A FEASIBILITY STUDY FOR A CANADIAN DBS PROGRAM PACKAGE

TAMEC INC.

ECONOMISTES - CONSEILS
ECONOMIC CONSULTANTS

C.P. 218 • 4, PLACE DU COMMERCE • ILE DES SOEURS, VERDUN, QUÉ • H3E 1J9 • CANADA • TÉLÉPHONE: (514) 767-5301

TAMEC INC.
ECONOMISTES - CONSEILS
ECONOMIC CONSULTANTS

C.P. 218 • 4, PLACE DU COMMERCE • ILE DES SOEURS, VERDUN, QUÉ • H3E 1J9 • CANADA • TÉLÉPHONE: (514) 767-5301

1

A FEASIBILITY STUDY FOR A CANADIAN DBS PROGRAM PACKAGE

prepared for the

DEPARTMENT OF COMMUNICATIONS

by

TAMEC INC.

July, 1981.

Government of Canada
Department of Communications

Gouvernement du Canada
Ministère des Communications

Your file Votre référence

Our file Notre référence

DOC CONTRACTOR REPORT DOC-CR-SP-81-036

DEPARTMENT OF COMMUNICATIONS - OTTAWA - CANADA

SPACE PROGRAM

TITLE: A FEASIBILITY STUDY FOR A CANADIAN DBS PROGRAM PACKAGE

AUTHOR(S): MICHEL LAFONTAINE
DIANE MARLEAU
GIL DARVES-BORNOZ

ISSUED BY CONTRACTOR AS REPORT NO: 352

CONTRACTOR: TAMEC Inc.

DEPARTMENT OF SUPPLY AND SERVICES CONTRACT NO: OST80-00125

DOC REQUISITION NO: 36100-0-0844

DOC SCIENTIFIC AUTHORITY: O.S. ROSCOE
G.L. ENDEMANN

CLASSIFICATION:

TABLE OF CONTENTS

TABLE OF CONTENTS (cont'd)

TABLE OF CONTENTS (cont'd)

TABLE OF CONTENTS (cont'd)

TABLE OF CONTENTS (cont'd)

TABLE OF CONTENTS (cont'd)

TABLE OF CONTENTS (cont'd)

LIST OF TABLES

LIST OF TABLES (cont'd)

LIST OF TABLES (cont'd)

LIST OF TABLES (cont'd)

LIST OF FIGURES

APPENDICES

A. DBS Clients Forecast

B. Risk Analysis: Results for TVRO Households

C. Risk Analysis: Results for DBS Clients

D. English Language Pay-TV: Subscribers and Revenue Projection (High Penetration Service)

E. Risk Analysis: Results for English Language Pay-TV Revenues (High Penetration Service)

F. Public Television: Budget Projection

G. Risk Analysis: Results for Public Television Budget

H. English Language Children Programming: Subscribers and Revenue Projections

I. Risk Analysis: Results for English Language Children Programming Revenues

J. An All Canada Superstation: Revenue Projection

K. Risk Analysis: Results for an All Canada Superstation Revenues

L. An Atlantic Superstation: Revenue Projection

M. Risk Analysis: Results for an Atlantic Superstation Revenues

N. Specialized Programming (18 hrs/day): Subscribers and Revenue Projections

O. Risk Analysis: Results for Specialized Programming (18 hrs/day) Revenues

P. Specialized Programming (6 hrs/day): Subscribers and Revenue Projections

Q. Risk Analysis: Results for Specialized Programming (6 hrs/day) Revenues

R. French Language Superstation: Revenue Projections

S. Risk Analysis: Results for a French Language Superstation Revenues

T. French Language Pay-TV: Subscribers and Revenue Projections

U. Risk Analysis: Results for French Language Pay-TV Revenues

POST-FAX EQUIPMENT
MONTREAL H1J 1S3
CR 213-31

1

1. EXECUTIVE SUMMARY

1. EXECUTIVE SUMMARY

1.1 Context

When Anik "C-1" becomes operational in late 1982 or early 1983, Canada could become the first country to offer, on a commercial basis, direct to home satellite distribution of television signals at 12 GHz; the service has already been labelled an interim DBS service, since individuals would be able to receive good quality signals with an antenna size as small as 1.2 m. The Anik "C-1" launch planned for the autumn of 1982, would be followed by the launch of Anik "C-2" in March 1983 and Anik "C-3" in 1985, or as required.

With an estimated service life of approximately 7 years, the Anik"C" generation of satellites would have to be replaced by a new generation of satellites in the 1988 to 1989 period. In that context, the Department of Communications is conducting a number of studies, including the present one, aimed at the determination of optimal technical and operational features of what would be a true direct broadcast satellite (DBS) system which would differ from Anik "C" as follows:

- It would permit smaller home TV receive only (TVRO) antennas, in the 1.0 m. range, that would be made possible by a more powerful satellite.

- Better coverage of the true North where presently, antennas of up to 4.5 m. would be required with Anik "C".

- It would provide capacity for more TV channels, and perhaps have more beams (up to six versus four with Anik "C").

1.2 Object

In light of the context described in the preceeding paragraph, the object of the present report is to establish the Feasibility of a Canadian Direct Broadcast Satellite Program Package. Executed as a follow on to other work performed for D.O.C. by Tamec Inc., the project had to:

- Consider individual reception as well as community reception.

- Expand both the number of services and the number of beams.

- Develop and analyse scenarios, including probable tariffs, that would produce a viable DBS system.

- Formulate most likely scenarios for a 15 year horizon.

1. EXECUTIVE SUMMARY (cont'd)

1.3 Methodology

1.3.1 Feasibility concept

All of the services examined in the present report are assumed to be financed either by the subscriber or through advertising or through a mixture of both. The feasibility of the services was thus viewed fom the point of view of the service providers, for which two basic questions have to be answered in order to evaluate this feasibility:

a) Do the services produce sufficiently large revenues to enable the providers of such services to absorb content as well as distribution costs (space segment and uplink) under a DBS system?

b) At what point is a higher powered DBS cost effective vs a low powered service such as that provided by Anik "C", i.e. would the additional expenses associated with the use of a more powerful satellite be more than compensated by the increase in revenues through subscription and/or advertising?

1.3.2 Approach

To provide an answer to these two basic question, our approach consisted of:

- establishing probable space segment costs, from data supplied to us by the Space Planning Branch, for four hypothetical DBS systems:
  - a four (4) beam DBS with either six (6) or twelve (12) channels per beam.
  - a six (6) beam DBS with either six (6) or twelve (12) channels per beam.

The DBS systems would provide coverage of the following regions:

4 beam DBS		6 beam DBS	
Beam Number	Regions	Beam Number	Regions
1	Atlantic-Quebec	1	Atlantic
2	Ontario	2	Quebec
3	Manitoba/Sask.	3	Ontario
4	Alberta/B.C.	4	Manitoba/Sask.
		5	Alberta
		6	British Columbia

1. EXECUTIVE SUMMARY (cont'd)

1.3 Methodology (cont'd)

1.3.2 Approach (cont'd)

- developing a forecast of DBS clients which in the present report were identified as:
  - TVRO households not passed by cable
  - TVRO households passed by cable
  - Cable subscribers, suitably equipped with a converter, which would have 'indirect' access to a DBS. (1)
- establishing a list of fifteen (15) programming services; all such services were assumed to be 'new' services, not presently available off air. (2) These services can be regrouped in eight programming categories which are :
  - English language pay TV:
    - high penetration service
    - medium penetration service
    - low penetration service
  - Public television:
    - Atlantic Canada
    - Manitoba/Saskatchewan
    - Alberta/British-Columbia (3)
  - Children programming
  - An all Canada superstation
  - An Atlantic superstation
  - Specialized programming
    - full time
    - prime time
    - mixed service (4)
  - A French language superstation
  - French language pay TV

---

(1) Distribution by cable of DBS services was assumed to be permitted by the regulatory authorities.

(2) For a more adequate discussion of the services' selection and/or rejection process, the reader is reffered to Chapter 5 of the present report.

(3) Separate services for Alberta and B.C. were also considered.

(4) Transponder shared with another service.

1. EXECUTIVE SUMMARY (cont'd)

1.3 Methodology (cont'd)

1.3.2 Approach (cont'd)

- developing market acceptance and revenue generation assumptions for each of the programming services;
- subjecting these services to the criteria set forth previously, i.e.:
  - revenue generation potential using a DBS
  - cost effectiveness of providing service with a DBS

1.4 Results

1.4.1 DBS clients

Our analysis has showed that DBS clients would grow from roughly 2.5 million households in 1983 to slightly less than 10 million households by the year 2000. TVRO households, a sub category of the DBS clients' universe would grow rapidly to approximately 1 million units over a 10 year period, but would then peak at 1.1 to 1.2 million units; at best, TVRO households would represent approximately 12% - 13% of total DBS clients.

The results of this analysis are illustrated in the following table.

Table 1-1

CANADA

DBS CLIENTS FORECAST (000), 1983-2000

	1983	1985	1990	1995	2000
TVRO households					
Not passed by cable	32	123	610	889	800
Passed by cable	33	105	239	268	298
Sub Total	65	229	849	1,157	1,097
Converter equipped Cable Subscribers	2,441	3,362	6,215	7,347	8,555
Total DBS Clients	2,506	3,591	7,064	8,504	9,652

1. EXECUTIVE SUMMARY (cont'd)

1.4 Results (cont'd)

1.4.2 Revenue potential of the various services

The revenue potential for each service, which is illustrated in table 1-2, was then compared to the probable distribution costs associated with the following satellite systems:

	Annual cost, per channel, per beam
Anik "C"	$ 950,000
DBS (6 beam, 72 ch.)	$1,325,000
DBS (4 beam, 48 ch.)	$1,675,000

The results associated with this comparison are presented in table 1-3 which illustrates, for selected years, and for each service, the percentage of revenues that would be spent on distribution. The results of table 1-3 are in turn summarized in table 1-4, which presents the number of services by percentage category of revenues spent on distribution.

While we are not in a position to adequately discuss, from a technical point of view, beam combining features such as presently available with Anik "C", such features would most certainly have a positive impact on services for which national distribution is intended, since for a large number of these, the percentage of revenues spent on distribution is fairly high.

1.4.3 Cost effectiveness

Cost effectiveness in the present research project was evaluated from the point of view of service providers who would attempt to establish, other things being equal, whether the probable increase in space segment costs associated with a DBS, would (or would not) be compensated by revenue increases. A high powered DBS system was found to be more cost effective when one or more of the following conditions were met:

a) The services are non discretionary in nature i.e. they are financed by advertising or public funding and offered free of direct charge to DBS clients.

b) The services have high consumer appeal.

c) Regional services aimed at Canada's most populated regions.

Alternatively a high powered DBS system was found to be least cost effective when one or more of the following conditions were met:

1. EXECUTIVE SUMMARY (cont'd)

1.4 Results (cont'd)

1.4.2 Revenue potential of the various services (cont'd)

Table 1-2

ANNUAL REVENUES BY SERVICE, 1983-2000
($ million)

Coverage Required	Service	1983	1985	1990	1995	2000
National	Pay TV-High penetration	$ 3.1	$13.1	$68.6	$ 82.5	$ 93.7
	-Medium penetration	$ 1.5	$ 6.6	$34.3	$ 41.2	$ 46.9
	-Low penetration	$ 0.8	$ 3.3	$17.2	$ 20.6	$ 23.4
	Children programming	$ 0.2	$ 1.4	$ 5.6	$ 6.8	$ 7.7
	All Canada Superstation	$18.4	$38.9	$98.4	$114.4	$125.5
	Specialized programming	$ 1.5	$ 7.9	$30.3	$ 35.6	$ 39.5
	Mixed Service	$ 1.5	$ 8.0	$30.6	$ 36.2	$ 40.4
Regional	Public TV-Atlantic	$ 3.8	$ 4.5	$ 6.8	$ 8.5	$ 9.4
	-Manitoba/Sask.	$ 4.2	$ 4.7	$ 6.3	$ 7.3	$ 7.5
	-Alberta/B.C.	$16.7	$18.4	$22.9	$ 27.2	$ 31.2
	Atlantic Superstation	$ 4.7	$ 8.2	$16.1	$ 19.5	$ 20.9
	French Language Superstation	$17.8	$29.9	$52.6	$ 61.9	$ 67.6
	French Language Pay TV	$ 0.8	$ 3.9	$19.1	$ 23.3	$ 26.3

