of Christ)	Ms. L. Plotnikoff
Boundary Environment and Outdoor Club - verbal presentation	Mr. N. Reynolds
Boundary Environment and Outdoor Club - verbal presentation	Mr. S. Bastien
Union of Spiritual Communities of Christ	Mr. W. Kootnekoff
Personal	Mr. J. Carson
Boundary Environment and Outdoor Club - verbal presentation	Mr. K. Garrison
Ladies Organization of the USCC verbal presentation	Mrs. M. Fofonoff
Union of Spiritual Communities of Christ Committee for Justice and Human Rights - verbal presentation	Mrs. I. Malloff
Personal - read into the record by Mr. R. Anthony	Dr. R. Walton
Personal - read into the record by Mr. R. Anthony	Mr. D. Campbell
Boundary Environment and Outdoor Club - verbal presentation	Dr. E. Rice

Castlegar - June 21 and 22

Presentations

Witnesses

Stampede International Co.	Mr. E. Amendolagine
Kootenay Presbytery of the United Church of Canada	Rev. C. MacGuire
Religious Society of Friends - Argenta	Mr. N. Polster

Personal	Mr. R. Brisco, MP for Nelson/West Arm
Verbal presentation	Mr. E. Clough
Personal	Ms. C. Gaskin
Slocan Valley Resource Society	Mrs. S. Lamare
Genelle Concerned Citizens	Mr. T. MacKenzie
Verbal presentation	Mr. H. McGregor
Verbal presentation	Ms. D. Moore
Trinity United Church Women of Creston	Mrs. L.B. Beduz
Personal	Mr. J. Terral
Personal	Mr. D. Jack
Personal	Mr. B. Carpendale
Personal	Ms. Joan Renold
Personal - read into the record by Mr. R. Banner	Mr. W. Schwartz
Personal	Ms. Penny Bonnett Ms. B.N. Daniel
Verbal presentation	Rev. T. Bristow
Verbal presentation	Mr. E. Taylor
Personal	Mr. D. Pierce
Personal	Mr. G. Rutley
Personal	Mr. W. Niemann
Personal	Mr. R. Banner
City of Castlegar	Alderman B. Godderis
Personal	Mr. R. Ploss
Verbal presentation	Mr. K. Tucker

## Williams Lake - June 26

<u>Presentations</u>	<u>Witnesses</u>
Personal	Alderman M.M. Kallaur
Personal - read into the record by Mr. G. Letcher	Mr. E. Sager
Personal - read into the record by Mr. G. Letcher	Mr. G. Eichel
Verbal presentation	Mr. R. Woods
Troopers of Williams Lake verbal presentation	Mr. D. Diether
Troopers of Williams Lake verbal presentation	Ms. L. Enquist
Greenpeace Foundation verbal presentation	Mr. R. Marining
Personal	Rev. P. Davis
Verbal presentation	Mr. G. Rainey

## Vanderhoof - June 27

<u>Presentations</u>	<u>Witnesses</u>
B.C. Council, Confederation of Canadian Unions	Mr. G. Schlesinger
Verbal presentation	Mr. A. Patrick
Smithers Conservative Centre	Ms. L. Price
Vanderhoof Environmental Society	Mr. B. Kanary
CAIMAW, Local 10 verbal presentation	Mr. J. Bell
Nechako Valley Regional Cattlemen's Association	Mr. D. Weaver
Stuart Trembleur Indian Band	Mr. C. Gregg

## Fort Nelson - July 3

No formal presentations

## Atlin - July 4

<u>Presentations</u>	<u>Witnesses</u>
Serapheim Engineering verbal presentation	Mr. T. Lyle
Placer Development verbal presentation	Mr. S. Tennant
Verbal presentation	Mr. J. Wallace
D.G. Leighton & Associates verbal presentation	Mr. D. Culbert
Department of Energy, Mines & Resources Government of Canada verbal presentation	Mr. B. Ballantyne
B.C. Energy Coalition	Mr. D. Dobyns
Atlin Community Association	Mr. W. Merry
B.C. Conference, United Church of Canada	Mrs. L. Boyce
Atlin Community Association verbal presentation	Ms. A. Wright
Verbal presentation	Mr. J. Davidson
Verbal presentation	Mr. L. Verlinden
Verbal presentation	Mrs. J. Spira
Personal - read into the record by Mr. W. Spira	Mr. A. Passerell, MLA for Atlin
Verbal presentation	Mr. B. Johnson
Personal - read into the record by Ms. M. Ripple	Mr. J. Fulton, MP for Skeena
Atlin District Board of Trade - read into the record by Mr. Anthony	Mr. H. Loken
Personal - read into the record by Mr. Anthony	Mr. R. Yorke-Hardy

APPENDIX 4  
Visits to uranium mines  
and deposits

A. Visits to Uranium Mines

1-11 APRIL, LIMOGES, FRANCE

Beny open pit mine

Fanay underground mine

Health protection laboratory

Filled in, revegetated pit mine

Bessines mill

Bessines tailings pond with surface leaching pipes

Dr. Chameaud's experiments on rats exposed to radon gas

8-9 MAY, ELLIOT LAKE, ONTARIO

Quirke Lake barium treatment plant

Quirke tailings disposal

Quirke site, revegetation experiment

Quirke Lake tailings - dry and wind blown

Quirke Lake tailings dam with experiment water treatment plant

Nordic tailings, giving acid

Quirke Lake settling ponds below tailings

14 MAY, MIDNITE MINE, WASHINGTON

Midnite mine open pit

Newly constructed pond to contain seepage from pit

Seepage waters from open pit

Tailings pond with saw mill waste being used to cover tailings

Dyke at open pit

Mill tailings wind blown material

Open pit office buildings

Seepage from pit: radioactive calcium sulphate (?) white precipitate

15 MAY, SHERWOOD MINE, WASHINGTON

Sherwood mine open pit

Sherwood mine mill

Reservoir below open pit

Berns to prevent water washing down to the reservoir

Ore bin

Barium sulphate ( $\text{BaSO}_4$ ) settling pond for heating effluent

Tailings pond

Seepage from  $\text{BaSO}_4$  treatment pond going underground

Seepage from  $\text{BaSO}_4$  precipitation pond re-emerging in gully above main highway

17 MAY, SALT LAKE CITY, UTAH

Vitro plant, Salt Lake City tailings pile

Salt Lake City Vitro site

Farming adjacent to Vitro site

Vitro plant, partly revegetated

B. Visits to Uranium Deposits

4 June - Blizzard, Fuko, Lassie Lake, Donen and Hydraulic Lake deposits  
in the east Okanagan of central British Columbia

8 June - Birch Island deposit on the south slope of the North Thompson  
Valley, 100 km. north of Kamloops

19 June - Beaverdell deposit, south-east of Kelowna

20 June - Boundary deposit, near Grand Forks

21 June - China Creek deposit, near Castlegar

27 June - Nechako River deposit, near Vanderhoof

5 July - Surprise Lake and Ruby Creek deposits, northeast of Atlin

(Commission staff timetable,  
June-July 1979).



