EVALUATION OF PHASE TWO OF THE ANIK-B COMMUNICATIONS PROGRAM

Volume 3 - Annexes

Submitted to the Department of Communications
by CPER Management Consulting Inc.

August, 1983

EVALUATION OF PHASE TWO OF THE ANIK B COMMUNICATIONS PROGRAM

VOLUME 3 - ANNEXES

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Submitted to:

Department of Communications
by CPER Management Consulting Inc.

Ottawa
August, 1983

ANNEX A

EVALUATION QUESTIONNAIRE FOR TASK AREA ONE

CPER, April 27, 1983

QUESTIONNAIRE ON THE EFFECTS OF THE PHASE TWO EXPERIMENTAL PROGRAM ACTIVITIES OF THE ANIK B COMMUNICATIONS PROGRAM

(Pilot Projects and Aggregated Activities)

I PURPOSE OF THIS QUESTIONNAIRE

The purpose of this questionnaire is to identify for the individual activities conducted in Phase Two of the Anik-B Communications Program, their respective contributions to the DOC goals for the Program. The DOC goals for the Program are presented below.

Note:
The answers to this questionnaire will be treated as Confidential. Any reports using this information will fully respect anonymity.

THE DOC GOALS FOR PHASE TWO OF THE ANIK B COMMUNICATIONS PROGRAM

(i) To support experiments, pilot projects and trials to further develop awareness, knowledge and expertise, promote the introduction of new services on commercial satellite systems and explore means to consolidate and aggregate user needs;

(ii) To encourage Canadian user institutions, industry and the carriers to advance Canadian capabilities in satellite communications technology and service delivery, to respond to national needs and international market opportunities;

(iii) To ensure continuity for service development trials, to provide a vehicle to bridge the service gap before Anik-C becomes available (where appropriate through interim commercial service on a leaseback basis) to those users already committed to Anik-C operations; and,

(iv) To stimulate and provide data for the development of telecommunications policy for 14/12 Ghz satellite service in Canada.

FORMAT OF THE QUESTIONNAIRE

This questionnaire contains eight parts, described as follows:

- Part I contains a brief description of your activity, compiled through DOC information we have reviewed. We ask you to make the changes and additions necessary to reflect accurately the activity;
- Part II contains questions concerning the introduction by Phase Two participants of commercial 14/12 Ghz services within their organizations;

- Part III contains questions on the effects of the Program with respect to increased knowledge, awareness and expertise gained regarding the 14/12 Ghz technology and service;
- Part IV focuses on the contribution, if appropriate, of the Phase Two activity to the policy issue concerning means for consolidating and aggregating users needs.
- Part V contains questions on the identification of communications needs of new groups and responses to these needs.
- Part VI contains questions on policy issues concerning 14/12 Ghz satellite services.
- Part VII is concerned with "other effects" of your activity.
- Part VIII is a brief set of questions on some specific costs your organization incurred in the Phase Two activity.

I YOUR PROJECT (see attached fact sheet on your project and please make necessary changes and additions)

II INTRODUCTION OF SERVICES ON COMMERCIAL 14/12 Ghz SATELLITE COMMUNICATIONS SYSTEMS

The primary objective of the DOC for Phase Two of the Program was the development of 14/12 Ghz communications services and their introduction on commercial satellite systems. As a result, an important measure of the effectiveness of the Phase II Program is whether of not Phase Two participants have introduced or are planning to introduce fully commercial 14/12 Ghz satellite services in their respective organizations.

2. Has the use of fully commercial 14/12 Ghz satellite services been introduced in your organization or do plans exist for introducing the commercial services?

2.1 Yes, now a full commercial user of 14/12 Ghz satellite services.

2.2 Yes, a plan has been adopted to introduce the commercial 14/12 Ghz satellite services.

2.3 No, have not introduced commercial 14/12 Ghz satellite services and do not plan to do so.

2.4 The possibility is still under consideration.

3. If your organization is not using or not planning to use fully commercial 14/12 Ghz satellite services, what are the reasons?

3.1 Selection of another telecommunications alternative. If so, what is the alternative? What were the main reasons for deciding on this option over the 14/12 Ghz satellite system and service?