1. EXECUTIVE SUMMARY (cont'd)

1.4 Results (cont'd)

1.4.2 Revenue potential of the various services (cont'd)

Table 1-3

PERCENTAGE OF REVENUES SPENT ON DISTRIBUTION BY EACH SERVICE

	Anik "C" (4 beam)				DBS (4 beam, 48 ch.)				DBS (6 beam, 72 ch.)			
SERVICE	1985	1990	1995	2000	1985	1990	1995	2000	1985	1990	1995	2000
NATIONAL												
Pay TV												
- High penetration	29.0%	5.6%	4.7%	4.1%	51.1%	9.8%	8.2%	7.2%	60.6%	11.6%	9.7%	8.5%
- Medium penetration	55.9%	11.1%	9.2%	8.1%	98.5%	19.6%	16.2%	14.2%	(1)	23.3%	19.2%	16.8%
- Low penetration	(1)	22.1%	18.5%	16.2%	(1)	39.0%	32.6%	28.6%	(1)	46.3%	38.7%	33.9%
All Canada superstation	9.8%	3.9%	3.3%	3.1%	17.2%	6.8%	5.8%	5.4%	20.4%	8.1%	6.9%	6.4%
Specialized programming	48.1%	12.6%	10.7%	9.6%	84.8%	22.2%	18.8%	17.0%	(1)	26.3%	22.3%	20.2%
Mixed service	47.5%	12.4%	10.5%	9.4%	83.8%	21.8%	18.6%	16.6%	99.4%	25.9%	22.1%	20.0%
REGIONAL												
Public TV												
- Atlantic	21.1%	14.0%	11.2%	10.1%	37.2%	24.6%	19.7%	17.8%	29.4%	19.5%	15.6%	14.1%
- Manitoba/Sask.	20.2%	15.1%	13.0%	12.6%	35.6%	26.6%	22.9%	22.3%	28.2%	21.0%	18.1%	17.6%
- Alberta/B.C.	5.2%	4.1%	3.5%	3.1%	9.1%	7.3%	6.2%	5.4%	14.4%	11.5%	9.8%	8.5%
Atlantic Superstation	11.6%	5.9%	4.9%	4.5%	20.4%	10.4%	8.6%	8.0%	16.1%	8.2%	6.8%	6.3%
French Language Superstation	3.2%	1.8%	1.5%	1.4%	5.6%	3.2%	2.7%	2.5%	4.4%	2.5%	2.1%	2.0%
French Language Pay TV	24.3%	5.0%	4.1%	3.6%	42.9%	8.8%	7.2%	6.4%	33.9%	7.0%	5.7%	5.1%

(1) More than 100%

1. EXECUTIVE SUMMARY (cont'd)

1.4 Results (cont'd)

1.4.2 Revenue potential of the various services (cont'd)

Table 1-4

NUMBER OF SERVICES BY PERCENTAGE CATEGORY OF REVENUES SPENT ON DISTRIBUTION

Year	Satellite System	Less than 10%	10-15%	15%-20%	20-25%	More than 25%	Total Services
1985	Anik "C"	3	1	-	3	5	12
	DBS (4 beam, 48 ch.)	2	-	1	1	8	12
	DBS (6 beam, 72 ch.)	1	1	1	1	8	12
1990	Anik "C"	6	4	1	1	-	12
	DBS (4 beam, 48 ch.)	5	1	1	3	2	12
	DBS (6 beam, 72 ch.)	4	2	1	2	3	12
1995	Anik "C"	7	4	1	-	-	12
	DBS (4 beam, 48 ch.)	6	-	4	1	1	12
	DBS (6 beam, 72 ch.)	6	-	3	2	1	12
2000	Anik "C"	9	2	1	-	-	12
	DBS (4 beam, 48 ch.)	6	1	3	1	1	12
	DBS (6 beam, 72 ch.)	6	1	2	2	1	12

1. EXECUTIVE SUMMARY (cont'd)

1.4 Results (cont'd)

1.4.3 Cost effectiveness (cont'd)

a) Discretionary, subscriber financed services

b) Specialized services with lower consumer appeal

c) Services distributed on a national basis.

1.5 Recommendations

Taking into account the findings of this report, the authors can formulate three broad recommendations:

a) Satellite design considerations

The Department of Communications should focus its attention on detailed trade off analyses between power, space and ground segment costs, and beam configuration; in that respect, the ability to combine beams together, a feature presently available on Anik "C", would most probably be particularly useful.

b) Policy considerations

The present report has in effect taken for granted that:

- individuals would be allowed to own TVROs as soon as Anik "C" becomes operational;
- high appeal, advertiser financed services would be available via a DBS.
- present Canadian content rules would be modified for specialized services.
- the cable industry would be allowed to distribute any DBS signal since all services would consist of 'new' services, not presently available 'off air'.

We thus recommend that, if a DBS system is to become a reality, the Department of Communications take action so that these implicit policy statements become reality; to do otherwise would eliminate the most promising candidates for DBS delivery.

c) Other considerations

We recommend that the Department of Communications undertake research on peripheral hardware such as converters and descramblers that would be required for the delivery of discretionary services.

2

2. INTRODUCTION

2. INTRODUCTION

2.1 Mandate

The object of the project is to establish the feasibility of a Canadian Direct Broadcasting Satellite Program Package. The project represents follow on work executed by Tamec Inc on a similar subject, but which considered exclusively community reception and distribution via cable.

Specific tasks associated with the present project were described as follows in our proposal dated December 9, 1980:

- Expand the potential number of reception points to include a range of likely home receivers:
- Increase the time zone/regional sensitivity by assuming at least 4 beams (instead of the half-Canada beams assumed in the previous study);
- Expand the number of services analysed in the earlier report;
- Develop and analyse scenarios that would produce a viable DBS system;
- Identify beam requirements and tariff structure that would produce such a viable system;
- Formulate most likely scenarios for a 15 year horizon after start-up.

2.2 Approach

Our approach is the present project consisted in:

- establishing a list of likely DBS services;
- developing a DBS clients forecast consisting of:
    - TVRO households not passed by cable
    - TVRO households passed by cable
    - Cable subscribers equipped with a converter.
- formulating revenue scenarios for each of the services;
- evaluating the revenues generated by each service in view of probable space segment costs;
- formulating conclusions and development scenarios of a DBS program package.

2. INTRODUCTION (cont'd)

2.3 Risk Analysis

Throughout this report, we have chosen to make extensive use of a modelling technique called risk analysis; it is thus appropriate to explain the reason behind that choice, and to give a description of he functioning principles of the technique.

2.3.1 The reason behind the use of risk analysis

The reason behind the use of risk analysis is that we have had to develop assumptions for a large number of variables that can affect the viability of DBS services, and for a lenghtly period of time as well (1980-2000).

Since the authors of this report, although confident in their ability to develop 'realistic' assumptions, do not have a crystal ball, care had to be taken in developing not only probable values for these variables, but pessimistic and optimistic values as well.

Such an approach, although more prudent, tends to compound the problem when one attempts to interpret the results.

For example, when using all the optimistic values for the variables associated with the viability of a single pay TV service, we would come to the conclusion that by the year 2000, the service would be generating more than $150 million annually; on the other hand, if we used all the pessimistic values for the same variables, the service would be generating less than $75 million annually.

Assuming everyone agreed on the range of values chosen for each variable, the results are still highly unrealistic, for the simple reason that in the real world, it is not reasonable to assume that everything will go wrong or that at the other extreme, everything will go right.

2.3.2 Operating principles and results

This is where the risk analysis technique, using a powerful computer simulation model, can be very useful. The model can perform a large number of iterations (1) where, in each iteration and for each variable that is subject to uncertainty, the computer replaces the probable value by a random value within a specified range (within pessimistic and optimistic) and according to a certain probability.

Although great care was taken when developing probable, pessimistic and optimistic values for each variable subjected to risk analysis, the exercise involved a <u>considerable amount of judgement on the part of the authors of this report, for which they are entirely responsible.</u>

(1) One hundred iterations were performed for each case in this report.

2. INTRODUCTION (cont'd)

2.3 Risk Analysis (cont'd)

2.3.2 Operating principles and results (cont'd)

The following example, using the maximum pay TV penetration rate will illustrate the process.

- Most probable value or mode value : 20%
- Downward fluctuation from the mode : 0.9
- Upward fluctuation from the mode : 1.2
- Probability that the fluctuation will be downard from the mode : 40%

This means that although, to the best of our judgement, the maximum pay TV penetration rate will be 20%, it could be as low as 18% (20% x 0.9) or as high as 24% (20% x 1.2); in other words for 40 iterations out of 100 the value will lie somewhere between 18% and 20% and for 60 iterations out of 100 the value will lie somewhere between 20% and 24%.

Once this has been done for all the variables subject to risk and for each iteration the following results are produced for the desired variable:

- minimum value
- maximum value
- mean value
- standard deviation
- mode value
- a 10 class frequency histogram
- an histogram interpretation i.e. percent chance of occurence within each class, to the left of each class or to the right of each class.

2. INTRODUCTION (cont'd)

2.3 Risk Analysis (cont'd)

2.3.2 Operating principles and results (cont'd)

Such results were available for 5 different periods which are:

Period Number	Corresponding Year
4	1983 (1)
6	1985
11	1990
16	1995
21	2000

The following page will illustrate the results for annual English speaking pay TV revenues in the year 1990 (period 11).

The minimum value of annual revenues is $58.8 million, a value which is certainly higher than if all the most pessimistic values associated with each variable, had been used.

The maximum value is $84.5 million (certainly lower than if all the most optimistic assumptions had been used).

- the mean value is $70.4 million

- the mode value (that is the mean value for the class which has the highest frequency) is $70.3 million

Most likely, the service would generate between $69.1 and $71.6 million (2). There is also a 91% percent chance that the annual revenues would be greater than $63.9 million and an 89% percent chance that they would be less than $76.8 million.

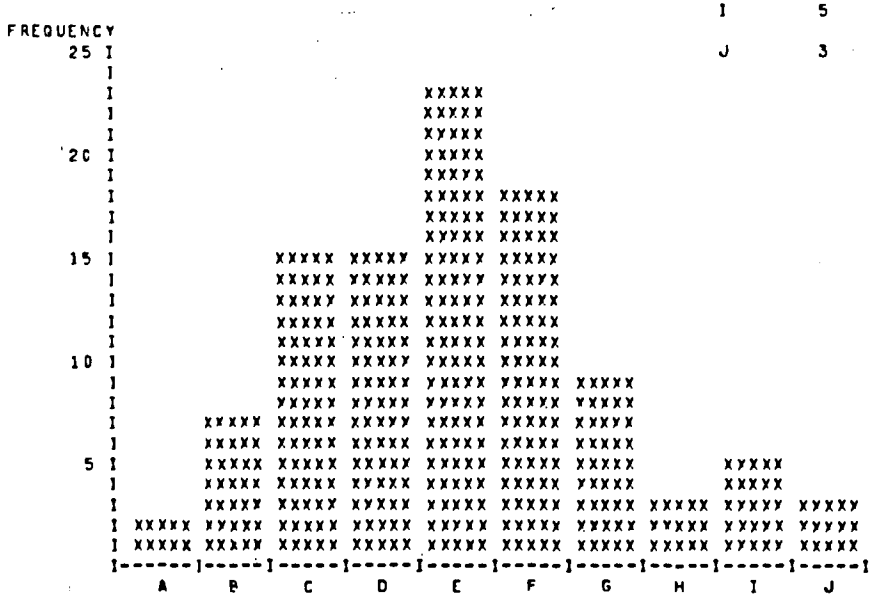
(1) It was assumed that all services were being introduced in 1983.
(2) Class E, 23 occurences out of 100.

```
*********************************
*  PAY-TV REVENUES              *
*  ---------------------------  *
*  ITEM   112        PERIOD   11 *
*********************************
*                               *
*  MINIMUM VALUE       58795.6253 *
*                               *
*  MAXIMUM VALUE       84481.0685 *
*                               *
*  MEAN VALUE          70419.8358 *
*                               *
*  STANDARD DEVIATION   5160.1254 *
*                               *
*  MODE VALUE          70294.2166 *
*                               *
*  NO. OF ITERATIONS        100  *
*********************************
```

HISTOGRAM INTERPRETATION FOR - PAY-TV REVENUES

CLASS	FREQ.	LOWER LIMIT	UPPER LIMIT	PERCENT CHANCE OF OCCURRENCE: WITHIN THE CLASS	OUTSIDE THE CLASS: TO LEFT	OUTSIDE THE CLASS: TO RIGHT
A	2	58795.63	61364.17	2.00	0.00	98.00
B	7	61364.17	63932.71	7.00	2.00	91.00
C	15	63932.71	66501.26	15.00	9.00	76.00
D	15	66501.26	69069.80	15.00	24.00	61.00
E	23	69069.80	71638.35	23.00	39.00	38.00
F	18	71638.35	74206.89	18.00	62.00	20.00
G	9	74206.89	76775.44	9.00	80.00	11.00
H	3	76775.44	79343.98	3.00	89.00	8.00
I	5	79343.98	81912.52	5.00	92.00	3.00
J	3	81912.52	84481.07	3.00	97.00	.00

** H I S T O G R A M **



CASE ** ENGLISH SPEAKING PAY-TV

2. INTRODUCTION (cont'd)

2.3 Risk Analysis (cont'd)

2.3.3 Variables subjected to risk analysis

The following variables were subjected to risk analysis in all cases analysed in this report:

1- Population growth rate
2- Average number of persons per household
3- Percentage of households passed by cable (1)
4- Cable penetration rate (1)
5- TVRO penetration rate of households not passed by cable
6- TVRO penetration rate of households passed by cable.

In addition, the following variables were also subjected to risk analysis depending on the nature of the service.

A) Subscriber financed services

1- Penetration rate for the service in English Canada
2- Penetration rate for the service in French Canada
3- Annual revenue per subscriber

B) Services partly or totally financed by advertising

1- Penetration rate of the service in English Canada
2- Penetration rate of the service in French Canada
3- Number of commercial minutes per hour of programming
4- Viewing levels in English Canada
5- Viewing levels in French Canada
6- Audience share of the service (percentage of the viewing public tuned to that particular service)
7- Cost per thousand associated with a 30 second commercial

(1) A different value was specified for the 6 different regions in Canada.

2. INTRODUCTION (cont'd)

2.4 Sensitivity Analysis

Throughout this report we have assumed a TVRO penetration rate that would be associated with a true DBS and characterized by:

a) Small diameter antennas (1.0 m. approx.)

b) A cost of $300 - $500.