APPENDIX 5  
First Interim Report  
on Uranium Exploration

## ROYAL COMMISSION OF INQUIRY INTO URANIUM MINING

## PROVINCE OF BRITISH COLUMBIA

FIRST INTERIM REPORT ON URANIUM EXPLORATION

August 15, 1979.

I. INTRODUCTION

1. The Commissioners have now visited the major sites of uranium exploration in the Province of British Columbia, and have completed a preliminary evaluation of the risks to the environment and to the public which these activities might cause. We have come to the position that the present methods of control of exploration for uranium are not yet adequate to ensure proper protection of the public and the environment, having at this time in mind the existing radiation standards set by the Federal and Provincial authorities.

2. The purpose of this FIRST INTERIM REPORT is to detail this evaluation and to recommend changes in the existing regulations and enforcement procedures. We wish to stress that our present conclusions and recommendations are only preliminary, and may be modified or expanded after we have heard the evidence presented to us at the Hearings due to be held in the Fall of 1979 and Spring of 1980.

II. QUESTION OF A TOTAL MORATORIUM ON EXPLORATION

3. To date, our consideration of uranium exploration has been limited to a study of its impact on the environment, and of possible health hazards to exploration crews and to the public.

4. The Public Hearings we have conducted so far have indicated to us that some members of the public believe that there are ethical grounds which are strongly held, for a total prohibition of uranium exploration. We have planned specific consideration of these ethical questions early in 1980 and wish to make it clear that the recommendations in this Report are those which we feel to be necessary at this point of time, viewed from the standpoint of public and environmental protection. We are not yet prepared to indicate our position on the ethical questions which are involved, though we anticipate making a comment on this aspect of the questions we have been asked to consider when our Final Report is submitted.

5. It may be argued by some that our unwillingness at this point to recommend a total ban on exploration for uranium represents a tacit consent to the extraction of any ore found, and its later utilization for nuclear energy; this does not follow.

III. ADDITIONAL REASONS FOR INTERIM REPORT

6. The Atomic Energy Control Board of Canada has recently indicated that in the future it will not be licensing uranium exploration, unless this involves removal of more than ten kilograms of uranium or thorium from

any one deposit in any one calendar year. (See Appendix I). In our view this makes it necessary for the Province of British Columbia to accept the responsibility to license uranium exploration, and it is now essential that the Provincial Government should move expeditiously to control this activity.

7. A further reason for submitting this Interim Report is that we have been made aware in public testimony of some hardship, for example, extra costs to individual prospectors, currently being caused by uncertainty concerning future policy in the Province of British Columbia in relation to uranium exploration.

#### IV. SPECIAL HAZARDS FROM URANIUM EXPLORATION ACTIVITY

8. It has become clear to us that the Provincial Regulations controlling exploration were originally drafted with a view to general coal and mineral exploration and were not concerned with the possible special hazards associated with uranium exploration.

9. Uranium exploration raises particular problems from three points of view. Firstly, the possibility of contamination of water by material released as a result of exploration activity; secondly, the possibility of radon gas and its daughters being emitted from exposed radioactive sources; and thirdly, the importance of some special protection methods needed for employees.

10. An examination of the main sites of exploration for uranium in British Columbia reveals that the possible hazards occasioned by this activity vary greatly in different locations, partly because the natural levels of radioactivity are different, but more particularly because the local conditions are far from uniform. We wish to stress that some of the public fears expressed to us in testimony in relations to the possible hazards resulting from drilling for uranium do not, in our opinion, constitute a significant risk. Some members of the public have been led to believe that a single drill hole some miles from the nearest habitation could present a hazard by virtue of the leakage into the general atmosphere of gas containing radon and its daughters. Such a possibility is unsupported by data, and the physics of gas dispersion and dilution make it exceedingly unlikely that any enhanced risk could result from such limited exploration activity. However, a more extensive program including large numbers of drill holes in a known radioactive deposit, could pose a hazard to nearby habitation unless these holes were promptly closed.

11. A potential hazard, in our opinion, is that drill holes will disrupt the pattern of groundwater flow causing a compositional change in the water and leading to contamination of a water supply previously unaffected. The possibility of increased uranium content, or the introduction of other constituents such as radium 226 or toxic heavy metals associated with uranium deposits, makes the problem particularly difficult. The contaminated water might be used for public drinking purposes, or irrigation, or for the watering of livestock.

## V. PRESENT SITUATION

12. We have noted examples where the hazards of uranium exploration are illustrated. At the B/D deposit of Consolidated Rexspar Mines (Birch Island), broken radioactive rock is distributed downwards into Foghorn Creek. At China Creek near Castlegar, there is a possibility of contamination of the creek which supplies the water to the local population of Genelle from exploration activity on both sides of the creek. Southeast of Kelowna in the Hydraulic Lake area the problem is that of possible future waterborne radionuclide or uranium affecting the Southeast Kelowna Irrigation District. Another problem exists at Eneas Creek west of Summerland, where uranium in the creek water at the present time appears to be naturally in excess of the proposed public drinking water standard (20 ppb uranium). A recent intensification of exploration and drilling in this area might have the effect of further increasing the uranium content in this and other creeks.

## VI. PROBLEM OF COMMUNICATION

13. It has been brought to our attention at a number of the Public Hearings we have so far conducted, that there have been difficulties with communication between all levels involved in uranium exploration. Not only has the public found it difficult to get information to which one would have supposed it was clearly entitled, such as exploration programmes, safety measures, etc., but the extent of information distributed to local health officers seems to have been exceedingly variable; the communication between mining inspectors and health officers and the public seems to have been deficient; the communication between the exploration companies and the public has been variable and in some instances unsatisfactory; and the Atomic Energy Control Board, which has been issuing licenses for uranium exploration, seems to have been too distant from the problems in the area to have provided an effective source of information.

14. The public testimony that we have heard has provided us with a great deal of evidence of the frustration encountered by concerned members of the public, including physicians, ministers, and representatives of cattlemen, fruit growers or other food producers. It is clear that an improvement of this aspect of the present situation should be a priority.

## VII. PRESENT LEGISLATION

15. The intensification of uranium exploration in British Columbia is so recent that proper information channels have not yet been developed, and the existing regulations covering exploration have not been amended to take specific account of the problems associated with uranium exploration.