3.2 Lack of funds available for any commercial telecommunications service.

3.3 14/12 Ghz satellite services too costly.

3.4 Better technical results with alternative (please describe).

3.5 Were planning to use the 14/12 Ghz satellite service but negotiations with Telesat Canada ruled out use of the service (rates, no satellite capacity available on Anik C or Anik B).

4. If your organization is now or plans to be a full commercial user of the 14/12 Ghz satellite service what, if any, alternatives were considered? What were the specific reasons for deciding on the 14/12 Ghz satellite system over other satellite or non-satellite telecommunications systems, (e.g., quality of service, greater coverage, cost advantages).

Have you purchased any LCET's for the commercial service? If "yes", from whom?

5. If a plan is in place to introduce the commercial 14/12 Ghz service or if the use of the service is still being considered within your organization:

5.1 Have funds been set aside for the full commercial 14/12 Ghz satellite service?

5.2 Is there a provision in the corporate plan of the organization for the introduction of the 14/12 Ghz satellite services, for shifting from other telecommunications services to 14/12 Ghz service? Please provide copies of relevant material if possible.

5.3 Have you purchased any LCET's for the commercial service? If "yes", from whom?

6. If your organization is still considering the question of using the commercial 14/12 Ghz satellite service what particular issues are still under review? e.g. the 14/12 Ghz service is the best technical solution to telecommunications needs but costs still under review; still negotiating with Telesat Canada. (Please describe status of negotiations, if appropriate).

7. If your organization had not experimented with the 14/12 Ghz system and services in the Phase II Program, would consideration have still been given to the use of commercial 14/12 Ghz service on Anik B or C?

8. What difference did the experimental activity make to the telecommunications service delivery plans of your organization, (e.g., provided concrete evidence to funding bodies of advantages achieved by the 14/12 Ghz service, moved more quickly to the commercial 14/12 service, proof of user demand for services, proof of cost-effectiveness of the 14/12 Ghz service).

III AWARENESS, KNOWLEDGE AND EXPERTISE REGARDING 14/12 Ghz SATELLITE SYSTEMS AND SERVICES

9. What is your general impression of:

(i) the level of knowledge within your organization about the capabilities and potential uses of the 14/12 Ghz technology?

- limited to a small number of individuals;
- encompasses a wide range of individuals within the organization;

(ii) the overall assessment of the worth to the organization of the 14/12 Ghz services?

- many potential advantages over other telecommunications services
- no difference
- less valuable

10. Do you consider that this knowledge level has changed due to your Phase Two participation in the Anik-B Program?

11. Please identify specific concrete changes or activities which represent to you increased levels of awareness, knowledge and expertise regarding the capability and use of the 14/12 Ghz satellite communications system and services, which you attribute to the Phase II activity - e.g.:

a) identification of potential new uses of the 14/12 Ghz satellite system and services by your organization;

b) identification of potential new users of your services resulting from the particular characteristics of the 14/12 Ghz system;

c) new groups within your organization now considering the use of the 14/12 Ghz satellite services;

d) evidence of increased corporate level support for both 14/12 Ghz and other satellite communications systems (e.g., elevation from a research or purely technical concern to a strategic level issue);

e) individuals in your organization now capable of operating and maintaining the 14/12 Ghz satellite system and services (e.g., installation, operation and maintenance of uplinks);

f) organizational changes made to support the use of the 14/12 Ghz system and services.

IV CONSOLIDATION AND AGGREGATION OF USERS' NEEDS

"Aggregation" refers to the consolidation of demand and pooling of satellite resources among 14/12 users in order to increase for the individual users the cost-effectiveness of using the 14/12 Ghz system and services on a commercial basis.

12. Did your experimental Phase II activity examine or test the possible advantages to your organization of aggregation? If 'Yes' how, with whom? Was this a conscious element of the design of the activity or did it arise as a natural evolution in it? e.g., as the need for decisions about the potential cost-effectiveness of the 14/12 Ghz system and services were becoming more immediate.

13. What specific arrangements for aggregation were identified as potentially viable for increasing the cost-effectiveness of the Ghz service? What has happened to the possible implementation of the proposed arrangement?
    - now aggregating;
    - did not pursue;
    - proved not feasible.