It was assumed as well that all services would be introduced in 1983 on Anik "C" (interim DBS) which would eventually be replaced by the true DBS in the 1988 to 1990 period.

A question can be raised as to what would happen if a true DBS was not economically feasible and permanent Anik "C" service was to be envisaged?

The answer to that question is that the TVRO penetration rate would probably be reduced because of:

a) The more cumbersome 1.8 m antenna

b) The additional costs associated with the antenna itself, installation and mounting.

It can be safely assumed however that the requirement for a slightly more cumbersome and more costly antenna would not affect community reception.

But still, because of the lower TVRO penetration rate with individuals, the annual revenues associated with each and every service would be reduced.

How seriously this 'problem' would be perceived by the various providers of services depends on the following factors:

- the importance of the potential revenue loss associated with the continued use of Anik "C"

versus

- the additional space segment costs resulting from the introduction of a true DBS

- and the additional uplink costs associated with a 6 beam DBS.

2. INTRODUCTION (cont'd)

2.4 Sensitivity Analysis (cont'd)

For example, let us assume that with Anik "C", the TVRO penetration rate would be cut by 50%; this means that by the year 2000, instead of being 88%, it would be 44%. Let us assume that, other things being equal, this would involve a $500,000 reduction in the annual revenues of a pay TV service. From then on the answer to our problem is fairly simple and can be summarized as follows:

- if the increase in space segment and uplink costs resulting from a true DBS is greater than $500,000, then the pay TV service would be better off with Anik "C".

- if on the other hand these additional costs are less than $500,000 then the pay TV service would be better off with a true DBS.

The use of sensitivity analysis can now be more clearly understood.

On one hand, we have been able to establish probable space segment rates associated with all satellite systems (see chapter 4) that is:

- Anik "C"
- a 4 beam, 48 channel DBS.
- a 4 beam, 24 channel DBS.
- a 6 beam, 72 channel DBS.
- a 6 beam, 36 channel DBS.

On the other hand, we have subjected every service envisaged to sensitivity analysis by gradually reducing the TVRO penetration rate by 'slices' of 5%; by comparing the net present value of the reduction in revenues with the net present value of the increase in distribution costs (space segment plus uplink) we were able to formulate the following typical conclusions:

- Even if the use of Anik "C" resulted in a 60% reduction of the TVRO penetration rate, (from 88% to 35% in the year 2000), a pay TV service would still be better off with Anik "C".

OR

- If the use of Anik "C" results in a reduction as small as 15% in the TVRO penetration rate (from 88% to 75% in the year 2000), then an all Canada superstation would be better off with a true DBS.

2. INTRODUCTION (cont'd)

2.4 Sensitivity Analysis (cont'd)

Sensitivity analysis thus permits a general evaluation of the cost effectiveness of a DBS, with what presently is the next best alternative, that is an interim DBS using Anik "C" satellites. It has to be pointed out though that the analysis, throughout this report, contains a number of simplifications and that consequently, any judgement call concerning the cost effectiveness of a DBS has to be formulated qualitatively as well; this, we hope, was achieved in a satisfactory manner with each and every service examined in this report.

3

3. BASIC DEMOGRAPHIC DATA

3. BASIC DEMOGRAPHIC DATA

3.1 Households forecast

The methodology we used to produce a households forecast is illustrated in the following figure. The data used in this exercice was obtained from Statistics Canada (1) (2) and it is presented in a summary form in a publication entitled 'Market Research Handbook', Catalogue no. 63-224.

3.1.1 Population growth rate

Statistics Canada has developped 4 sets of fertility and migration assumptions to project Canada's population; the resulting growth rates are shown in the next table along with the scenario we have chosen and which is an average of these four scenarios.

Table 3-1

CANADA

POPULATION GROWTH SCENARIOS

1976 - 2001

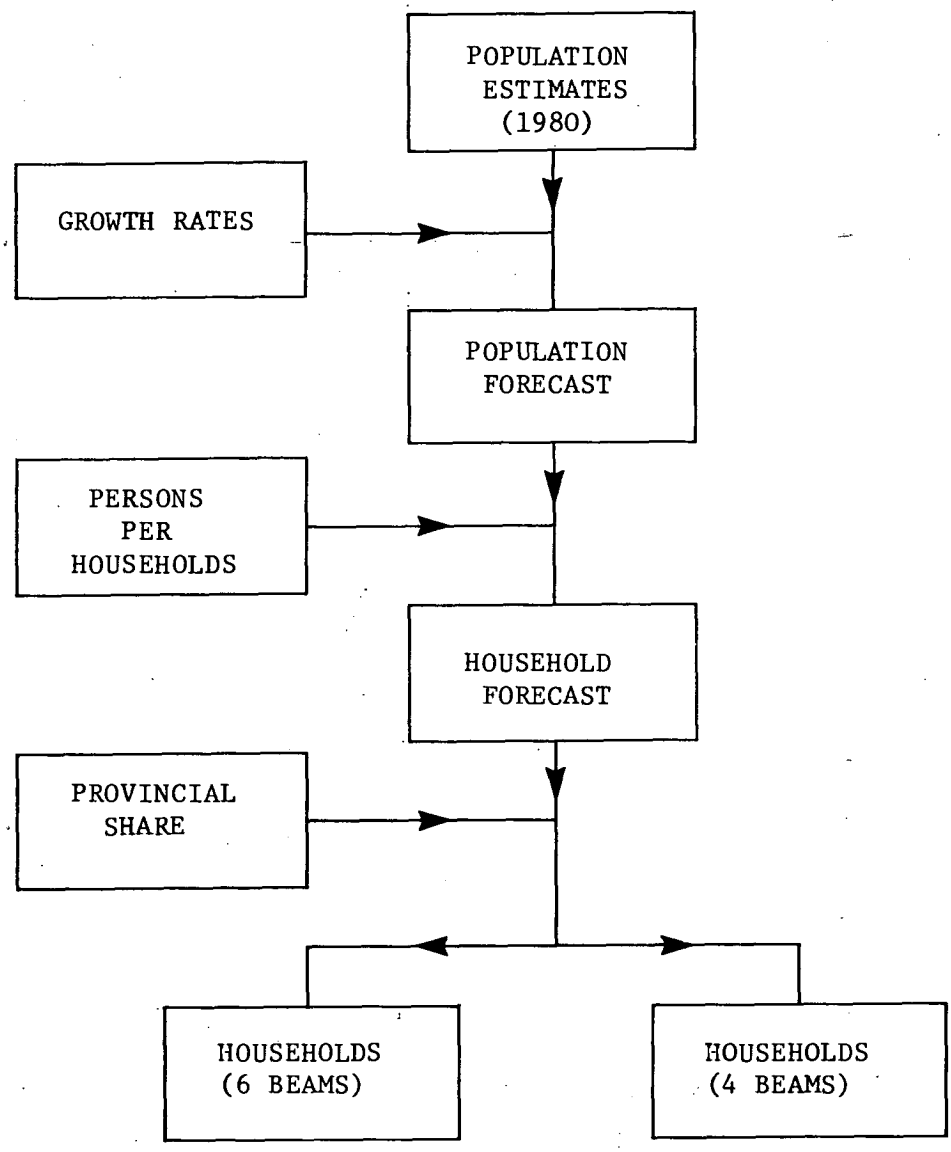
Period	76-81	81-86	86-91	91-96	96-01	Average
I	1.34%	1.39%	1.30%	1.08%	0.89%	1.20%
II	1.23%	1.29%	1.20%	0.98%	0.79%	1.10%
III	1.14%	1.11%	0.96%	0.74%	0.57%	0.90%
IV	1.03%	1.00%	0.86%	0.64%	0.46%	0.80%
Average	1.2%	1.2%	1.1%	0.9%	0.7%	1.0%

Source: Statistics Canada.

(1) Catalogue 91-250, Population projections for Canada and Provinces, 1976-200.
(2) Catalogue 91-517, Household and family projections for Canada and the Provinces to 2001.

Figure 3 - 1

DEMOGRAPHY METHODOLOGY



3. BASIC DEMOGRAPHIC DATA (cont'd)

3.1 Households forecast (cont'd)

3.1.1 Population growth rate (cont'd)

Using revised population estimates for the year 1980 and applying these growth rates, we developped a population forecast up to the year 2000, which is briefly described in the following table.

Table 3-2

CANADA

POPULATION FORECAST

1983-2000

YEAR	POPULATION (000)
1983	24,785
1985	25,384
1990	26,811
1995	28,039
2000	29,034

3.1.2 Household formation

Household formation depends on various institutional, social and demographic factors such as:

- marriage and divorce rates
- labour force participation rate
- birth rates
- migration rate
- etc.

3. BASIC DEMOGRAPHIC DATA (cont'd)

3.1. Households forecast (cont'd)

3.1.2 Household formation (cont'd)

The combined action of these variables determines the average number of persons per household, for which Statistics Canada has again produced four scenarios which are illustrated in the following table; we have again chosen an average scenario (1) to forecast household formation up to the year 2000.

Table 3-3

AVERAGE NUMBER OF PERSONS PER HOUSEHOLD FORECAST

SCENARIO	1976	1981	1986	1991	1996	2001
I	3.26	3.02	2.85	2.81	2.76	2.68
II	3.26	3.05	2.89	2.85	2.83	2.78
III	3.26	3.07	2.89	2.81	2.76	2.68
IV	3.26	3.05	2.86	2.77	2.72	2.66
Average	3.26	3.05	2.87	2.81	2.77	2.70

Source: Statistics Canada

Using the preceeding figures and our population forecast, we developed a household forecast up to the year 2000.

(1) As slight adjustment was made for the year 1980 to take into account a revised household estimate from Statistics Canada for that year.

3.1 BASIC DEMOGRAPHIC DATA (cont'd)

3.1 Households forecast (cont'd)

3.1.2 Household formation (cont'd)

Table 3-4

CANADA

HOUSEHOLD FORECAST

1983-2000

YEAR	HOUSEHOLDS (000)
1983	8,254
1985	8,561
1990	9,342
1995	10,104
2000	10,834

3.1.3 Households by province

The distribution of households by province depends again on a number of factors such as:

- mortality
- fertility
- external and interprovincial migration.

Again, Statistics Canada has developed assumptions concerning the Provincial distribution of Canadian households; the relative 'share' of each Province that we used in the present report is presented in the next table.

3. BASIC DEMOGRAPHIC DATA (cont'd)

3.1 Households forecast (cont'd)

3.1.3 Households by province (cont'd)

Table 3-5

PERCENTAGE DISTRIBUTION OF HOUSEHOLDS BY PROVINCE

1980-2000

PROVINCE	1980	2000
Newfoundland	1.85%	1.85%
Prince Edward Island	0.44%	0.38%
Nova Scotia	3.27%	2.68%
New Brunswick	2.61%	2.18%
Quebec	26.21%	23.02%
Ontario	37.25%	40.88%
Manitoba	4.38%	3.55%
Saskatchewan	4.02%	2.08%
Alberta	8.48%	8.66%
British Columbia, N.W.T., and Yukon	11.48%	14.69%
Canada	100.00%	100.00%

The information presented in the preceeding table enabled us to produce a regional household forecast that we can apply to both DBS models (6 beams and 4 beams).

3. BASIC DEMOGRAPHIC DATA

3.1 Households forecast (cont'd)

3.1.3 Households by province (cont'd)

Table 3-6

CANADA

HOUSEHOLD FORECAST (000), 6 BEAM MODEL

1983-2000

REGION	1983	1985	1990	1995	2000
Atlantic	662	675	713	744	767
Quebec	2,124	2,176	2,299	2,407	2,494
Ontario	3,119	3,267	3,649	4,039	4,429
Manitoba/Sask.	659	660	655	639	610
Alberta	702	730	801	870	938
B.C./N.W.T./and Yukon	987	1,052	1,222	1,403	1,591
Canada	8,254	8,561	9,342	10,104	10,834

Table 3-7

CANADA

HOUSEHOLD FORECAST (000), 4 BEAM MODEL

1983-2000

REGION	1983	1985	1990	1995	2000
Atlantic/Quebec	2,786	2,851	3,012	3,151	3,261
Ontario	3,119	3,267	3,649	4,039	4,429
Manitoba/Sask.	659	660	655	639	610
Alberta/B.C./ N.W.T. and Yukon	1,689	1,782	2,023	2,273	2,529
Canada	8,254	8,561	9,342	10,104	10,834

3. BASIC DEMOGRAPHIC DATA (cont'd)

3.2 DBS clients forecast

Our approach to produce a DBS clients forecast is illustrated in the following figure. This figure illustrates that we have identified three categories of potential DBS clients which are:

- TVRO households not passed by cable
- TVRO households passed by cable, but which for one reason or another, elect not to subscribe to cable service
- Cable subscribers 'indirectly' receiving DBS services.

3.2.1 Households passed and not passed by cable

At the end of 1979, 78% of Canadian households were passed by cable; we expect this percentage to reach approximately 92% in the year 2000.

The assumptions used for households passed by cable are presented in the following figure and in table 3-8; the implicit assumption is that cable has already reached a saturation level in terms of homes passed (1) although some growth remains because of the following factors:

- Households growth is expected to be stronger in urban areas where cable is more cost effective.

- Some communities presently have a sufficiently high population density to justify cable per se, but are prevented from getting it because of the prohibitive cost of carrying TV signals via microwave; satellite distribution can be expected to largely solve this trunking problem (2).