16. We note that in the present Mines Regulation Act, the definition of "mine" in Section 2 means "any underground, open-pit, or quarry working, or other working of the ground, for the purpose of prospecting, mining, opening up, developing, or proving any mineral or mineral-bearing substance . . . ." Later in Section 11, subsection 18, there occurs the paragraph "Notwithstanding the provisions of this section in respect of all placer mining operations other than hydraulic monitoring, and in respect of all mines in the exploration stage, the Chief Inspector has the same power and authority that is granted to any person, except the Lieutenant-Governor in Council, under this section, where the employment of mechanical equipment is likely to disturb the surface of the land in clearing, stripping, trenching, or such other operations as the Chief Inspector may consider likely to cause significant disturbance of the surface of the land, and he may approve programmes for reclamation and conservation of the land surface and issue permits required under this section, subject to such terms and conditions as he may prescribe."

17. We interpret these sections as clearly indicating that the Chief Inspector of Mines has responsibility over exploration activities. It seems clear that he has power to require a wide variety of actions in relation to exploration, or actions which should be taken in advance of exploration; but it appears to us that up to this point in time these powers have not been widely used. For example, they would in our view have empowered the Chief Inspector to designate what baseline studies of water or air concentrations of radioactive materials should be made on a given site before any exploration involving detailed drilling or trenching on a large scale had been permitted. We have not found evidence that the legislation has been used for this purpose, though in our view in some instances it clearly should have been.

18. The wording of the Pollution Control Act seems to us to bring contamination of water with uranium or with radionuclides, and air with radon daughters clearly within the definition of "pollution". However we have not found evidence that the Pollution Control Branch to this point has been involved in a discussion or survey of problems that might be caused by current uranium exploration. The licenses previously issued by the Atomic Energy Control Board required the exploration company to state what health and safety provisions it had made in relation to its activities, and what precautions it was taking to protect the environment. The undertakings which were given to the Atomic Energy Control Board by individual companies under this section do not appear to have been generally known by the District Mining Inspectors, although these individuals have presumably been responsible for checking whether or not these commitments were being discharged.

#### VIII. TYPES OF EXPLORATION

19. Mineral exploration involves those activities designed to locate mineral deposits and evaluate their economic potential. In order to describe what steps should be taken to control uranium exploration, it is helpful to view these activities in an orderly framework. Consequently, we have adopted the following general structure for those activities which follow the inception and design of an exploration program.

### LEVEL ONE - REGIONAL EXPLORATION

20. This includes the compilation and assesment of existing information and the collection of exploration data of a reconnaissance nature including:

- (a) Airborne and ground geophysical surveys
- (b) Geological mapping
- (c) Sediment, soil and water sampling
- (d) Radon determinations

### LEVEL TWO - DETAILED GROUND EXPLORATION

21. Exploration procedures at this level are designed to thoroughly evaluate local areas of interest. Common activities include:

- (a) Detailed ground geophysical and geochemical surveys often requiring line cutting in forested areas.
- (b) Road building, trenching (including blasting) and stripping.
- (c) Diamond and/or percussion drilling.

### LEVEL THREE - DETAILED SUBSURFACE EXPLORATION

22. Detailed subsurface exploration provides a thorough information base for evaluating the feasibility of mineral production. In practice it may be difficult to ascertain where Level Two ends and Level Three begins. Activities at this level include the following:

- (a) Systematic drilling and sampling
- (b) Excavation of large surface pits and/or driving exploratory adits and shafts.

23. Ground acquisition by claim staking or purchase normally coincides with the onset of Level Two.

## IX. GUIDELINES FOR URANIUM EXPLORATION

24. Exploration surveys and ancillary physical work can be classified as disruptive or non-disruptive of the physical environment. There should normally be little or no significant disturbance of the land surface up to and including Level Two activity (a). We are therefore most concerned with those activities occurring in Levels Two and Three that can result in physical and/or chemical contamination of the environment. The general problems associated with these activities are common to exploration for all natural materials, but in the case of uranium there is the added possibility of problems arising from uranium and the radioactivity of its decay products.

25. Insofar as special hazards are associated with uranium exploration, we wish to suggest that the following guidelines be used to supplement the present regulations, some of which are contained in "Guidelines for Coal and Mineral Exploration in British Columbia" (B.C. Ministry of Mines and Petroleum Resources, 1978).

## ROAD BUILDING

26. Removal of cover material during construction of access roads to uranium exploration sites may result in exposure of radioactive materials. Consequently, such roads should be surveyed radiometrically and results provided to the Inspecting Officer as soon as is feasible. Where potentially hazardous radioactivity is recognized, the Inspecting Officer may require burial, redesign or relocation.

## STRIPPING, TRENCHING AND TEST PITTING (including Blasting)

27. Stripping, trenching and test pitting lead to the possibility of exposing high grade uranium concentrations, increasing the rate of radon emission, producing debris piles subject to new conditions of erosion, and altering the surface drainage regime. All these problems can be avoided or minimized by strict adherence to the Guidelines for Clearing, Stripping and Trenching and other relevant sections on Reclamation and Revegetation in "Guidelines for Coal and Mineral Exploration" (B.C. Ministry of Mines and Petroleum Resources, 1978) with the added provisions that excavated overburden should be sorted according to level of radioactivity. In backfilling the most radioactive material should then be replaced first. Following reclamation, a scintillometer survey should be undertaken to ensure that radiation levels do not significantly exceed those present prior to the disturbance.

## DRILLING

28. Water flowing in drill holes may lead to contamination of previously uncontaminated surface or groundwaters. Therefore, all drill holes not approved by the Inspecting Officer for monitoring purposes must be filled to depth with appropriate sealing material. The sealing procedure must be acceptable to the Inspecting Officer. Additional contamination may arise from drilling muds, sludge and unused cuttings. To minimize the dispersal of these materials a sump tank in an excavation shall be used for their containment. On completion of drilling, such materials shall be covered by overburden to a depth of at least one meter or more as directed by the Inspecting Officer. An effort should be made to reuse drilling mud from one drill site to another.

29. On the completion of drilling, the site should be reclaimed as specified in "Guidelines for Coal and Mineral Exploration" (B.C. Ministry of Mines and Petroleum Resources, 1978) and checked by a final scintillometer survey to verify that no significant changes in levels of radioactivity have occurred.

30. Upon completion of a drill hole, the location, date, and name of the exploration company must be posted at the drill hole site in a permanent manner analogous to a claim post.

31. In cases of detailed drilling programs corresponding to Level Three - "Detailed Subsurface Exploration" a monitoring program shall be instituted as follows:

- (a) Samples of surface waters are to be taken before and during detailed subsurface exploration. These must be analyzed for uranium and other constituents as required by the Inspecting Officer.
- (b) Groundwater should be analyzed for uranium and other constituents and flow system characteristics.
- (c) Air samples should be taken for determination of radon concentrations.