14. What, if any, influence did your efforts and conclusions with respect to aggregation have on the decision regarding the use by your organization of commercial 14/12 Ghz service?

V. ADVANCEMENT OF CANADIAN CAPABILITY IN SATELLITE COMMUNICATIONS TECHNOLOGY AND SERVICES TO RESPOND TO NATIONAL NEEDS AND INTERNATIONAL MARKET OPPORTUNITIES

15. Did your Phase Two activity result in the identification of communications needs of new groups which your organization could now serve using the 14/12 Ghz satellite system? Who? (e.g., new groups of students in non-institutional settings).

16. Is your organization now serving these groups or planning to serve them? Please describe any efforts made to capitalize on these opportunities.

17. As a result of your Phase Two activity, have requests been made for your programming and services delivered by the 14/12 Ghz satellite system by potential client groups falling outside of your jurisdiction:
    - in Canada?
    - abroad?

18. Have requests been made by other organizations with similar mandates in different jurisdictions, for consulting advice on setting up similar or other services using the 14/12 Ghz system to their clientel in their respective jurisdictions:
    - in Canada?
    - abroad?

19. If 'Yes', please describe, including follow-up action taken by your organization (e.g., needs analyses, feasibility analyses, visits, presentations, demonstrations).

20. What were the particular contributions of your Phase Two activity in identifying these opportunities and possibly capitalizing on them?

VI. POLICY AND REGULATORY ISSUES

A particularly important factor which can affect the decisions of organizations to use 14/12 Ghz satellite services on a commercial basis is the policy, regulatory and institutional environment for the provision of those services.

21. What, if any, specific policy, regulatory issues or problems were identified during the project which affected the potential cost-effectiveness to your organization of commercial 14/12 Ghz satellite service?

22. What specific proposals did your organization identify for resolving the problems identified?

23. What specific actions were taken by your organization to influence decisions on issues identified?

24. What efforts were made to encourage the DOC to influence decisions on the issues or changes to the existing institutional arrangements for satellite services?

25. What specific actions, if any, did you pursue with other groups to resolve the issues or influence change?

VII OTHER EFFECTS AND IMPACTS OF THE PHASE TWO ACTIVITY

26. What other effects do you attribute to your Phase Two activity?
    a) on Canadian industry and Canada's competitive edge in the 14/12 Ghz satellite market?
    b) on your organization and its telecommunications plans and activities?
    c) on users of 14/12 Ghz satellite services?
    d) on other satellite communications services?
    e) on other telecommunications services?

VIII SOME COSTS TO CONDUCT THE PROJECT

27. Please record the following specific costs which you incurred in conducting your Phase Two activity:
    a) monthly service charge, if appropriate, for satellite service, paid to the DOC;
    b) purchases of Low Cost Earth Terminals (from whom, how many and cost);
    c) refits to terminals;
    d) purchases of other satelllite-related ground segment equipment;
    e) specific contributions of hardware, components, or R & D on new 14/12-related technology.

ANNEX B

LIST OF RESPONDENTS: FOR TASK AREA NO. 1

ANNEX B: LIST OF RESPONDENTS: FOR TASK AREA NO. 1.

BCTV (PDPP West)

Mr. T. Negoro,
Vice President, Engineering, BCTV

TV Ontario Project (PDPP East)

Mr. B. Reed, Engineer, TVO

Mr. R. Mayot, Manager, Telecommunications Relations, TVO

Ontario Ministry of Government Services Project

Mr. G. Chung-Yan, Telecommunications Branch, OMGS

Ms. N. Biswas, Supervisor, Systems Development,
Telecommunications Branch, OMGS.

Mr. E. Nowina, Manager, Telehealth Program,
Ontario Ministry of Health

CPA Project

Mr. D. Larsen, Manager, Telecommunications Systems,
Dome Petroleum Ltd.

Mr. B. Page, Telecommunications Engineer,
Shell Canada Resources Ltd.,

Mr. R. Cooper, Telecommunications Supervisor,
AMOCO Canada Petroleum Co., Ltd.,

Mr. M. Delisle, Telecommunications Advisor,
Communications and Services Division,
Imperial Oil Ltd.