---

(1) The penetration rate or % of homes passed that subscribe to the service will be addressed later.
(2) A very similar assumption was used in both the Cancom and Northstar proposals to the CRTC.

Figure 3-2

DBS FORECAST

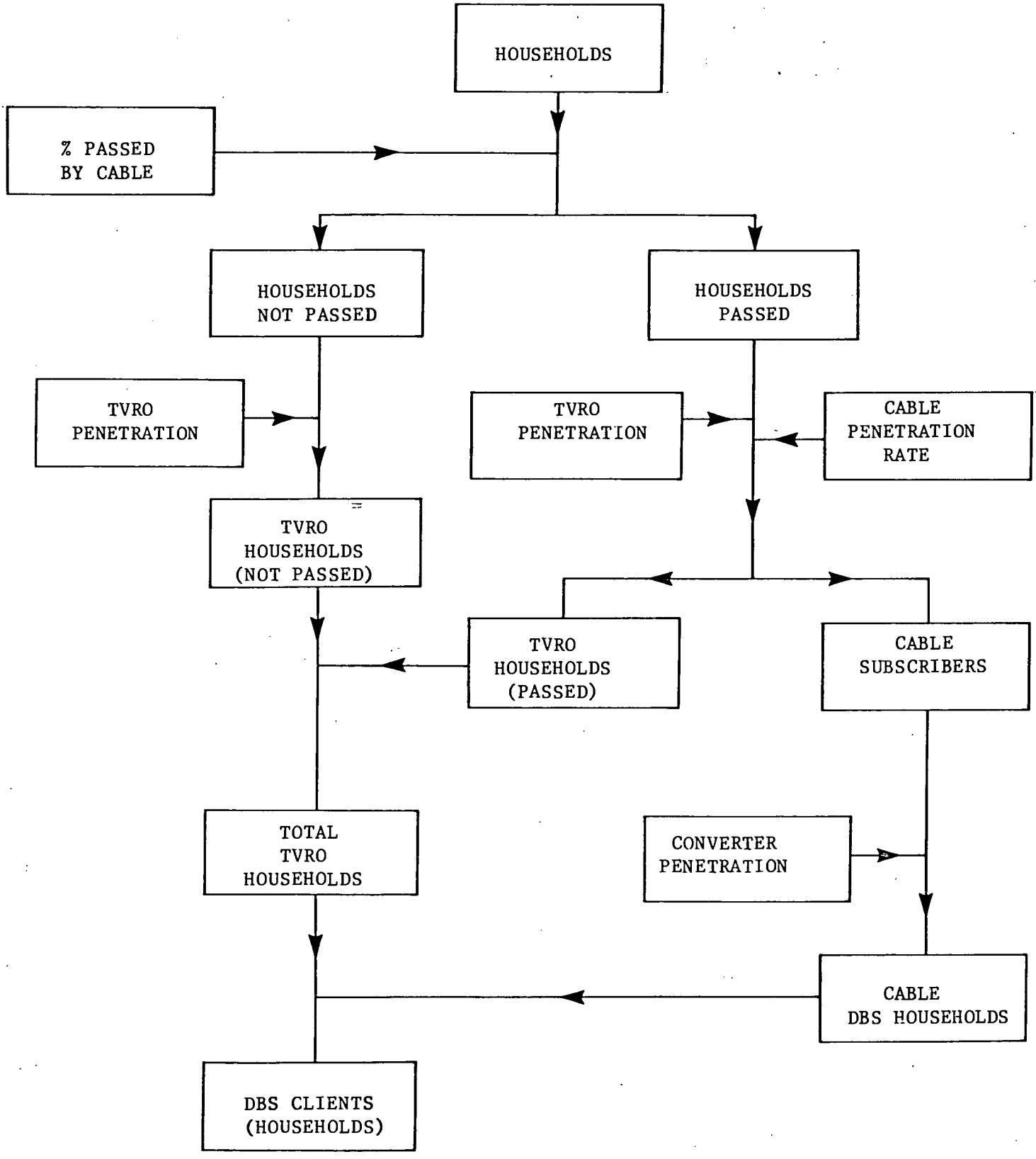
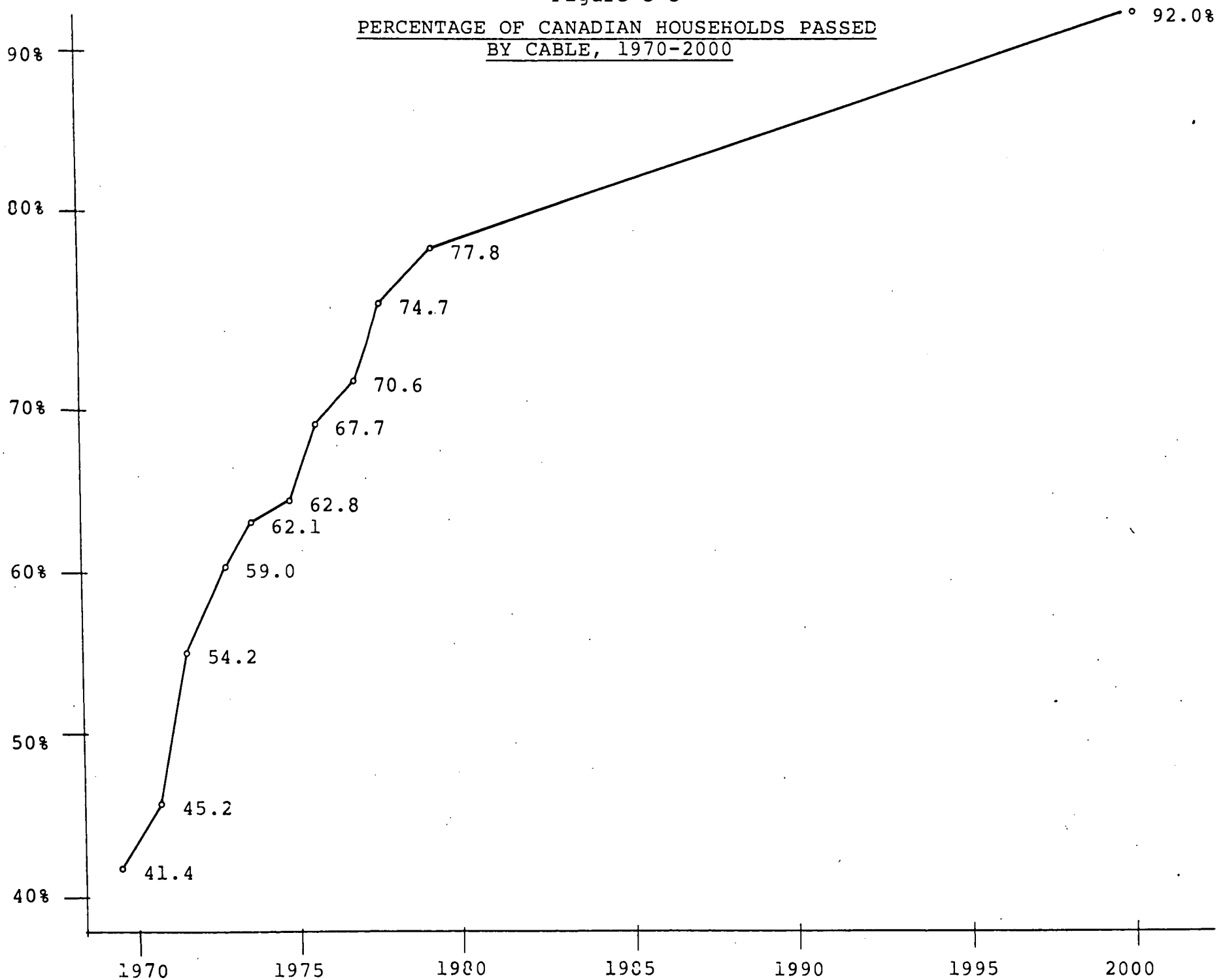


Figure 3-3

PERCENTAGE OF CANADIAN HOUSEHOLDS PASSED BY CABLE, 1970-2000



3. BASIC DEMOGRAPHIC DATA (cont'd)

3.2 DBS clients forecast (cont'd)

3.2.1 Households passed and not passed by cable (cont'd)

- On the other hand, distribution of discretionary, subscriber paid services can be expected to improve revenues per subscriber which would tend to make cable more attractive in some lower population density areas where cable is not presently economically feasible.

Table 3-8

PERCENTAGE OF

HOUSEHOLDS PASSED BY CABLE

1979 AND 2000

REGION	1979	2000
Atlantic	48.7	85
Quebec	77.4	92
Ontario	82.7	92
Man./Sask.	58.8	85
Alberta	81.4	92
B.C./Yukon/N.W.T.	95.3	95
Canada	77.8	92

These assumptions enabled us to develop a forecast of households passed and not passed by Cable.

Table 3-9

CANADA

HOUSEHOLDS PASSED BY CABLE (000)

BY REGION 1983-2000

REGION	1983	1985	1990	1995	2000
Atlantic	368	400	483	568	653
Quebec	1,703	1,775	1,956	2,130	2,294
Ontario	2,634	2,787	3,194	3,625	4,073
Manitoba/Sask.	420	437	475	503	519
Alberta	586	616	696	779	863
B.C./N.W.T./Yukon	941	1,002	1,165	1,337	1,517
Canada	6,651	7,019	7,969	8,942	9,919

3. BASIC DEMOGRAPHIC DATA (cont'd)

3.2 DBS clients forecast (cont'd)

3.2.1 Households passed and not passed by cable (cont'd)

Table 3-10

CANADA

HOUSEHOLDS NOT PASSED BY CABLE (000)

BY REGION 1983-2000

REGION	1983	1985	1990	1995	2000
Atlantic	293	277	230	176	115
Quebec	421	401	344	276	200
Ontario	486	480	455	414	356
Manitoba/Sask.	239	222	180	135	91
Alberta	116	114	105	92	75
B.C./N.W.T./Yukon	46	49	57	66	75
Canada	1,601	1,543	1,371	1,159	912

3.2.2 TVRO households

As illustrated in Figure 3-2, there are two categories of potential TVRO households which are:

- Households not passed by cable
- Households passed by cable but who, for one reason or another, elect not to purchase a TVRO.

3.2.2.1 TVRO households (not passed by cable)

To forecast the penetration of TVRO households in Canada, we used an analogy with the penetration of colour television sets. We believe there is a case to be made for such an analysis for the following reasons:

3. BASIC DEMOGRAPHIC DATA (cont'd)

3.2 DBS clients forecast (cont'd)

3.2.2 TVRO households (cont'd)

3.2.2.1 TVRO households (not passed by cable) (cont'd)

- both are fairly similar products (addressing needs and requirements that are closely related);

- the price of colour television sets exhibited historically the same price reductions which everyone expects for 12 GHz TVROs; expressed in constant $ of 1980, colour TV sets have declined in price from $ 1500 - $ 2000 when they were introduced, to $ 400 - $ 600 at the present time.

- while it can be argued that the penetration rate of TVROs should not be developed independently from programming considerations which are dealt with later on in this report, it can also be said that this "chicken and egg" proglem was also faced by colour TV sets that is: no color TV sets being produced because of the absence of colour programming, and no colour programming because of the absence of colour TV sets.

The penetration of colour TV sets, defined as the percentage of Canadian households with at least one colour TV set, is illustrated in Table 3-11 and Figure 3-3.

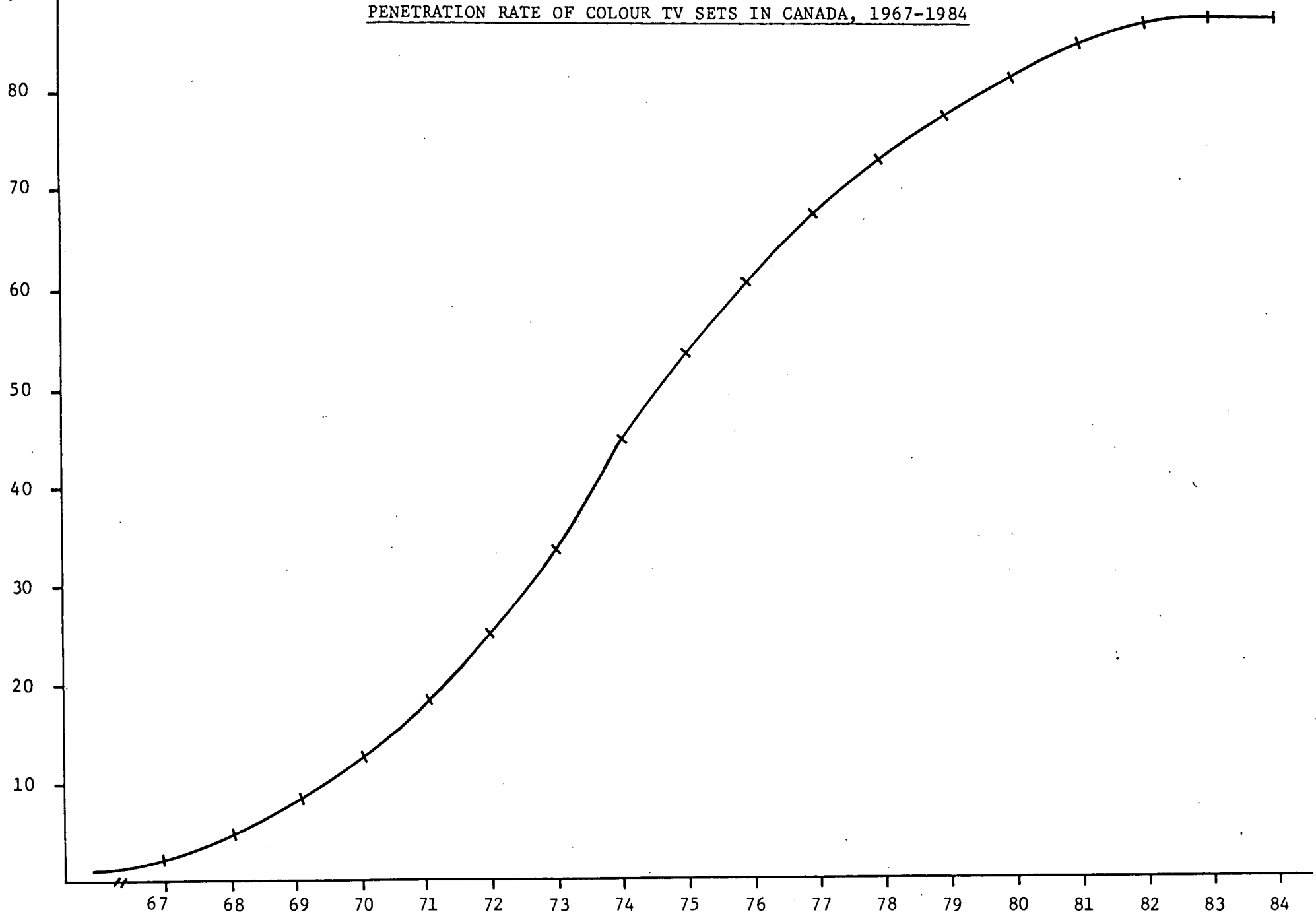
The data exhibits a very strong "S" curve characteristic with the following 3 phases:

- slow growth at the earlier phase of introduction of the product,

- rapid growth as the price of the product decreases in real terms and as the product gets wide consumer acceptance,
- slow growth rates resulting from saturation.

Figure 3-4

PENETRATION RATE OF COLOUR TV SETS IN CANADA, 1967-1984



3. BASIC DEMOGRAPHIC DATA (cont'd)

3.2 DBS clients forecast (cont'd)

3.2.2 TVRO households (cont'd)

3.2.2.1 TVRO households (not passed by cable) (cont'd)

Table 3-11

PENETRATION RATE OF COLOUR TV SETS IN CANADA

1967-1984

YEAR	PENETRATION RATE
1967	2.0
1968	4.2
1969	8.0
1970	12.1
1971	18.4
1972	24.2
1973	33.1
1974	44.5
1975	53.3
1976	60.7
1977	67.8
1978	72.3
1979	76.7
1980	81.2
1981 (1)	84.2
1982 (1)	86.2
1983 (1)	87.2
1984 (1)	87.7

Source : Statistics Canada, Household facilities and equipment, Cat. 64 - 202

(1) Estimated by Tamec Inc.

We have thus utilized this data to define a penetration rate of TVROs in households not passed by cable; our assumptions are presented in the following table:

3. BASIC DEMOGRAPHIC DATA (cont'd)

3.2 DBS clients forecast (cont'd)

3.2.2 TVRO households (cont'd)

3.2.2.1 TVRO households (not passed by cable) (cont'd)

Table 3-12

PENETRATION RATE OF TVROs

IN HOUSEHOLDS NOT PASSED BY CABLE

(1983-2000)

YEAR	PENETRATION RATE
1983	2.0
1984	4.2
1985	8.0
1986	12.1
1987	18.4
1988	24.2
1989	33.1
1990	44.5
1991	53.3
1992	60.7
1993	67.8
1994	72.3
1995	76.7
1996	81.2
1997	84.2
1998	86.2
1999	87.2
2000	87.7

These assumptions resulted in the following TVRO forecast for households not passed by cable.

3. BASIC DEMOGRAPHIC DATA (cont'd)

3.2 DBS clients forecast (cont'd)

3.2.2 TVRO households (cont'd)

3.2.2.1 TVRO households (not passed by cable) (cont'd)

Table 3-13

TVRO HOUSEHOLDS (NOT PASSED BY CABLE)

BY REGION (000) 1983-2000

REGION	1983	1985	1990	1995	2000
Atlantic	6	22	102	135	101
Quebec	8	32	153	212	175
Ontario	10	38	203	318	312
Manitoba/Sask.	5	18	80	104	80
Alberta	2	9	47	70	66
B.C./N.W.T./Yukon	1	4	26	51	66
Canada	32	123	610	889	800

3.2.2.2 TVRO households (passed by cable)

The second category of TVRO households are the ones that are passed by cable but that, for one reason or another, elect not to subscribe to cable and purchase a TVRO. We have assumed that this category would initially represent 0.5% of households passed by cable, growing to a maximum of 3% of such households over a five year period after introduction of service at 12 GHz.

The implicit assumption is thus that a DBS would have a minimal impact, in terms of households purchasing a TVRO, in areas where cable service is available; we feel this assumption is reasonable for the following reasons:

3. BASIC DEMOGRAPHIC DATA (cont'd)

3.2 DBS clients forecast (cont'd)

3.2.2 TVRO households (cont'd)

3.2.2.2 TVRO households (passed by cable) (cont'd)

- All services considered in this report are "new" services that are not presently available off air; it is thus reasonable to assume that past CRTC decisions, which have tended to limit distribution of Canadian satellite signals by cable, would not apply and that it would be up to the marketplace to decide whether Canadian households would subscribe to cable or would purchase a TVRO.

- The vast majority of cable systems are presently distributing one or more of the four major U.S. networks (ABC, NBC, CBS and PBS); since these will not be available via a DBS, this tends to favor the competitive position of the cable industry.

- The cable industry also performs distribution of Canadian signals on a regional basis; again this improves the competitive position of the cable industry since these signals would not be available via any kind of satellite system.

- Finally, the cable industry also has the option of developing services at the local level; these would consist not only of radio and TV services but of Telidon services and of non programming services as well (fire and burglar alarm, energy management, and other interactive services).

In summary the cable industry will most probably be able to offer any service that a DBS would offer plus a large number of services that will not be available via a DBS.

The results associated with these assumptions are presented in table 3-14.

3. BASIC DEMOGRAPHIC DATA (cont'd)

3.2 DBS clients forecast (cont'd)

3.2.2 TVRO households (cont'd)

3.2.2.2 TVRO households (passed by cable) (cont'd)

Table 3-14

TVRO HOUSEHOLDS (PASSED BY CABLE)

BY REGION (000) 1983-2000

REGION	1983	1985	1990	1995	2000
Atlantic	2	6	14	17	20
Quebec	9	27	59	64	69
Ontario	13	42	96	109	122
Manitoba/Sask.	2	7	14	15	16
Alberta	3	9	21	23	26
B.C./N.W.T./Yukon	5	15	35	40	46
Canada	33	105	239	268	298

3.2.2.3 Total TVRO households

The total number of TVRO households (passed + not passed by cable) is presented in the following table.

Table 3-15

TOTAL TVRO HOUSEHOLDS (000)

1983-2000

REGION	1983	1985	1990	1995	2000
Atlantic	8	28	116	152	121
Quebec	17	59	212	276	244
Ontario	23	80	299	427	434
Manitoba/Sask.	7	25	94	119	96
Alberta	5	18	68	93	92
B.C./N.W.T./Yukon	6	19	61	91	112
Canada	65	229	849	1,157	1,097

3. BASIC DEMOGRAPHIC DATA (cont'd)

3.2 DBS clients forecast (cont'd)

3.2.3 DBS Cable subscribers

3.2.3.1 Cable subscribers

The last category of DBS clients consists of cable subscribers which would receive DBS programming via their cable system.

A cable subscriber forecast was developed by applying a cable penetration rate (1) to the number of households passed by cable. A summary of the cable penetration rates assumptions we have used is presented in the following table; the present 69% penetration rate would grow to 90% by the year 2000, except in the Province of Quebec where the rate would lag at 75%. The implicit assumption is that the penetration rate which has tended to exhibit very slow growth characteristics in the past five years, would regain a small but steady momentum thanks to new services including television services delivered via a DBS.

Table 3-16

CABLE PENETRATION RATE BY REGION

1972, 1979 AND 2000

REGION	1972	1979	2000 (*)
Atlantic	39.2	72.4	90.0
Quebec	32.5	48.3	75.0
Ontario	55.8	75.5	90.0
Manitoba/Sask.	41.0	70.1	90.0
Alberta	26.1	64.4	90.0
B.C./N.W.T./Yukon	78.2	88.8	90.0
Canada	50.1	68.7	86.2

Source : Statistics Canada, 56-205
(*) Estimated by Tamec Inc.

(1) Percentage of households passed by cable that subscribe to the service.

3. BASIC DEMOGRAPHIC DATA (cont'd)

3.2 DBS clients forecast (cont'd)

3.2.3 DBS Cable subscribers (cont'd)

3.2.3.2 Converter penetration rate

In addition, since specialized services are analyzed in the present report, it was assumed that such services would require the use of a converter by cable subscribers; taking into account the rapid penetration of desk top converters and replacement of colour TV sets by ones that have built-in converters, we assumed that the percentage of cable subscribers equipped with such a converter would grow from 30% (1) in 1980 to 100% by 1990.

3.2.3.3 DBS cable subscribers

The results associated with these assumptions are presented in the following table.

Table 3-17

DBS CABLE SUBSCRIBERS BY REGION (000)

1983-2000

REGION	1983	1985	1990	1995	2000
Atlantic	142	201	394	487	588
Quebec	458	637	1,205	1,448	1,705
Ontario	1,048	1,439	2,648	3,130	3,659
Manitoba/Sask.	158	215	381	428	465
Alberta	206	285	538	650	773
B.C./N.W.T./Yukon	429	585	1,048	1,204	1,365
Canada	2,441	3,362	6,215	7,347	8,555

Note: Converter equipped cable subscribers.

(1) Source: CBC Research Department

3. BASIC DEMOGRAPHIC DATA (cont'd)

3.2 DBS clients forecast (cont'd)

3.2.4 DBS clients

A summary forecast of DBS clients is presented in the two following tables. DBS clients have been defined as households:

- not passed by cable with a TVRO
- passed by cable with a TVRO
- subscribing to cable and equipped with a converter.

Table 3-18

DBS CLIENTS (6 BEAM MODEL) (000)

1983-2000

REGION	1983	1985	1990	1995	2000
Atlantic	150	229	511	639	708
Quebec	475	696	1,416	1,724	1,949
Ontario	1,071	1,519	2,946	3,557	4,093
Manitoba/Sask.	165	239	476	547	561
Alberta	211	304	606	744	865
B.C./N.W.T./Yukon	435	604	1,109	1,294	1,476
Canada	2,506	3,591	7,064	8,504	9,652

3. BASIC DEMOGRAPHIC DATA (cont'd)

3.2 DBS clients forecast (cont'd)

3.2.4 DBS clients (cont'd)

Table 3-19

DBS CLIENTS (4 BEAM MODEL) (000)

1983-2000

REGION	1983	1985	1990	1995	2000
Atlantic/Québec	624	925	1,927	2,363	2,657
Ontario	1,071	1,519	2,946	3,557	4,093
Manitoba/Sask.	165	239	476	547	561
Alberta/B.C./ N.W.T./Yukon	646	908	1,715	2,038	2,341
Canada	2,506	3,591	7,064	8,504	9,652

3.3 Risk analysis

3.3.1 Risk analysis assumptions

Since we have had to develop assumptions for a fairly large number of variables throughout this chapter, we decided to test the sensitivity and validity of the results with risk analysis (see Chapter 2).

Each of the variables in the following table was allowed to move independently from its mode value to a minimum or maximum value; the analysis also required that we define a probability that the fluctuation would be downward from the mode. Needless to say the values in the following table also required a considerable amount of judgement for which the authors are solely responsible.

3. BASIC DEMOGRAPHIC DATA (cont'd)

3.3 Risk analysis (cont'd)

3.3.1 Risk analysis assumptions (cont'd)

Table 3-20

RISK ANALYSIS ASSUMPTIONS

VARIABLE	Downward fluctuation from the mode (≤ 1)	Upward fluctuation from the mode (≥ 1)	Probability that the fluctuation will be downward from the mode (%)
Population growth rate	0.9	1.1	50 %
Average number of persons per household	0.95	1.05	60 %
Percentage of households passed by cable	0.98	1.02	65 %
TVRO penetration rate (not passed by cable)	0.9	1.05	50 %
TVRO penetration rate (passed by cable)	0.8	1.2	50 %
Cable penetration rate (Quebec)	0.95	1.05	40 %
Cable penetration rate (other regions)	0.98	1.02	50 %

3. BASIC DEMOGRAPHIC DATA (cont'd)

3.3 Risk Analysis

3.3.2 Results

The results associated with risk analysis as well as the full simulation are presented in Appendices A, B and C and can be summarized as follows.