#### ADITS AND SHAFTS

32. Adits and Shafts are normally driven as a means of direct investigation of bulk sampling of mineral deposits. In our opinion, the hazards associated with these activities correspond more closely to those encountered in underground mining of uranium than in surface exploration activities currently taking place in British Columbia. For this reason, we recommend a moratorium on the driving of exploratory adits and shafts at sites of uranium exploration. This moratorium should be concurrent with the existing moratorium on uranium mining in British Columbia.

#### SAMPLE AND CORE STORAGE

33. Many of the exploration activities referred to previously give rise to a variety of samples including drill core, requiring storage prior to examination and/or analysis. Much of the more highly radioactive material encountered in an exploration program will be represented in such samples. It follows that sample storage must be undertaken in an orderly fashion, either on site or at some other site agreed to by the Inspecting Officer, but in premises to which only authorized personnel have access. These premises should be clearly posted, well ventilated to avoid accumulation of radon daughters, and monitored for levels of radon and gamma radiation. A detailed record of samples shipped must be maintained.

### X. RECOMMENDATIONS

34. On the basis of the preliminary data available to the Commission, we recommend:

- R-1. That the Province of British Columbia should institute a licensing procedure for uranium exploration.
- R-2. That the Province of British Columbia should prohibit the driving of exploratory adits and shafts at sites of uranium exploration.
- R-3. That strict guidelines and regulations for the control of uranium exploration be introduced as part of the licensing process.



- R-4. That consideration be given to transferring the responsibility for the surveillance of exploration activity in the Province of British Columbia from the District Mines Inspector to the District Geologist. The District Geologist should be given such staff as is required to carry out the surveillance program in his region, having regard to the extent of uranium exploration within it, and he should also be required to be the main and publicized source of information in the locality on all matters concerned with uranium exploration. This information should include public information on exploration activities, on the level of radioactivity around individual drill sites, and on the status of reclamation on exploration sites.
- In our view, the District Geologist is well equipped to supervise local surface exploration activity. He has detailed knowledge of the geology of the region, he is very interested in the results of drilling programs, he has means of access to any location in the region, and he is equipped to make the measurements of surface radioactivity which would be required. Liaison between the District Mines Inspector and the District Geologist should be simple since in general they occupy adjacent offices.
- R-5. That dosimeters should be worn by exploration staff for at least a month on any specific drilling project, but at the discretion of the Inspecting Officer the wearing of dosimeters could be discontinued. With most surface work there seems to be little possibility that significant levels of radiation exposure either from gamma sources or inhalation of radon gas and its daughters would be likely.
- R-6. That information on levels of radioactivity recorded at drill sites or from surface rock or core storage areas should be routinely sent by the District Geologist to the local Health Officer and the Regional Manager of the Pollution Control Branch, so that both of those officials and the public are fully informed of the present status of uranium exploration in the district.
- R-7. That where radioactive cores are being stored on the site, unrestricted public access to these should not be possible, and that there be proper protection for members of the drilling crew who would have access to the storage area. This area must be well ventilated and measurements of radon gas concentration should be made periodically if workers are to be employed in the immediate location of such core samples. The responsibility for ensuring worker protection on the site should be shared with the local Health Officer and the representative of the Pollution Control Branch after notification by the Inspecting Officer that radioactive cores were present in the area.

R-8. That there be a public warning displayed at places where outcrops of rock are specially radioactive. During the course of our visits to the main sites of uranium exploration in British Columbia, we have had an opportunity to take readings of radiation levels at rock surfaces (tabulated in Appendix II). In two instances the radiation levels seemed to us to be high enough to require some special action.

(a) The radiation count at the surface of the Fuko deposit, in the upper Kettle River watershed, which is immediately adjacent to a public road, is approximately 1,000 microrems per hour or about 500 times the average natural background. It would seem to us that the existence of this exposed rock should necessitate a public warning notice which would indicate the nature of the deposit, with possibly the following wording:

DANGER

HIGHLY RADIOACTIVE ROCK IN THIS AREA

We suggest that this notice could be posted on the authority of the local Health Officer.

(b) Similar high count rates were noted at the rock face of the B/D deposit above Birch Island on the Consolidated Rexspar claims. This is also adjacent to a logging road to which the public has unrestricted access, and a similar notice should be posted in this situation. The other data in Appendix II indicate that some material adjacent to drill holes has a count rate of up to 200 and 500 microrems per hour. At these sites the special precautions we have indicated in Section IX would eliminate any significant hazard.

R-9. We recommend the development of a province-wide radiation observation network. This is necessitated by the considerable variation in natural radiation levels. We anticipate making a more detailed recommendation on this matter in our Final Report.

## XI. CONCLUSIONS

35. After visiting the existing sites of uranium exploration in British Columbia, we have concluded that the operation of the existing regulations is still unsatisfactory. We concluded that additional legislation is not specifically needed for this situation to be rectified, but have recommended a change in individual responsibility, together with the involvement in the locality of the local Health Officer and the representative of the Pollution Control Branch in decisions concerning the protection of water resources or the protection of public health. We believe at this time that these recommendations, if implemented, would eliminate the possibility of significant public hazard from uranium exploration. We also recommend that the Province of British Columbia should initiate a licensing procedure for uranium exploration, and prohibit the driving of adits and shafts in exploration areas at the present time.

36. We wish to emphasize again that this Interim Report on Uranium Exploration does not preclude our making other or more detailed recommendations on these matters in our Final Report. The series of Technical Hearings scheduled to start in September 1979, may lead us to modify these recommendations, but we wish to bring them to the attention of the Government of British Columbia at their present stage of formulation.

Readings of Radiation Levels at Rock Surfaces  
and Material Adjacent to Drill Holes

Appendix II  
Interim Report  
on Uranium Exploration  
dated August 15, 1979

DATE	SITE	LOCATION DETAIL	SCINTILLOMETER MICROREM/HOUR	SOUND/MINUTE
23 June	MANNING PARK	Alpine Meadows	2 - 3	c 90
3 June	VANCOUVER	Point Grey	2 - 3	c 90 - 100
4 June	BLIZZARD (Norcen)	Top of Basalt dome	2 - 3	
		Stream N.W. edge	15 - 20	
		Cores	25 - 100	
4 June	DONEN (PNC)	Core Storage	6	
		Road gravel on way to FUKO	20 - 25	
	FUKO OUTCROP	Central surface	800 - 1000	
		Above Deposit	15 - 20	
8 June	BIRCH ISLAND (Consolidated Rexspar)	B Zone - general	100	
		over drill hole	120	
		30 yards up hill	25	
		Road to A site	18	
		A Zone - general	25	
		over drill hole	20	
		B-D Zone rock face	1000	
		Rock into Foghorn Creek	200	
		Abandoned core hut	40 - 80	
18 June	PENTICTON (Pacific Petroleum)	Apex Road	40	
		(Potassium radioactivity)	25	
		Outcrops Farleigh Lake	25	
		Pink outcrop on bank	40	
20 June	GRAND FORKS BOUNDARY SHOWING (Chinook Construction)	Showing No. 2	12 - 15	
		Borehole PH78C25	200 - 500	
		Country rock	35	
		KIWI drill site	10 - 15	
		cuttings	25 - 32	