ACCESS Alberta Project

Dr. J. M. Plumb, Director, Planning and Research,
ACCESS Alberta

Mr. D. Keith, Director, Corporate Affairs and Planning,
ACCESS Alberta

Mr. I. James, Director of Programming, Special Projects,
ACCESS Alberta.

Mr. B. Foster, Alberta Government Telephones

Mr. Borris, Alberta Government Telephones

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Knowledge Network of the West Communications Authority Project

Mr. D. Roach, Executive Director, Network Services, Knowledge Network

Mr. T. Prentice, Director, Communications Development Branch, Ministry of Universities, Science and Communications,

Mr. E. Byrnes, Manager, Technology Applications, Communications Development Branch,

Canadian Broadcasting Corporation (PDPP West and SNG) Projects

Mr. J. Landsburg, Manager, Distribution and Operations, C.B.C.

Mr. R. Smee, Director, Corporate Development, C.B.C.

Mr. A. Khayat, Director of Engineering, C.B.C.

Inuit Tapirisat of Canada Project

Mr. J. Padlayat, President, Inuit Broadcasting Corp.,

Mr. K. Lougheed, TNI

RCA Canada Aggregated Activity

Mr. Hagar, Vice-President and General Manager

Telesat Radio Demonstration/Experiment

Mr. M. Zuliani, Manager, Product Research and Development, Telesat Canada.

Mr. T. Auyeung, Project Coordinator, Telesat Canada

Manitoba Telephone System Aggregated Activity

Mr. Glover Anderson, Assistant Manager, MTD

Mr. D. McCaffry, Network System Planning Manager, MTS.

Mr. R. Katchlik, Corporate Affairs, MTS

Dome Petroleum Aggregated Activity

Mr. D. Larsen, Manager, Telecommunications Systems, Dome Petroleum

OTHERS

Mr. R. M. Lester, Vice President, Business Development,
Telesat Canada

Mr. Claude Lewis, President, Northstar Home Theatre Inc.

Mr. P. Claydon, Engineering Supervisor, Satellite Broadband
and Broadcast Services,
British Columbia Telephone Company

Mr. R.G. McCullagh, Director, Marketing Support, Space Program,
Department of Communications

Ms. N. Hockin, Officer, Marketing Support Program,
Department of Communications

Mr. W. Stacey, Executive Vice-President,
Canadian Association of Broadcasters

Mr. M. J. Savas, Sales Manager, Satellite Services,
Trans Canada Telephone System

Mr. D. N. Bullock, Section Manager, Satellite Services,
Trans Canada Telephone System

Mr. L. Krawczyk, Section Manager, Satellite Business Project,
Bell Canada

Mr. C. Palmer, Bank of Nova Scotia, Don Mills, Ontario.

Mr. R.M. Smythe, Bank of Montreal, Scarborough Computer Complex,
Toronto, Ontario.

Mr. D. N. Downie, Royal Bank of Canada,
Toronto, Ontario.

Mr. Leon De Launay, Assistant Director, T/C Fundamental Planning,
Trans Canada Telephone System

Mr.P. M. Norman, Director, Satellite Services,
Telesat Canada

Mr. S. Armstrong, Director General, Research,
Canadian Radio-Television and Telecommunications Commission

Mr. E.E.G. Steele, President, Canadian Association of Broadcasters

Mr. R.V. Ventresca, Section Manager, Satellite Business Project

Mr. C.G. Webster, Vice-President, Engineering
CNCP Telecommunications

ANNEX C

PHASE ONE AND PHASE TWO DOC PROGRAM GOALS

DOC GOALS FOR PHASE ONE AND TWO OF THE ANIK-B COMMUNICATIONS PROGRAM

A. PHASE ONE:

i) To determine the viability, on a pre-operational but continuing basis, of telecommunications services designed to meet identified requirements;

ii) To develop the knowledge and expertise to better utilize 14/12 GHz satellite communication technology;

iii) To develop and create awareness in user institutions of the potential of telecommunications to deliver new services; and,

iv) To contribute to policy issues.

B. PHASE TWO:

1. To foster the development and introduction of new satellite telecommunications services and systems by continuing to support demonstrations, experiments, pilot projects and trial designs to further develop awareness, knowledge and expertise and assess viability of these new services and systems in the 14/12 GHz frequency band, and by consolidating the results of these activities.