Table 3-21

CANADA
TVRO FORECAST (000)
1983 - 2000

Year	Minimum Value	Maximum Value	Mean Value	Mode Value	Simulation Result
1983	59	72	66	64	65
1985	207	253	231	223	229
1990	753	930	852	869	849
1995	1,029	1,261	1,172	1,205	1,157
2000	998	1,236	1,118	1,104	1,097

Table 3-22

CANADA
DBS CLIENTS FORECAST (000)
1983 - 2000

Risk Analysis	Minimum Value	Maximum Value	Mean Value	Mode Value	Simulation Result
1983	2,379	2,595	2,507	2,519	2,506
1985	3,420	3,795	3,604	3,624	3,591
1990	6,756	7,479	7,110	7,148	7,064
1995	8,128	8,946	8,527	8,658	8,504
2000	9,204	10,109	9,684	9,516	9,652

3. BASIC DEMOGRAPHIC DATA (cont'd)

3.4 Conclusions

The preceeding analysis shows that the number of individual TVRO households can be expected to grow fairly rapidly to 1 million households in the early 90's; from then on, to the year 2000, that number can be expected to remain fairly stable at 1.1 to 1.2 million households.

DBS clients on the other hand, which include cable subscribers equipped with a converter as well as TVRO households, should grow from 2.5 million households in 1983 to more than 9 million households by the year 2000; this means that approximately 90% of all Canadian households would have access to DBS programming.

4

4. TECHNO ECONOMIC CONSIDERATIONS

4. TECHNO ECONOMIC CONSIDERATIONS

4.1 Introduction

The object of this chapter is to establish probable space segment rates for a DBS system; these results will then be used for two purposes which are:

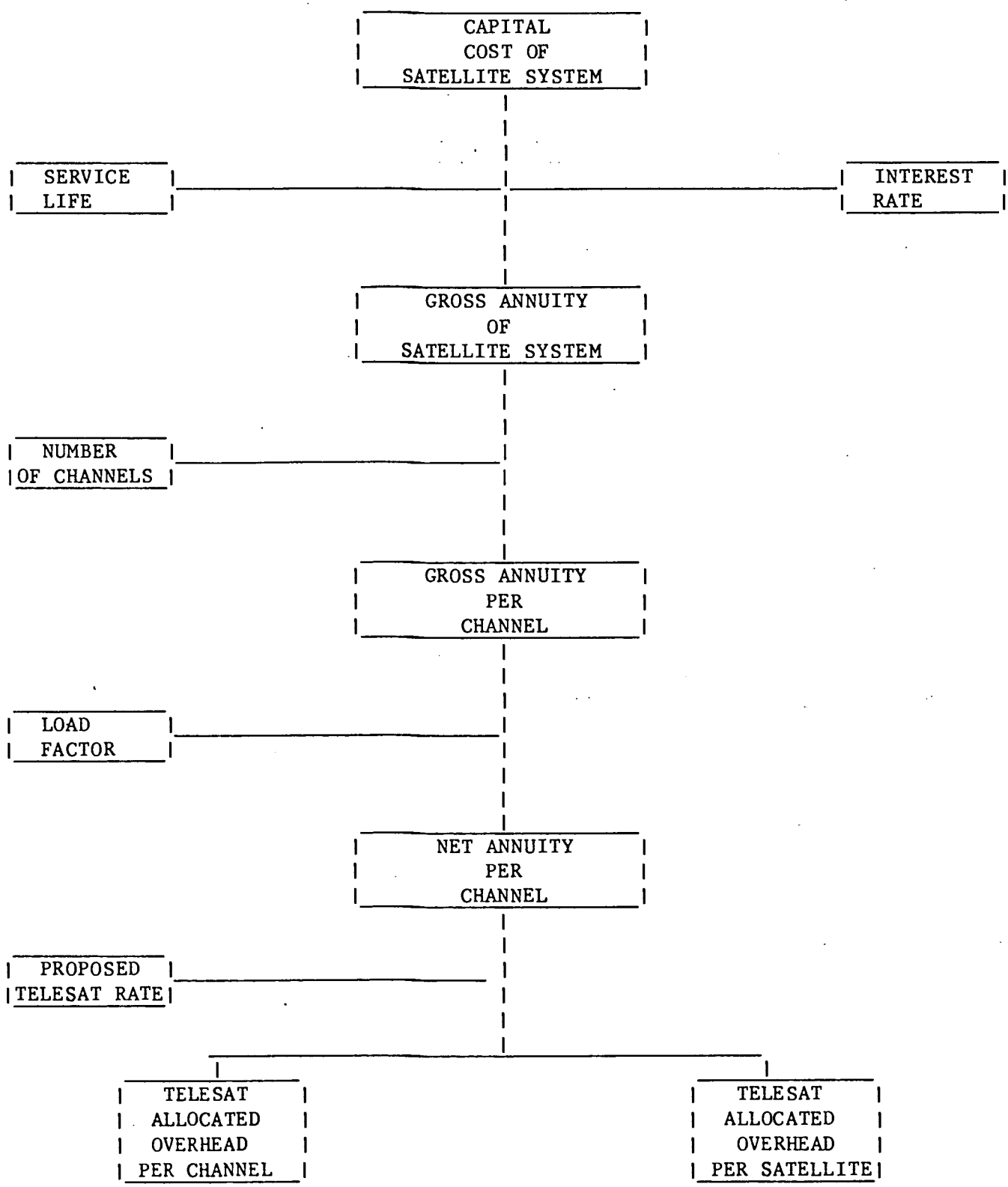
- to examine what effect they would have in absolute terms on the viability of programming services

- to analyse in relative terms the cost effectiveness of a DBS over an interim DBS such as Anik "C".

The Space Planning Branch provided us with the capital costs, expressed in constant 1978 $, of all the alternatives. Using Anik "C" data, we were able to derive from these capital costs and from presently known space segment rates, a Telesat allocated overhead which would include interest charges, maintenance and operation costs as well as profit; this Telesat allocated overhead was then used to derive space segment costs for a DBS in conjunction with the capital costs provided by the Space Planning Branch. This approach is illustrated in the folllowing figure.

FIGURE 4-1

SPACE SEGMENT RATES: METHODOLOGY



4. TECHNO ECONOMIC CONSIDERATIONS (cont'd)

4.1 Introduction (cont'd)

ANIK "C" DATA

Assumptions:

- 1 operational satellite, 1 spare
- Channel capacity : 32 TV signals (2 TV per RF channel)
- Cost per satellite : $22 million
- Cost per launch : $12 million
- Service life : 8 years
- Interest rate : 12%
- Load factor : 75% of operational satellite
- Proposed Telesat rate : $825,000/year

Results:

- Capital cost of satellite system : $ 68 million
- Gross annuity of satellite system : $ 13,689,000
- Gross annuity per channel : $ 427,800
- Net annuity per channel : $ 570,400
- Telesat allocated overhead per channel : $ 255,000

4. TECHNO ECONOMIC CONSIDERATIONS (cont'd)

4.2 Probable space segment costs on a DBS

The results associated with these assumptions are summarized in the following table and are presented in detail in tables 4-1 to 4-5.

Table 4-1

PROBABLE SPACE SEGMENT RATES

ON VARIOUS DBS SYSTEMS

Number of beams	Number of channels per beam	Probable annual space segment rate per channel
6	6	$ 1,450,000
6	12	$ 1,200,000
4	6	$ 1,950,000
4	12	$ 1,550,000

4. TECHNO ECONOMIC CONSIDERATIONS (cont'd)

4.2 Probable space segment costs on a DBS

Table 4-2

DBS (6 beams, 36 channels)

Assumptions:

- Number of satellites	:	2 operational, 1 spare
- Channel capacity	:	36
- Cost per system (1)	:	$160 million
- Service life	:	8 years
- Interest rate	:	12%
- Load factor	:	75% of operational satellites
- Telesat allocated overhead per channel	:	$255,000

Results:

- Capital cost	:	$ 160 million
- Gross annuity of satellite system	:	$ 32,208,000
- Gross annuity per channel	:	$ 895,000
- Net annuity per channel	:	$ 1,193,000
- Probable space segment rate	:	$ 1,448,000

(1) Including launch

4. TECHNO ECONOMIC CONSIDERATIONS (cont'd)

4.2 Probable space segment costs on a DBS (cont'd)

Table 4-3

DBS (6 beams, 72 channels)

Assumptions:

- Number of satellites : 4 operational, 1 spare
- Channel capacity : 72
- Cost per system (1) : $250 million
- Service life : 8 years
- Interest rate : 12%
- Load factor : 75% of operational satellites
- Telesat allocated overhead per channel : $255,000

Results:

- Capital cost : $ 250 million
- Gross annuity of satellite system : $ 50,326,000
- Gross annuity per channel : $ 699,000
- Net annuity per channel : $ 932,000
- Probable space segment rate : $ 1,187,000

(1) Including launch

4. TECHNO ECONOMIC CONSIDERATIONS (cont'd)

4.2 Probable space segment costs on a DBS (cont'd)

Table 4-4

DBS (4 beams, 24 channels)

Assumptions:

- Number of satellites	: 2 operational, 1 spare
- Channel capacity	: 24
- Cost per system	: $150 million
- Service life	: 8 years
- Interest rate	: 12%
- Load factor	: 75% of operational satellites
- Telesat allocated overhead per channel	: $255,000

Results:

- Capital cost	: $ 150 million
- Gross annuity of satellite system	: $ 30,195,000
- Gross annuity per channel	: $ 1,258,000
- Net annuity per channel	: $ 1,678,000
- Probable space segment rate	: $ 1,933,000

4. TECHNO ECONOMIC CONSIDERATIONS (cont'd)

4.2 Probable space segment costs on a DBS (cont'd)

Table 4-5

DBS (4 beams, 48 channels)

Assumptions:

- Number of satellites : 4 operational, 1 spare
- Channel capacity : 48
- Cost per system (1) : $230 million
- Service life : 8 years
- Interest rate : 12%
- Load factor : 75% of operational satellites
- Telesat allocated overhead per channel : $255,000

Results:

- Capital cost : $ 230 million
- Gross annuity of satellite system : $ 46,300,000
- Gross annuity per channel : $ 965,000
- Net annuity per channel : $ 1,286,000
- Probable space segment rate : $ 1,541,000

(1) Including launch

4. TECHNO ECONOMIC CONSIDERATIONS (cont'd)

4.3 Effects on distribution costs

The effects on distribution costs will depend on the desired coverage for a particular TV signal; assuming an annual uplink charge of $125,000 per beam per signal, a list of all the possibilities is presented in the following table.

Table 4-6

DISTRIBUTION COSTS
($ 000)

Desired coverage	Anik "C"	DBS 6 beams 36 channels	DBS 6 beams 72 channels	DBS 4 beams 24 channels	DBS 4 beams 48 channels
Atlantic	$ 950	$ 1,575	$ 1,325	$ 2,075	$ 1,675
Quebec	$ 950	$ 1,575	$ 1,325	$ 2,075	$ 1,675
Atlantic/Quebec	$ 950	$ 3,150	$ 2,650	$ 2,075	$ 1,675
Ontario	$ 950	$ 1,575	$ 1,325	$ 2,075	$ 1,675
Manitoba/Saskatchewan	$ 950	$ 1,575	$ 1,325	$ 2,075	$ 1,675
Alberta	$ 950	$ 1,575	$ 1,325	$ 2,075	$ 1,675
British Columbia	$ 950	$ 1,575	$ 1,325	$ 2,075	$ 1,675
Alberta/B.C.	$ 950	$ 3,150	$ 2,650	$ 2,075	$ 1,675
Half Canada (Eastern)	$ 1,900	$ 4,725	$ 3,975	$ 4,150	$ 3,350
Half Canada (Western)	$ 1,900	$ 4,725	$ 3,975	$ 4,150	$ 3,350
All Canada	$ 3,800	$ 9,450	$ 7,950	$ 8,300	$ 6,700

Note: The use of 1/2 Half Canada beams, which is possible with Anik "C", was not considered.

4. TECHNO ECONOMIC CONSIDERATIONS (cont'd)

4.4 Approach

The approach we have taken in this report can perhaps be illustrated by comparing Anik "C" with a four beam DBS (12 channels per beam).

The difference in distribution costs on a 1/4 Canada basis are as follows:

- Anik "C" : $ 950,000
- 4 beam DBS : $ 1,675,000
- Difference
  - Annual : $ 725,000
  - NPV (1) : $ 5,887,000

Since Anik "C" would require the use of a 1.8 m antenna that would be more cumbersome and more costly, this could probably affect the TVRO penetration with individual users, which in term would affect the revenues of each and every TV service considered in this report.

What we thus have done is to use sensitivity analysis to reduce the forecasted penetration rate of TVROs with individual users, to evaluate the reduction of revenues that would ensue from it. An illustration of this approach with the French language superstation is presented in the following table:

Table 4-7

SENSITIVITY ANALYSIS: FRENCH LANGUAGE SUPERSTATION

% reduction in TVRO penetration rate	Net present value of revenues ($ million)	Difference over the true DBS Case	Net DBS effect
0%	$ 348.0 (1)	-	- $ 5.9
5%	$ 346.0	$ 2.0	- $ 3.9
10%	$ 344.0	$ 4.0	- $ 1.9
15%	$ 342.0	$ 6.0	+ $ 0.1
20%	$ 340.0	$ 8.0	+ $ 2.1
25%	$ 338.0	$ 10.0	+ $ 4.1
30%	$ 336.0	$ 12.0	+ $ 6.1

(1) The Net Present value has been calculated over 18 years at 12%.

4. TECHNO ECONOMIC CONSIDERATIONS (cont'd)

4.4 Approach (cont'd)

These results could be interpreted as follows:

- A true DBS would require a penetration rate of TVRO's of approximately 15%-17% greater than with Anik "C" to produce the same net present value of revenues.