		Natural outcrop	40
		Road to cabin Snowball Creek	10
		Inside old cabin	6
		Sample bags	2 - 10
		Granite outcrop	16 - 18
20 June	WILLIAMS LAKE	Alexis Creek	2 - 3
21 June	GENELLE (Stampede International)	China Creek	
		Hilltop drill & blast site	20 - 25
27 June	VANDERHOOF	Nechako River	
		Kenney Dam Road	
		Site EN1 (E & B Co.)	
		Cuttings	6
		Perimeter	5
		Drill cores	10 - 11
		Site EN2	
		Site 2 cores	less than 5
		KLUSKUS Log Road	
		Site E1 (Shell Co.)	2 - 3
		Core remains on site	2 - 3
5 July	ATLIN	Cemetery	2 - 3
		Surprise Lake (lower end)	2 - 3
		Road by Surprise Lake	15 - 17
		Ruby Creek Granite bed	15 - 25
		Molybdenum drill cores & boxes	5 - 10

NOTE:

These measurements of radioactivity were made by the use of a scintillometer (Ludlum Measurements Inc., Sweetwater, Texas, Model 19 micro/R meter) which was kindly lent to the Royal Commission for this period of its work by Dr. Wayne Greene, Chief Radiation Protection Division, Department of Health, Province of British Columbia, to whom we are greatly indebted.

## APPENDIX 6

### Depository libraries

A. Libraries Holding Transcripts, Statements of Evidence,

Accession Lists and the Interim Report<sup>y</sup>

Abbotsford Public Library  
 Atlin Community Library  
 Campbell River Library  
 Castlegar Public Library  
 Fraser Valley College-Learning Resources Centre, Chilliwack  
 Clearwater Library  
 Cranbrook Public Library  
 Dawson Creek Public Library  
 Fort Nelson Public Library  
 Grand Forks Public Library  
 Greenwood Public Library  
 Cariboo-Thompson-Nicola Regional Library, Kamloops  
 Kelowna Branch of the Okanagan Regional Library  
 Vancouver Island Regional Library, Nanaimo  
 New Westminster Public Library  
 Prince George Public Library  
 Prince Rupert Public Library  
 Quesnel Library  
 Revelstoke Library  
 The Library, North West College, Terrace  
 Royal Commission on Uranium Mining, 3724 W. Broadway, Vancouver  
 The Library, B.C.I.T., 3700 Willingdon Ave., Burnaby  
 Special Sciences Division-Documents, Simon Fraser University Library, Burnaby  
 The Library, University of British Columbia, 2075 Westbrook Place, Vancouver  
 Vancouver Public Library, 750 Burrard Street, Vancouver  
 Vanderhoof Public Library

B. Libraries Holding Edited Videocassettes

Fraser Valley College, Learning Resources Centre, Abbotsford  
 Selkirk College, Library, Castlegar  
 East Kootenay College, Library, Cranbrook  
 Northern Lights College, Library, Dawson Creek  
 Cariboo College, Library, Kamloops  
 Okanagan College, Library, Kelowna  
 Malaspina College, Library, Nanaimo  
 College of New Caledonia, Library, Prince George  
 North West College, Library, Terrace  
 B.C.I.T. Library, Burnaby  
 Royal Commission on Uranium Mining, 3724 West Broadway, Vancouver, B.C.  
 Camosun College, Library, Victoria

## APPENDIX 7

### Participant funding



NAME <sup>1</sup>	INITIAL REQUEST	FIRST ALLOTMENT	NEW REQUEST	ADDITIONAL ALLOTMENTS	TOTAL
EAAUM (B.C. Federation of Naturalists, SPEC, Western Canada Chapter of the Sierra Club)	\$34,000/mo	\$30,000		\$15,000	\$45,000
ACA	\$ 2,050	\$ 2,000	\$19,025	\$ 6,000	\$ 8,000
Beaverdell Community Club			Funds to sent to rep- resentatives	\$ 3,700	\$ 3,700
BCCUCC	\$ 5,600/mo. +11,500	\$ 2,000		\$ 6,000	\$ 8,000
British Columbia & Yukon Chamber of Mines	\$18,275	\$ 2,000		\$ 2,000	\$ 4,000
Boundary Environment and Outdoor Club	\$ 1,625	\$ 1,600	\$ 1,870	\$ 1,800	\$ 3,400
CCNR - Kelowna	\$19,000	\$ 3,000		\$ 4,000	\$ 7,000
CCNR - Vancouver			\$ 5,560/mo. x 6 months =33,900	\$ 4,000	\$ 4,000
Canadian Public Health Association			\$ 2,500	\$ 2,500	\$ 2,500

<sup>1</sup>Consult List of Abbreviations for the legend.

NAME	INITIAL REQUEST	FIRST ALLOTMENT	NEW REQUEST	ADDITIONAL ALLOTMENTS	TOTAL
CCCBN			\$ 8,000	\$ 6,000	\$ 6,000
Committee for a Clean Kettle Valley	\$56,050	\$ 3,000		\$ 2,000	\$ 5,000
Greater Victoria Environmental Centre			\$ 2,000	\$ 2,000	\$ 2,000
Greenpeace Foundation (Okanagan)	\$25,200	\$ 3,000			\$ 3,000
Greenpeace Foundation (Vancouver)	\$10,968 (6 mos.)	\$ 2,000	\$ 6,000	NIL	\$ 2,000
Indigenous Peoples of the Western Hemisphere	\$63,750	\$ 500			\$ 500
JCUTH representing Interest Groups in Kelowna, Beaverdell, Christian Valley, Westbridge, Bridesville, Rock Creek, Midway, Greenwood, Grand Forks			\$42,000	\$25,000	\$25,000
Kamloops Honey Producers' Association			\$ 500	\$ 500	\$ 500
KNSG	\$ 3,525/mo.	\$ 4,000	\$ 4,450 (for additional project)	\$20,000	\$24,000