2. To facilitate the introduction of new services on commercial satellite systems in Canada by exploring means to aggregate user needs and by providing a vehicle for limited interim service delivery before Anik C becomes available.

3. To support the advancement of Canadian capability in satellite communications technology and service delivery by assisting Canadian user instituions, industry and the carriers to respond to national needs and international market opporunities.

4. To stimulate telecommunications policy development by identifying issues and providing relevant data.

ANNEX D

INTERVIEW QUESTIONNAIRE FOR COMPANY OFFICIALS
(INDUSTRIAL BENEFITS)

INTERVIEW QUESTIONNAIRE FOR COMPANY OFFICIALS (INDUSTRIAL BENEFITS)

Note:

The answers to this questionnaire will be treated as Confidential. Any reports using this information will fully respect anonymity.

1.0 PROJECT DEFINITION

1.1 Attached is a brief description of the Anik-B 14/12 Ghz communications technology project for which your company was responsible. Is this description correct, or are there modifications or additions that should be made?

1.2 What assistance did your company receive from the federal government for this project?

a) Financial?

b) Technical?

c) Materiel, including equipment loans?

1.3 Did your company subcontract any development work for this project? If Yes, describe the work briefly and identify the subcontractor.

2.0 BACKGROUND

2.1 Had your company worked in the field of 14/12 Ghz communications before undertaking this project. If Yes, identify the work. Did this previous work contribute greatly to your company's ability to undertake this project. Did your company receive financial assistance from the federal government for any of this previous work?

2.2 Before undertaking this project, did your company do a cost/benefit or market study in order to determine the immediate and/or long term benefits to your company? If Yes, describe briefly.

2.3 What markets did your company foresee for the product to be developed under the project? Domestic? Export? Were these markets in the 14/12 Ghz frequency?

2.3A How did you see this product fitting into your corporate strategy?

2.4 What was your company's assessment of the overall risk and payoff of the project:

High Risk -- High Payoff?
High Risk -- Low Payoff?
Low Risk -- High Payoff?
Low Risk -- Low Payoff?

2.5 What was your company's assessment of the technical risk?

2.6 What was your company's assessment of the commercial/market risk?

2.7 Would your company have undertaken this project without government support? If No, for which of the following reasons:

- Financial risks too high (i.e., needed financial assistance from the government)?
- Technical risks too high (i.e., needed technical assistance from DOC)?
- Commercial risks too high (i.e., needed market provided by Anik-B)?
- Other (specify)?

3.0 DIRECT RESULTS OF PROJECT

3.1 What did the project itself generate in terms of:

a) Employment at
   i) your company, by classification of employee (e.g. technical, production, etc.)?
   ii) your subcontractors?

b) Value added by your company (i.e., total value of the project less cost of subcontracts, and purchased components, materiel and services)?

c) Imports of goods or services (value)?

3.2 Does your company judge the project to have been a technical success? If No, explain.

3.3 Did your company acquire valuable knowledge and experience as a result of undertaking this project? If Yes, in which of the following areas can this knowledge and experience be applied:

- product development?
- process development?
- production?
- marketing?
- consulting services?
- other (specify)?

What is your company's estimate of the dollar value of this increased knowledge and experience?

3.4 Are the key members of the project team still employed by your company? If No, are they now engaged in related work in Canada?

4.0 FOLLOW ON ACTIVITIES

(In your responses to these questions, please differentiate between products in the 14/12 Ghz frequency and any products in different frequencies.)

4.1 Since undertaking the project, has your company sold any products developed under it to:

a) The federal government?

b) Other customers in Canada?

c) Foreign customers?

If Yes, what quantity and value was sold to each, and what did these sales generate in terms of:

a) employment at:

i) your company, by classification of employee (e.g., technical, production, etc.)?

ii) your subcontractors?

b) Net revenue (profit) to your company (e.g., total value of sales less cost of labour, material, overhead, and marketing)?

c) Value added by your company (i.e. total value of sales less cost of subcontracts and purchased components, material and services)?

d) Imports of goods or services (value)?