On the other hand, if one wanted to distribute an English speaking Pay TV service throughout Canada, the distribution costs would be as follows:

- Anik "C"	: $ 3,800,000
- 4 beam DBS	: $ 6,700,000
- Difference:	
Annual:	: $ 2,900,000
NPV	: $23,547,000

Using again sensitivity analysis we have been able to formulate the following conclusion:

- A true DBS is justified only if the penetration rate of TVROs is at least 55% greater than would otherwise be the case with Anik "C" even if one assumes no increase in programming costs.

5

5. PROGRAMMING CONCEPTS AND CRITERIA

5. PROGRAMMING CONCEPTS AND CRITERIA

5.1 Review of the U.S. situation

Programming services now available from U.S. satellites can be classified in 6 broad categories which are:

- pay television
- superstations
- cable network television
- religious programming
- other television programming
- other services

All of these services are presently available from Satcom I or from Comstar D-2 which RCA had to lease temporarily from AT&T after the Satcom III mishap; the one exception is Spanish International Network which is distributed via Westar; this satellite system also carries other television programs but satellite distribution in that case is essentially used for networking purposes (programs and advertising material as well) by the broadcasting industry.

5.1.1 Pay Television Services

These, as their name indicates, consist of services where the entire cost (programming and distribution) is charged directly to the consumer; there are presently seven pay TV services available on U.S. satellites:

- Home Box Office
- Cinemax (HBO-2)
- Showtime
- The Movie Channel
- Home Theatre Network
- Bravo-Escapade
- Galavision (Spanish speaking)

5.1.2 Superstations

Superstations in the U.S. context (1) are independant off air television stations which reach distant markets via satellite and cable; there are three such services presently available from U.S. satellites:

- WTBS - Atlanta
- WGN - Chicago
- WOR - New York

(1) The word superstation will have a different meaning when used later on in a Canadian context.

5. PROGRAMMING CONCEPTS AND CRITERIA (cont'd)

5.1 Review of the U.S. situation (cont'd)

5.1.3 Cable Network Television

These services are characterized by the fact that they are financed by:

- subscriber revenues
- advertising on the satellite feed
- local/regional advertising on cable

There are presently 6 such services on U.S. satellites:

Name of Service	Content
- Entertainment and Sports Programming Network (ESPN)	Sports
- USA Network	Sports
- Cable News Network	Information
- Satellite Program Network (SPN)	Counter programming
- Spanish International Network (SIN) (1)	Ethnic programming
- Black Entertainment TV (BET)	Ethnic programming

5.1.4 Religious Programming

There are four such services which are:

- Christian Broadcasting Network (CBN)
- People That Love or Praise The Lord (PTL)
- Trinity Broadcasting Network (TBN)
- National Christian Network (NCN)

(1) Available from Westar but was also added to the list because it has cable as well as conventional broadcast affiliates.

5. PROGRAMMING CONCEPTS AND CRITERIA (cont'd)

5.1 Review of the U.S. situation (cont'd)

5.1.5 Other Television Programming

These services include:

- Children programming (1): Nickelodeon
  Calliope
- Other: U.S. Congress
  Modern Talking Pictures
  Appalachian Community Network

5.1.6 Other Services

These are essentially non television services and include:

- radio services
- cabletext
- slow scan
- full bandwith teletext

5.1.7 Planned Services and Conclusions on the U.S. Situation

Programming services are presently under the severe constraint of limited satellite capacity in the United States. This situation is expected to change dramatically during the 1982-1985 period with the launch of some 20 new satellites.

This obviously means that there will be a vast array of new services introduced during that period. There will obviously be more pay TV, but from the information we are able to gather from trade magazines and specialized publications, there will be also many services financed by a mixture of subscriber and advertising revenues; these will include programming services dedicated to:

- arts and culture
- women
- senior citizens
- health
- education
- video magazines
  - science
  - hobbies and 'How to' type of programming

And these services, presently in the development stage, are all backed by substantial financial commitments from very large corporations.

(1) These could have been classified as pay TV in a strict economic sense since they contain no advertising material and are financed directly by the subscriber.

5. PROGRAMMING CONCEPTS AND CRITERIA (cont'd)

5.1 Review of the U.S. Situation (cont'd)

5.1.7 Planned Services and Conclusions on the U.S. Situation (cont'd)

There is thus no doubt in our mind that true viewing alternatives will be available on a North American basis but advertising and sponsorship will play a major role in the financing of these diverse and specialized programming services.

5.2 Established Canadian Services

5.2.1 The Main Networks

Our mandate requested us specifically to examine the possibility that established services might become candidates for DBS carriage.

We are in a position to formulate an early rejection of such a possibility for the simple reason that these services already have an extensive network of off air affiliates that runs coast to coast in the case of CBC and CTV; the French speaking TVA network is faced with a similar problem in the sense that at least 95% of the French speaking population is presently reached by its affiliates.

For these services and from the strict economic point of view, a DBS would not provide any tangible benefits but most of all it would confront them with the copyright problem; any distribution of the programming material outside the area for which it was specifically intended for, violates copyright agreements. Thanks to technological developments, the problem is not unsurmountable; sharper beams and especially scrambling could provide a solution from the technological point of view but they have the disadvantage of greatly reducing the market and thus the feasibility of such services; in addition, taking into account probable space segment costs, the problem is obviously worse with 6 beams.

5.2.2 Independent Stations

On the other hand there are some large independent stations that presently purchase national rights for programs; after using those rights in their own market, they then resell the rights for the same programming material to other television stations in other markets. Again from the strict economic and technological point of view, such a station could decide to become a 'superstation' i.e. it could use satellite distribution to reach distant markets, thus generating additional advertising revenues, but at the expense of loss of resale of programming rights in those distant markets.

5. PROGRAMMING CONCEPTS AND CRITERIA (cont'd)

5.2 Established Canadian Services (cont'd)

5.2.2 Independent Stations (cont'd)

Such a possibility has been analysed in the present report but in a 'clean' context, that is one that does not involve cheating on programming rights.

5.2.3 Public Television

There are presently two public television organizations in Canada which are TV Ontario and Radio-Québec; each of these will be discussed separately.

The case for TV Ontario is similar to that of conventional broadcasters, that is they are faced with the copyright problem; as far as 'outside' programming is concerned, rights are sold by the program producers for the Ontario market and not for the entire Canadian market; for TVO productions the problem is similar, that is Ontario citizens would not like to see their taxes subsidize programming aimed at citizens of other provinces.

Because of this, and because of the fact that TVO is already on the satellite anyhow, we will limit ourselves to the feasibility of English speaking public television in provinces and/or regions where such services are not presently available; these are:

Atlantic Provinces
Manitoba/Saskatchewan
Alberta
British Columbia

The case of Radio-Québec on the other hand is different in that it has been given the mandate to develop programming at the local/regional level; this political choice requires the use of microwave facilities which cannot be displaced by any satellite system. The choice thus seems to have been made to use terrestrial facilities, that is microwave and off air transmitters, to distribute Radio-Québec; a 10 year master plan has been developed which in the end would see 95% of the Quebec population served by such a system.

5. PROGRAMMING CONCEPTS AND CRITERIA (cont'd)

5.3 Programming services examined in the present report

Programming services examined in the present report come under two broad categories which are:

- services financed directly by the subscriber

- services partly or totally financed by advertising

Because of the difficulties associated with existing services, this report will deal with 'new' services which are:

- pay television
- public television
- children programming
- an All Canada Superstation
- an Atlantic Superstation
- specialized programming
- a French language Superstation
- French language pay TV

5.4 Criteria

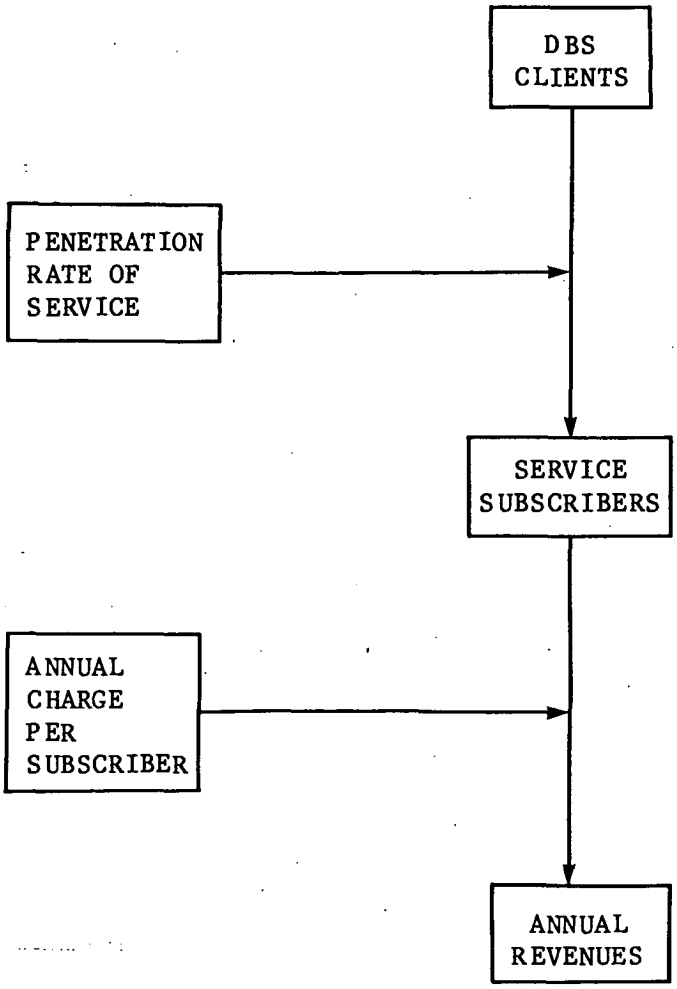
The feasibility of the various services will be analysed in this report as viewed by the providers of the services which would have to absorb not only programming costs but distribution costs as well (space segment plus uplink costs).

The object of the analysis then becomes to evaluate, to the best of our judgement, whether the revenues generated by the various services are sufficient to meet these costs and to what extent a DBS would be cost effective.

The approach we have used to produce a forecast of revenues for the two broad categories of services is illustrated in the two following figures.

Figure 5-1

SUBSCRIBER SUPPORTED SERVICES: METHODOLOGY



9

POST-FAX EQUIPMENT
MONTREAL H1J 1S3
CR 213-31

6. ENGLISH LANGUAGE PAY TV

6. ENGLISH LANGUAGE PAY TV

6.1 General

A total of three Pay TV concepts were examined in this report; these were modelled after the following U.S. services:

A) Home Box Office

Programming:

- Films for which it has non exclusive rights
- Some films for which it has exclusive rights
- Large number of variety specials and other programming for which it has exclusive rights.

Marketing strategy:

- H.B.O. is the market leader; the core of its Pay TV package is still feature films but the availability of original productions, generally not shown on conventional television is what 'cements' the loyalty of subscribers; this not only attracts a large number of subscribers but reduces 'churn' (the number of subscribers who disconnect from the service).

B) Showtime

Programming:

- Films for which it has non exclusive rights
- Smaller number of variety specials and other programming for which it has exclusive rights.

Marketing strategy:

- Showtime is the 'Number 2 and trying harder'; because of its smaller number of subscribers it has difficulty in matching HBO's expenditures on original programming. This causes some identification problem with subscribers and an increase in churn as well.

6. ENGLISH LANGUAGE PAY TV

6.1 General (cont'd)

C) The Movie Channel

Programming:
- Films for which it has non exclusive rights
- No other categories of programming.

Marketing strategy:
- The Movie Channel is the 'follower'; because of similitude in programming it can develop a serious identification problem which is compounded by the appearance of Cinemax, HBO's second service, which has similar programming characteristics.

These considerations are briefly summarized in the following figure.

Figure 6-1

PAY TV: METHODOLOGY

1. PROGRAMMING CONSIDERATIONS

2. APPROACH

SCENARIO	MARKET LEADER	NO. 2 AND TRYING HARDER	FOLLOWER
TYPICAL EXAMPLE	HBO	SHOWTIME	THE MOVIE CHANNEL
PROGRAMS	FILMS LARGE NUMBER OF SEPCIALS	FILMS SMALLER NUMBER OF SPECIALS	FILMS

6. ENGLISH LANGUAGE PAY TV (cont'd)

6.2 Assumptions

The following table illustrates the growth of satellite delivered pay TV in the United States since Home Box Office started the service in November 1975. Total pay TV penetration is illustrated in figure 6-2.