NAME	INITIAL REQUEST	FIRST ALLOTMENT	NEW REQUEST	ADDITIONAL ALLOTMENTS	TOTAL
North Shuswap Environmental Committee			unspecified	(\$ 3,700 held in reserve)	
Solar Alternatives to Nuclear Energy	\$ 5,500	\$ 1,000			\$ 1,000
SKIP			unspecified	\$ 3,700	\$ 3,700
South Okanagan Environmental Coalition	\$ 5,500/mo.	(\$ 2,000 withdrawn)			-
UBCIC	\$96,815	\$ 9,500		\$10,000	\$19,500
United Fishermen & Allied Workers' Union	\$ 8,000	\$ 2,000			\$ 2,000
WCELA	\$ 9,780	\$ 1,500		\$ 3,500	\$ 5,000
VEA	\$ 8,000	\$ 2,200		\$ 5,800	\$ 8,000
	TOTAL Reserve	\$71,500 <u>3,500</u> \$75,000		\$129,300 <u>20,700</u> \$150,000	\$200,800 <u>24,200</u> \$225,000

NOT ELIGIBLE FOR FUNDING

NAME	REQUESTED
B.C. Energy Coalition	Unspecified
Patrick Britten	\$ 500
Douglas C.S. Caldwell	\$ 4,250
Brian Carpendale	\$ 5,210
Consumers' Association of Canada (B.C. Advocacy)	\$ 6,900
First Baptist Church	\$ 750
Fusion Energy Foundation	\$ 4,000
Mike Gilfillar	\$ 4,450 (2 mos.)
Kelowna Prospectors	\$ 1,000
Scott Lawrance	Unspecified
The Pulp, Paper and Woodworkers of Canada, Workers' Compensation Board Representatives - Gary J. Newell	\$ 3,150
South Okanagan & Similkameen Union Board of Health	\$10,000

## APPENDIX 8

### Public Notice: Participant Funding



Province of British Columbia

# **PUBLIC NOTICE**

## **ROYAL COMMISSION OF INQUIRY INTO URANIUM MINING PARTICIPANT FUNDING**

The Commission has been provided with limited funds for interested groups within the Province of British Columbia to assist them in preparing their briefs for presentation at a Public Hearing.

### **GUIDELINES**

The guidelines for funding of participants before the Commission are as follows:

- (a) There should be a clearly ascertainable interest that ought to be represented at the Inquiry.
- (b) It should be established that separate and adequate representation of that interest will make a necessary and substantial contribution to the Inquiry.
- (c) Those seeking funds should have an established record of concern for, and should have demonstrated their own commitment to, the interest they seek to represent.
- (d) It should be shown that those seeking funds do not have sufficient financial resources to enable them adequately to represent that interest, and will require funds to do so.
- (e) Those seeking funds should have a clear proposal as to the use they intend to make of the funds, and should be sufficiently well organized to account for the funds.

In order to avoid duplication, various groups of similar interests are encouraged to jointly prepare a brief for presentation.

### **APPLICATION FOR FUNDS**

Application for funding should be made in writing to the Executive Secretary at the address below, and should provide the following information:

- (a) A statement of how the applicant satisfies the guidelines for funding.
- (b) A description, including a detailed budget, of the purposes for which the funds are required, how the funds will be disbursed and how they will be accounted for.
- (c) A statement of the extent to which the applicant will contribute funds and personnel to participate in the Inquiry.
- (d) The name, address, telephone number and position of the individual within the group who will be responsible for administering the funds.

The deadline for submitting an application will be Monday, April 30, 1979.

On behalf of the Commission;  
Brig. Gen. E.D. Danby (retired)  
Executive Secretary  
Royal Commission of Inquiry  
Health and Environmental  
Protection — Uranium Mining

## APPENDIX 9

Results of interviews with  
six major participants

COLUMN NUMBER<sup>1</sup>

I	II	III	IV
Representative interviewed, name of group and description of groups' primary concern	Witness identified	Use of cross-examination	Studies
Mr. Roger (law graduate) of the Union of British Columbia Indian Chiefs (UBCIC) whose prime concern is the Indian situation (1980b, interview).	Calling in witnesses for the Social Impact & Jurisdiction Phases. We would rather do this than leave it to the Commission to bring in and fund these witnesses.	Thoroughly cross-examine evidence that is: - important & relevant to the Indian situations; - contentious; - vulnerable; - hurtful to our case. Basically, use cross-examination to bring out our case, but, sometimes, to determine a witness' credibility.	We are finding out which Indian bands would be affected by uranium mining in British Columbia and preparing two studies: - a land use and occupancy study in the Atlin area (for presentation at the second round of community hearings); - a development conflict study in the Okanagan (for presentation in Phase VIII).
Dr. Young (medical doctor) of the British Columbia Medical Association (BCMA) whose prime concern is public health (1980, interview)	Identified on our own initiative: - one witness for the Overview Phase; - one witness for the Waste Management Phase; - five witnesses for the Public & Worker Health Phase; - one witness for the Environmental Impact Phase.	Only cross-examine evidence that: - is incorrect; - could be seen from other points of view - could alter the final outcome of RCIUM. Use cross examination: - to assess whether a witness is competent; - to discredit a witness if he/she is biasing the evidence; - to show that the evidence is not universally agreed upon; - to point out the existence of new evidence; - to bring into focus relevant points.	BCMA is doing a study on baseline epidemiology and a comparison of occupational health in Canada and the United States.

<sup>1</sup>See pp. 180-1 for columns V, VI and VII.



I	II	III	IV
Dr. Switzer, environmental coordinator of Consolidated Rexspar Minerals and Chemicals Ltd. (Rexspar). whose prime concern is acceptance of a specific uranium mine proposal (1980, interview).	Identified as many witnesses as we can afford. Rexspar is a small company and cannot afford numerous consultants and lawyers from other companies.	Prepare a thorough cross-examination of evidence that: - can help along our final cause; - may not be accurate (is the witness credible?)	Have done a lot of preliminary work on our uranium mine proposal.
Ms. Rounthwaite (lawyer), legal counsel for the Environmental Alliance Against Uranium Mining (EAAUM). EAAUM is a coalition between the Federation of British Columbia Naturalists, The Sierra Club of Western Canada, and the Canadian Scientific Protection and Environmental Control Society (1980a, interview).	Identified six witnesses for the Environmental Impact Phase whose testimonies cover ground not covered by Commission witnesses; for example, radio-ecology.	Prepare a thorough cross-examination of witnesses appearing in the Environmental Impact Phase. If something important has not been covered by a witness but he/she is competent in this area, will question him/her about it.	EAAUM is presenting a major submission for Phase VI (March) on the potential environmental impacts of uranium mining in British Columbia. EAAUM has commissioned Aspect Consultants to do a study of the environmental implications of uranium derived radionuclides in biological systems with particular reference to British Columbia.
Mr. Paterson (lawyer), legal counsel, primarily, for the Confederation of Canadian Unions (CCU), whose prime concern is the health and safety of workers, but also for the Kootenay Nuclear Study Group, (KNSG) and the Yellowhead Ecological Association (YEA), and from time to time, for the Atlin Community Association (ACA) (1980, interview).	CCU, YEA & KNSG do not have the money to call many witnesses themselves. Hence, we lobby the Commission to bring in witnesses of our choice; this has been successful. The CCU has identified four witnesses for the Public & Worker Health Phase.	Given the nature of the CCU's concerns, focus cross-examination on evidence to do with: - worker and public health; - the relationship between government and industry; - government administration. Use cross-examination: - to bring out additional points; - to emphasize important information;	Presenting a major brief in Phase X on jurisdiction and enforcement. Updating two items in the Commission Library (see numbers 262 and 263 in Appendix 12). We would have done more but our funds are limited