4.1A How does your company now see this product(s) fitting into your corporate strategy.

4.2 Is your company manufacturing the product developed under the project at this time? If Yes, at what rate?

4.3 Has your company researched the potential domestic and/or export market for the product developed under the project?

4.4 Are there competitive products on the market or being developed? If Yes, identify.

4.5 Does your company expect to sell the product developed under the project in future? If No, answer question 4.6 and go to question 5.0. If Yes, go to question 4.7.

4.6 For what reason do you not expect to sell the product in future:

- Project not technically successful?
- No market for the product?
- Product cannot compete with other products on the market in terms of quality (technical), price or both?
- Marketing problems (e.g., tariffs, regulations, foreign subsidies, etc.)?
- Financial investment?
- Other (specify)?

4.7 What quantity and value of the product do you expect to sell in each of the next five years to:

a) The federal government?

b) Other customers in Canada?

c) Foreign customers?

4.8 What do you estimate the sales forecast in response to question 4.7 will generate in terms of:

a) Employment at;

i) your company, by classification of employee (e.g., technical, production, etc)?

ii) your subcontractors?

b) Net revenue (profit) to your company (i.e., total value of sales less cost of labour, material, overhead and marketing)?

c) Value added by your company (i.e., total value of sales less cost of subcontracts and purchased components, material and services)?

d) Imports of goods or services (value)?

4.9 What specific plans does your company have to manufacture the product developed under the project in future? Describe (e.g. separate production facility or line, production rate, subcontract and procurement plans).

4.10 What specific plans (strategy) does your company have to market the product developed under the project in the future? Describe (e.g., advertisements, brochures, training aids, agents, distributors).

4.11 What, if any, specific problems does your company expect to encounter in manufacturing and/or marketing the product developed under the project in future:

- Technical (R&D)?
- Production (volume, cost)?
- Marketing (competition, regulations, tariffs)?
- Financing?

4.12 Have the Anik-B pilot projects and experiments stimulated the market for the product?

4.13 Has any other federal government activity stimulated or impeded the development of the market for the product (e.g., regulations). If Yes, specify.

4.14 Are there any actions that the federal government could take to stimulate the domestic and/or export market for the product?

4.15 Will you require government assistance (financial, technical or other) in order to develop, manufacture and market the product profitably in the future?

5.0 OTHER PRODUCTS OR SERVICES DEVELOPED AS A RESULT OF THE PROJECT (SPIN-OFFS)

5.1 Has your company used, or does it plan to use, any of the results of the project to develop other products and/or services? If Yes, describe them briefly?

5.2 For each product identified in 5.1, indicate actual sales to date and sales forecast over next five years in the domestic market and the export market, and the employment and net revenue generated by them.

6.0 OTHER CONSIDERATIONS

6.1 What, if any, particular aspects of your company's organization or its operating methods helped or hindered the success of the project, or the commercial viability of the products developed under it?

6.2 What, if anything, could DOC, DREE, or other federal department or agency have done to help the success of the project or the commercial viability of the product?

6.3 Would it have helped your company if it had been more involved in the Anik-B program discussions and decisions (e.g., the selection of pilot projects)? If Yes, specify.

6.4 How should the government support the development of the Canadian satellite communications industry in future (e.g. MSAT).

ANNEX E

INTERVIEW QUESTIONNAIRE FOR EXPERTS (INDUSTRIAL BENEFITS)

INTERVIEW QUESTIONNAIRE FOR EXPERTS (INDUSTRIAL BENEFITS)

Attached is a description of the project* of which you have knowledge and which is the subject of this evaluation.

You are requested to respond to those questions for which you have technical or commercial insight.

Familiarity with Project

Please indicate the degree of knowledge which you have of the:

- Overall Project
- Technical Aspects
- Commercial Aspects

Technological

- What level of technology was involved in this project:
  Embryonic -- Mature

- Did this project represent a significant technological breakthrough?

- Was the technology involved new to the firm?

- Was the technology involved new to Canadian industry?

- Rate the degree of technical success of the project.

- Did the project facilitate the developments of other products?
  Processes?
  Services?

For the purpose of this questionnaire, development, subcontracts, will be treated as projects; their existence must be ascertained.