I	II	III	IV
CCU, KNSG, VEA (cont'd)		<ul style="list-style-type: none"> <li>- to test the credibility of the witness;</li> <li>- to determine the philosophy of the witness.</li> </ul> <p>Overall, try to get points in the transcripts that can be used to make our final case.</p>	
Mrs. Boyce of the British Columbia Conference of the United Church of Canada (BCCUCC) (1980, interview).	Calling six witnesses for the Ethics Phase. We would like to hear from a resource economist still.	<p>Prepare questions on the evidence. Use cross-examination:</p> <ul style="list-style-type: none"> <li>- to try to sensitize witnesses to moral questions;</li> <li>- to get points in the transcripts that can be used in the Ethics Phase;</li> <li>- to make witnesses aware of the technical uncertainties in their evidence and the value judgements they are making that are based on these uncertainties.</li> </ul>	<p>Make summaries of those statements of evidence that are significant, focusing on the moral and ethical points. Pass these onto a "reference group" of theologians and ethicists. Mr. Evans, outreach educator for BCCUCC, will prepare a brief for Phase IX based on the summaries.</p>

COLUMN NUMBER

I	V	VI	VII
Representative	Extent of review	Work with witnesses	Technical assistance
Mr. Rogers (UBCIC)	Review each brief before and after its presentation at the technical hearings. Time is a constraint.	Definitely work alongside our witnesses.	Usually, have no technical assistance. For the Social Impact Phase, however, will receive help from other people in UBCIC.
Dr. Young (BCMA)	Review each brief. More time is needed (suggests an extra week off between each phase).	Work with our witness as much as possible.	Usually, have no technical assistance.
Dr. Switzer (Rexapar)	Thoroughly review all evidence that has a basis in fact; look up the scientific reference too. Absolutely no time constraints. However, we have limited funds; hence I do not have the statements of evidence reviewed by outside experts.	Edit (grammatically) our own witnesses' statements; that is all.	Rely solely on my own experience. (Dr. Switzer has a Ph.d. in Zoology and has worked alongside the best lawyers in the United States).
Ms. Rounthwaite (EAAUM)	EAAUM participates only in the Environmental Impact Phase and parts of other phases that deal with environmental concerns. Not sufficient time or money to attend all phases. Listen to evidence as it is presented. Make notes on statements that I can make use of in cross-examination.	Want our witnesses to present parts of our case so we send them a list of questions that we want addressed. Also we suggest to our witnesses what they should concentrate on in their verbal presentations at the hearings.	Tony Pearce of Aspects Consultants helps prepare cross-examination.

I	V	VI	VII
Mr. Paterson (CCU, KNSG, YEA)	Cannot do as thorough a review of the evidence as the government agencies and the mining companies can since our financial resources and my time are limited.	Work with our witnesses to a considerable extent; that is they send us their evidence and we critique it and send it back, and so on until we are happy. Also we send the witnesses copies of the relevant transcripts and statements of evidence.	Have two scientific researchers working with me.
Mrs. Boyce (BCCUCC)	Review each brief, concentrating in particular, on the ethical and moral components. Not enough time to read the references cited, except for those on ethics. If the Church did not help us out financially there would be no one monitoring the hearings.	Other people in my group will work with the witnesses; for example, Dr. Anderson and Mr. Evans.	Receive no technical assistance--no funds for this. Some of the technical information is beyond my understanding.

APPENDIX 10  
Cross-examination of ten witnesses  
by major participants

Phase Number	Witness	BCMA	BCCUCC	UBCIC	SKID	WCCLA	EAAUM	KNSG	MAJOR PARTICIPANTS <sup>1</sup>					GREEN-PEACE	MABC	REX-SPAR	BCM EMPR	BCF LUSA	PNC	CCNR KELOWNA	Total no. of major participants cross-examining
II	Provincial Department of EMPR, Mine & Inspection & Engineering Branch	X			X	X	X								X			X			6
III	Norcen panel	X	X	X	X	X								X						X	7
III	Mr. K. Matthews & Mr. G.R. Yount	X	X	X		X		X				X									6
V	Earl J. Kiohn	X	X	X		X				X											5
V	Dr. D'Appolonia			X	X	X				X	X						X				7
V	Dr. Al Henry	X	X	X	X	X	X	X	X			X		X							10
VI	Dr. John Cherry	X	X	X	X		X	X					X								9
VI	Dr. Donald Langmuir	X																			1
VI	Dr. Frank Patton		X		X		X	X	X										X		7
VI	Dr. John Nelson	X	X	X	X		X		X	X	X	X									8
Total no. of witnesses cross-examined		8	7	7	7	6	5	4	4	4	4	3	3	2	1	1	1	1	1	1	

<sup>1</sup> Consult List of Abbreviations for the legend.

## APPENDIX 11

Preliminary budget estimate: EAAUM

Senior Legal Counsel:	\$75/hr. 8 hrs./day, 29 days/month	\$12000/month
Junior Legal Counsel:	\$50/hr. 8 hrs./day, 20 days/month	\$ 8000/month
Co-ordinator:		\$ 1500/month
Researchers (2)	\$1200/month each	\$ 2400/month
Secretary:		\$ 1000/month
Office and Overhead:		\$ 2000/month
Communication with Constituency:		
(a) Newsletter:	Twice/month, 15000 copies	\$ 2000/month
(b) Meetings, travel for 10 people:	Twice/month	\$ 4000/month
Documents and Research Materials:		
Reproduction of Documents:		\$ 3000
Total: \$32,900/month plus initial funding of \$5500 for documents, research materials and reproduction thereof.		



## APPENDIX 12

Items in the Commission library

A. Sample of items received between 23 May and 30 May, 1979

- 261 Sweet, W. "Unresolved: the front end of nuclear waste disposal." The Bulletin of the Atomic Scientists. May 1979. pp. 44-48. 5 p.
- 262 Canadian Association of Industrial Mechanical and Allied Workers. Correspondence on mining safety, 1978-1979. CAIMAW. 1979. various pagings.
- 263 Canadian Association of Industrial Mechanical and Allied Workers. Proposed amendments to the Mines Regulations Act; submission to the ministry of mines and petroleum resources of the Province of British Columbia. CAIMAW. Jan. 1978. 264 p.
- 264 Band, P., et al. Potential of cigarette smoking and radiation: evidence from a sputum cytology survey among uranium miners and controls. 1977? 22 p.
- 265 Boulton, J., ed. Management of radioactive fuel wastes: the Canadian disposal program. AECL-6134. Oct. 1978. 135 p.
- 266 Organization for Economic Co-operation and Development; Committee for Scientific and Technological Policy. Public participation in decision making related to science and technology: a basis for the forum discussion held on October 10, 1978. Sept. 1978. 139 p.
- 267 U.S. Dep't. of Health, Education, and Welfare. A review of the use of ionizing radiation for the treatment of benign diseases: vol. 1; a report. HEW Publication (FDA) 78-8043. Sept. 1977. 53 p.
- 268 Rotblat, J. "The risks for radiation workers." The Bulletin of the Atomic Scientists. Sept. 1978. pp. 41-46. 6 p.
- 269 Morton, J.D. Surface disposal of uranium tailings and mine waste: a geotechnological viewpoint: presented to the Canadian Institute of Mines and Metallurgy; 81st A.G.M.-Montreal, April 1979. 10 p.

B. Sample of items received between 2 November and 27 December 1979

- 1410 Russell, R.S., et al. "Naturally occurring radioactive substances: the uranium and thorium series." Radio-Activity and Human Diet, Chap. 17, 1966. pp. 365-379. 8 p.

- 1411 Tanner, W.W. "Natural radiation effects of vertebrate animals inhabiting the uranium areas of Southeastern Utah." Radioecology, 1963. pp. 325-326. 2 p.
- 1412 Dobson, R.L. "Binucleates lymphocytes and low-level radiation exposure." Immediate and low-level radiation exposure, 1960. pp. 247-251. 5 p.
- 1413 Delarue, N.C., et al. "Multiple fluoroscopy of the chest: carcinogenicity for the female breast and implications for breast cancer screening programs." Canadian Medical Association Journal, vo. 112, June 21, 1975, pp. 1405-1413. 7 p.
- 1414 Myrden, J.A. et al. "Breast cancer following multiple fluoroscopies during artificial pneumothorax treatment of pulmonary tuberculosis." Canadian Medical Association Journal, vol. 100, June 14, 1969. pp. 1032-1034. 3 p.
- 1415 Cohen, B.H., et al. "The epidemiological study of mongolism in Baltimore." Annals of the N.Y. Academy of Science, vol. 171, 1970. pp. 320-327. 8 p.
- 1416 Lyon, J.L., et al. "Childhood leukemias associated with fallout from nuclear testing." The New England Journal of Medicine, vol. 300, no. 8, Feb. 22, 1979. pp. 398-402. 6 p.

(Accessions Lists 1 and 4, Uranium Information Centre, 1979).

### APPENDIX 13

Public education by  
six major participants

Major participant	Public education activities
EAAUM (White 1980, interview)	EAAUM was given money for public education in the first round of funding; this will not happen in the second round of funding. The EAAUM office itself serves an educational function.
KNSG (Terral 1980 interview)	I [Terral] attend the technical hearings. Richard Banner writes press releases and produces the KNSG Newsletter in the interior (Nelson). Both of us receive participant funding. The Commission knows that the KNSG uses some funds for public education.
JCUTH (Smith 1980, interview)	We didn't put down public education when we applied for the second round of funding because we knew the Commission would ignore that. We face a real dilemma--should we intervene in the Inquiry or educate the public? We decided to intervene but, in so doing, we perform some public education since we communicate what happens at the technical hearings back to the communities.
WCELA (Boggild 1980, interview)	WCELA is doing some public education, for example, I've been on radio and TV, and so has Kim Roberts. The association has also done some workshops on nuclear issues. We haven't used participant funds for public education.
BCCUCC (Boyce 1980a interview); <u>The Trumpet</u> 1 November 1979).	The United Church hired Mr. Moelaert to educate primarily members of the Church, but also interested members of the public about the issues involved in uranium exploitation. We didn't use participant funds to hire him; indeed, the Commission probably wouldn't have given us money to have Mr. Moelaert touring around the province. The United Church produces a weekly half-hour television series called "Nuclear Crossroads." It is scheduled on Vancouver Cablevision (Cable 10) Mondays at 8:00 p.m. and repeated Sundays at 1:30 p.m. Western Cablevision (Surrey, etc.) carries the series on Wednesdays at 6:30 p.m. and Victoria Cablevision plans to run the series on its mid-band (E-18). In this program, Mrs. Boyce (hostess) takes a look at the RCIUM hearings, interviewing a different actor (Commissioner, major participant, witness, etc.) each week.
BCUIC (Rogers 1980a interview)	It is BCUIC's policy to use a lot of money for public education. We hold workshops, issue newsletters, and so on, and use participant funds for all this. The Commission knows that this is how we use a lot of our funds.

## LIST OF ABBREVIATIONS

ACA	Atlin Community Association
AECL	Atomic Energy Control Limited
BCCUCC	British Columbia Conference of the United Church of Canada
BCMA	British Columbia Medical Association
BCFLUSA	British Columbia Federation of Labour and United Steelworkers of America
BCMEMP	British Columbia Ministry of Energy, Mines and Petroleum Resources
CBC	Canadian Broadcasting Corporation
CCNR	Canadian Coalition of Nuclear Responsibility
CCCBN	Coalition of Concerned Citizens of the Bulkley- Nechako
CCU	Confederation of Canadian Unions
EAAUM	Environmental Alliance Against Uranium Mining
EMR	Department of Energy, Mines and Resources
JCUTH	Joint Committee - Uranium Technical Hearings
KNSG	Kootenay Nuclear Study Group
MABC	Mining Association of British Columbia
MVPI	Mackenzie Valley Pipeline Inquiry
OECD	Organization for Economic Cooperation and Development
PCAB	Pesticides Control Appeal Board
PNC	Power Nuclear Corporation of Japan
PR	Preliminary Rulings
RCIUM	Royal Commission of Inquiry into Uranium Mining
RSBC	Royal Statute of British Columbia
RSC	Royal Statute of Canada
SCC	Science Council of Canada
SPEC	Scientific Pollution and Environmental Control Society
SFU	Simon Fraser University
SKID	Southeast Kelowna Irrigation District
TAG	Technical Advisory Group
TP	<u>Transcripts of Proceedings</u>
UBCIC	Union of British Columbia Indian Chiefs
UBC	University of British Columbia
UID	<u>Uranium Inquiry Digest</u>
WCELA	West Coast Environmental Law Association
WCOPI	West Coast Oil Ports Inquiry
YEA	Yellowhead Ecological Association