- Did the project contribute to the development of the technical capability of the firm?

- Did the project contribute to the firm's ability to adapt to future developments in:
  a) 14/12 technology;
  b) satellite communications generally;
  c) in technology generally.

- Did the project contribute to the development of the firm's R & D staff and facilities?

- At the time the project started, what would have been your assessment of the probability of technical success?

- Give your judgement of:
  - the calibre of the firm's scientific/technical staff;
  - the adequacy of the number of staff employed on the project;
  - the adequacy of the R & D facilities employed;
  - the adequacy of the financial resources employed.

- To what degree was the project hampered by a lack of the necessary information on technology?

Commercial

- What is your assessment of the commercial prospects of this product:
  - in this firm
  - other firms which might market it.

- To what extent has the project contributed to the development of the firm as a viable continuing supplier of 14/12 satellite communications equipment in particular and satellite communications equipment in general.

- To what degree did the project contract assist the firm over a bad period:
  - Period did not exist;
  - Project did not assist.

- At the time the project started, what would your assessment have been of commercial prospects for the project product;

- Considering the cost, was the project worthwhile on the basis of future commercial viability;

- Assess the ability of this firm to translate R & D into a commercially viable product;

- Assess the adequacy of the firm's marketing capability;

- Assess the extent of the markets available to the firm;

- To what degree did the Anik-B project as a whole stimulate the development of markets for this type of equipment;

- In your view would the firm have developed this or a similar product without the Anik-B 14/12 GH_Z Program; If No, why not -
  - Commercial Risk
  - Technical Risk
  - Scale of Financing
  - No market
  - No System
  - Other (specify)

ANNEX F

LIST OF INTERVIEWEES FOR INDUSTRIAL BENEFITS EVALUATION

LIST OF INTERVIEWEES FOR INDUSTRIAL BENEFITS EVALUATION

DEPARTMENT OF COMMUNICATIONS

Dr. R.W. Breithaupt
Mr. Brian Clarke
Mr. R.J. Douville
Ms. Nora Hockin
Mr. R.W. Huck
Ms. D.H. Jelly
Mr. W.T. Kerr
Mr. J. Leblanc
Ms. P.D. Major
Mr. R.G. McCullagh
Mr. J.A. Moffat
Mr. J.D. Palmer
Mr. B. Robertson
Mr. E.D. Skomorowsky
Mr. E. Tsang
Mr. J.F. Webster

CONTRACTORS

Andrew Antenna Company Limited
Mr. Hugh Swain, President

Gensat Communications Corporation
Mr. Doug Skinner, Manager
Communications Products Marketing

MA Electronics Canada Limited
Mr. P. Mercer, President and General Manager

Microtel Pacific Research Limited
Mr. Bruce W. Granholm, Earth Station Project Manager
Mr. Issak, Manager, Satellite Marketing & Sales

Miller Communications Systems Limited
Mr. Allan Miller, President

Mitel Corporation
Mr. L. Barton, Vice-President, Satellite Communications Division
Mr. Iain Grant, Director of Special Projects

CONTRACTORS (Cont'd)

Raytheon Canada Limited
Mr. Ronald Kelly, Manager, Government Relations

SED Systems Inc.
Mr. Alex Curran, President
Mr. B.K. Benneweis, Director, Research and Development Division
Mr. H. Grant, Senior Engineer

Spar Aerospace Limited
Mr. J.G. Leahy, Assistant Divisional Manager
Communications Systems Division
Mr. M.J. Morris, Manager, Engineering and Project Management
Communications Systems Division

The Wind Turbine Company of Canada
Mr. William H. Fuller, President

Victrix Limited
Mr. Harry Lawry, Director of Marketing

EXPERTS

Mr. Peter S.N. Claydon
Engineering Supervisor
British Columbia Telephone Company

Dr. P. Gourd
Professor of Electrical Engineering
University of Alberta

Mr. L. Martin
Canadian Radio and Telecommunicatins Commission

Mr. Doug Towers, President
D.I. Towers Consultants Ltd.

OTHER INTERESTED PARTIES

Mr. David Colville
Department of Transportation
Government of Nova Scotia

Mr. D.N. Dowie
Royal Bank of Canada

Mr. Michael Leuty, Manager, Ottawa Office,
Ian Martin Associates

Mr. C. Palmer
Bank of Nova Scotia

Mr. R.M. Smythe
Bank of Montreal

ANNEX G

CONTRACTS FOR THE EARTH SEGMENT OF THE ANIK-B 14/12 GH_z COMMUNICATIONS SYSTEM

CONTRACTS FOR THE EARTH SEGMENT OF THE ANIK-B 14/12 GH_Z COMMUNICATIONS SYSTEM

CONTRACTOR	CONTRACT DESCRIPTION	APPROXIMATE CONTRIBUTIONS $ (thousands)		
		Gov't	Contractor	Total
Andrew Antenna Company Limited	Development of high efficiency feed system for 10 foot antenna	20	-	20
	Production of 3.7 metre and 4.5 metre 14/12GH_Z transmitter and receiver antenna for video uplink	20	-	20
Gensat Communications Corporation	Development of improved indoor unit (IDU) and production of 100 units.	66	70	136
MA Electronics Canada Limited	Development of solid-state 14 GH_Z Field Effect Transistor (FET) amplifier for use in low-cost two-way telephony terminal operating in a single carrier voice-activated SCPC mode and production of six amplifiers	342	-	342
	Production of ten 12GH_Z low noise amplifiers (LNA) for earth terminals	70	-	70
Microtel Pacific Research Limited	Development of low-cost digital Single Channel per Carrier (SCPC) telephony system	1,400	4,500	5,900
Miller Communications Systems Limited	Development, construction and integration of two low capacity prototype slim Time Division Multiple Access (TDMA) terminals for testing and demonstration with Anik-B	476	160	636

CONTRACTOR	CONTRACT DESCRIPTION	APPROXIMATE CONTRIBUTIONS $ (thousands)		
		Gov't	Contractor	Total
Mitel Corporation (Teltek Systems)	Design, development and production prototype frequency converter and pilot receiver for telephony terminal and production of two FM Single Channel per Carrier (SCPC) voice channel unit.	61	-	61
Raytheon Canada Limited	Development of 90 Mbps Satellite digital links	(contract with Telesat)		
SED Systems Inc.	Development and evaluation of prototype low Cost Earth Terminals (LCET) for direct-to-home reception of broadcast TV at 12GH_z and production of 100 LCETS	544	-	544
	Development and system verification of low-cost digital SCPC Telephony Terminal (LCTT)	519	364	883
	12GH_z Field Effect Transistor (FET) Amplifier	105	-	105
	Development of TV wideband demodulator and 12 GH_z frequency systhesizer for SHF up and down converters	40	-	40
	10 Low Noise Amplifiers	70	-	70
	Modification of 9 metre fixed terminal	241	-	241

CONTRACTOR	CONTRACT DESCRIPTION	APPROXIMATE CONTRIBUTIONS $ (thousands)		
		Gov't	Contractor	Total
SPAR Aerospace Limited*	Modifications to Hermes TV Receive/Telephony Terminals to adapt them for Anik-B	223	-	223
	Development of prototype three-metre 12GH_Z low-cost receive-only earth terminals for Cable Television (CATV) head-end applications and the production of 10 terminals	331	130	461
	Development of prototype low-cost two-way FM Single Channel per Carrier (SCPC) telephone earth terminals for 14/12 GH_Z service (SPARCOM)	492	417	909
	Development of solid-state 14GH_Z Field Effect Transistor (FET) amplifier for use in low-cost two-way telephony terminal operating in a single carrier voice SCPC mode.	98	-	98
The Wind Turbine Company of Canada	Development of 1.2 metre microwave antennae including reflector, antennae mount and antennae feed mount and production of three units using aluminum pressing technique.	20	15	35
Victrix Limited	Development of 1.2 metre microwave antennae including reflector, antennae mount and antenna feed mount and production of three units using glass fibre reinforced plastic and three units using mica technology	50	14	64

*Three contractors used the Anik-B 14/12 GH_Z communication system to test the telephony terminals that they had developed:

Contractor	Hours of Operation (to May 1983)
Microtel Pacific Research Limited	1,449
Mitel Corporation	22
Spar Aerospace Limited	65