Table 6-1

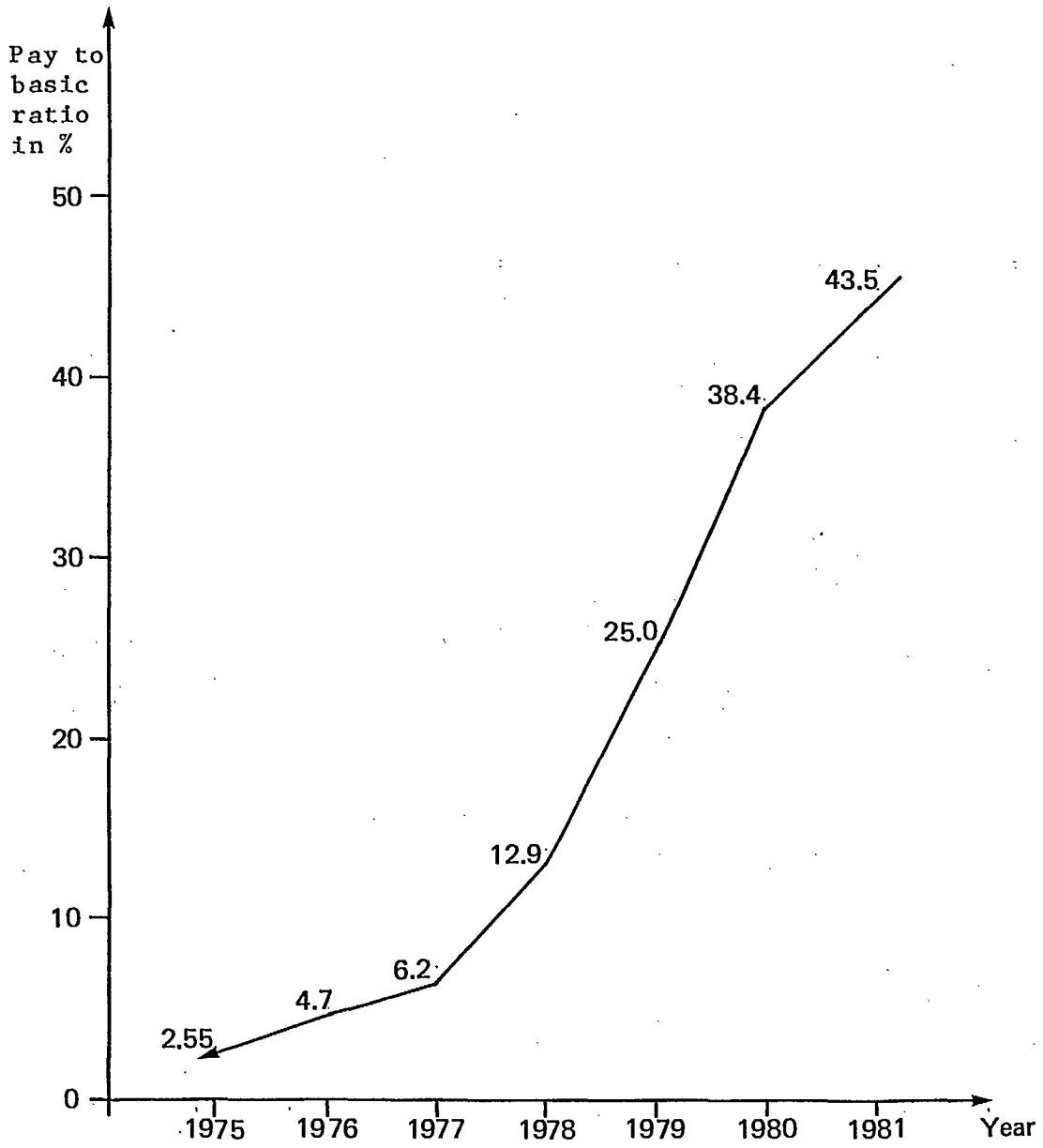
SATELLITE DELIVERED PAY TV IN THE U.S.

DATE / SERVICE	1975 (1)	1976 (1)	1977 (1)	1978 (1)	1979 (1)	1980 (1)	1981 (2)
Home Box Office							
Subscribers(000)	250	600	750	1,500	2,750	5,000	6,000
Pay to basic ratio	2.55%	4.7%	5.6%	11.2%	18.5%	29.1%	31.2%
Showtime							
Subscribers(000)	-	-	80	230	825	1,070	1,600
Pay to basic ratio	-	-	0.6%	1.7%	5.6%	6.2%	8.3%
The Movie Channel							
Subscribers(000)					125	429	600
Pay to basic ratio	-	-	-	-	0.8%	2.5%	3.0%
Others							
Subscribers(000)	-	-	-	4	20	115	190
Pay to basic ratio	-	-	-	(3)	0.1%	0.7%	1.0%
Total Pay TV Subscribers							
Subscribers(000)	250	600	830	1,734	3,720	6,614	8,390
Pay to basic ratio	2.55%	4.7%	6.2%	12.9%	25%	38.4%	43.5%
Total Basic Cable Subscribers(000)	9,800	12,600	13,280	13,428	14,830	17,200	19,265(4)

Source: Cable File 81, Cablevision (2/81, 2/80, 9/79, 9/78)
(1) Figures are for November
(2) Figure is for February
(3) Less than one tenth of 1%
(4) Estimated by Tamec Inc.

Figure 6-2

PAY TV: PENETRATION IN THE US



6. ENGLISH LANGUAGE PAY TV (cont'd)

6.2 Assumptions (cont'd)

The preceeding information enabled us to develop three penetration scenarios that would be associated with three distinct, coast to coast, English speaking services; these assumptions are presented in Table 6-2.

Table 6-2

PAY TO BASIC RATIOS (1)

CATEGORY / YEAR	1983	1984	1985	1986	1987 & after
High penetration service	2.55%	4.7%	7.5%	17.8%	20%
Medium penetration service	0.75%	2.2%	5.6%	9.4%	10%
Low penetration service	0.38%	1.1%	2.8%	4.7%	5%

In addition these pay to basic ratios were cut in half for the Province of Quebec since we are assuming an English Speaking service and it was also assumed that the wholesale price of the service would be $4.50 a month; the difference between the retail price and the wholesale price would account for the cable operator revenue and administrative and overhead costs and profits associated with distribution of the service to individual TVRO households.

All the variables were subjected to risk analysis and the following table presents a summary of all the assumptions used.

(1) These ratios were applied to DBS clients, i.e. TVRO households plus cable subscribers equipped with a converter.

6. ENGLISH LANGUAGE PAY TV (cont'd)

6.2 Assumptions (cont'd)

Table 6-3

ENGLISH LANGUAGE PAY TV: RISK ANALYSIS ASSUMPTIONS

Variable	Mode Value	Downward fluctuation from the mode	Upward fluctuation from the mode	Downward probability
High Penetration Service	Maximum of 20%	0.9	1.2	40%
Medium Penetration Service	Maximum of 10%	0.9	1.2	40%
Low Penetration Service	Maximum of 5%	0.9	1.2	40%
Wholesale price	$4.50	0.9	1.1	50%

These assumptions require a number of comments:

- Since the maximum penetration rate that would be achieved jointly by the three services is 35%, this would seem somewhat conservative in view of the U.S. experience; it must be remembered though that Pay TV in the U.S. has proved more attractive with 'new' cable subscribers than with 'older' cable subscribers; since Canada is already heavily cabled, consumer resistance to Pay TV might be more important, initially at least. In addition Pay TV in Canada is likely to be subjected to content regulations that will reduce the attractiveness of the service.

- The penetration rates are applied to TVRO households and to cable subscribers equipped with a converter which again makes our assumptions conservative in the pre 1990 period at least, when the converter penetration rate is below 100%.

- Taking into account the previous considerations we have decided, again on a best judgement basis, to define risk analysis assumptions that are slightly more optimistic that is:

  - the probability that the actual value might be lower than the probable value is only 40%

  - the downward fluctuation from the mode of 0.9 means we could have been overly optimistic by as little as 10% while the upward fluctuation from the mode of 1.2 means we could have been overly pessimistic by as much as 20%.

6. ENGLISH LANGUAGE PAY TV (cont'd)

6.3 Results

The following table presents a summary of the results for the various services.

Table 6-4

PAY TV SUBSCRIBERS AND REVENUES PROJECTIONS

	1983	1985	1990	1995	2000
Subscribers (000)					
High penetration service	58	243	1,271	1,528	1,735
Medium penetration service	29	121	636	764	868
Low Penetration service	15	61	318	382	434
Revenues ($ million)					
High penetration service	$3.1	$13.1	$68.6	$82.5	$93.7
Medium penetration service	$1.5	$ 6.6	$34.3	$41.2	$46.9
Low penetration service	$0.8	$ 3.3	$17.2	$20.6	$23.4

Results of risk analysis are only presented for the high penetration service scenario; similar conclusions would apply for the other two services but revenue figures would have to be divided by 2 for the medium penetration scenario, and by 4 for the low penetration scenario. A summary of these results is presented in the following table. Appendices D and E present the detailed computer runs for the high penetration service scenario.

Table 6-5

ANNUAL REVENUES OF AN ENGLISH SPEAKING PAY TV SERVICE
($ million)

Year	Minimum Value	Maximum Value	Mean Value	Mode Value	Simulation Result
1983	$ 2.8	$ 3.6	$ 3.2	$ 3.1	$ 3.1
1985	$11.5	$ 15.7	$13.3	$13.0	$13.1
1990	$58.8	$ 84.5	$70.4	$70.3	$68.6
1995	$72.4	$ 98.7	$84.8	$84.2	$82.5
2000	$82.2	$113.0	$96.1	$89.9	$93.7

6.4 Conclusions on English Language Pay TV

6.4.1 Overall feasibility

The feasibility of Pay TV depends on a great number of factors which are too complex to treat in detail in the present report; nevertheless one of the most important of these factors will certainly be the ability by each service to generate sufficient revenues to invest in original productions of various kinds. The following table attempts to determine to what extent each of the services examined in the present chapter will be able to do so; the approach has been simply to determine the amount that could be spent on such original productions, and that would bring the net present value of benefits to 0.

Table 6-6

OVERALL FEASIBILITY OF ENGLISH LANGUAGE PAY TV
($ million)

	High Penetration Service	Medium Penetration Service	Low Penetration Service
Revenues	$375.5	$187.8	$93.9
Costs			
Variable programming (1)	$150.2	$ 75.1	$37.6
Start up	$ 3.0	$ 3.0	$ 2.0
Administration and overhead	$ 24.3 (2)	$ 24.3 (2)	$12.2 (3)
Satellite distribution (4)	$ 54.4	$ 54.4	$54.4
Sub Total	$231.9	$156.8	$106.2
Balance available for original production	$143.6	$ 30.9	neg.
NPV of benefits	$ 0	$ 0	neg.
Original Production on an Annual Basis	$ 17.7	$ 3.8	neg.

Note: All figures are Net Present Values except when otherwise indicated.
(1) Estimated at 40% of revenues
(2) $3 million annually
(3) $1.5 million annually
(4) $6.7 million a year (i.e. a 4 beam, 48 channel DBS)

6. ENGLISH LANGUAGE PAY TV (cont'd)

6.4 Conclusions on English Language Pay TV

6.4.1 Overall feasibility (cont'd)

Under these assumptions the results would seem to indicate that a minimum pay to basic ratio of 10% has to be reached over a five year period (the medium penetration service) if a pay TV service is to break even. Other things being equal the feasibility could be improved (i.e. the break even pay to basic ratio could be lowered) if one took into account the following considerations:

- If one assumed Anik "C" rates (1) for a 6 year period (1983-1988) and DBS rates from 1989 on, the effect on the annual amount available for original production would be as follows:

High penetration scenario	:	$19.3 million
Medium penetration scenario	:	$ 5.5 million
Low penetration scenario	:	$ 0.1 million

- If one further assumed Anik "C" rates for the same 6 year period but Half Canada beams instead of 1/4 Canada beams the annual amounts available for original production would be as follows:

High penetration scenario	:	$20.4 million
Medium penetration scenario	:	$ 6.5 million
Low penetration scenario	:	$ 1.2 million

The overall results are thus slightly improved for the low penetration service but the improvement, we must admit, is not substantial; other things being equal again, this third service would probably be better off to wait until converter penetration has built up to a more significant level, or to start the service on a regional basis in Canada's most populated regions.

6.4.2 Anik "C" versus a 4 beam, 48 channels DBS

Using sensitivity analysis to determine the impact of a reduction in the TVRO penetration rate, we have been able to formulate the following conclusion regarding the high penetration service.

(1) Anik "C", 4 beam configuration
(2) This would mean for example a TVRO penetration rate of 39% instead of 87% in the year 2000.

6. ENGLISH LANGUAGE PAY TV (cont'd)

6.4 Conclusions on English Language Pay TV

6.4.2 Anik "C" versus a 4 beam, 48 channels DBS (cont'd)

A true DBS would require a penetration rate of TVRO's approximately double the penetration rate that would be associated with Anik "C" to produce the same net present value of revenues; putting it the other way around, even if Anik "C" generated a 55% drop (1) in the TVRO penetration rate, the net present value of revenues, other things being equal, would be identical to the one associated with a DBS.

For the medium and low penetration services, a true DBS would not be cost effective, i.e. it would not improve the net present value of revenues even if one assumed that Anik "C" would rely strictly on cable subscribers (0% TVRO penetration rate).

Table 6-7

IMPACT OF REDUCTIONS IN THE TVRO PENETRATION RATE ON HIGH PENETRATION SERVICE REVENUES ($ million)

% reduction in TVRO penetration rate	NPV of revenues	Difference over true DBS case	Net DBS effect
0%	$375.5	-	- $23.5
10%	$371.3	$ 4.2	- $19.3
20%	$367.0	$ 8.5	- $15.0
30%	$362.8	$12.7	- $10.8
40%	$358.6	$17.0	- $ 5.5
50%	$354.3	$21.2	- $ 2.3
55%	$352.2	$23.3	- $ 0.2
60%	$350.0	$25.5	+ $ 2.0

6.4.3 Six beams versus four beams

We do not believe that English language pay television is sufficiently sensitive to time zone or regional considerations to justify a six beam DBS. If such a system was implemented, the NPV of distribution costs would increase by $10 million, thus putting in danger the Number Two Service.

(1) This would mean for example a TVRO penetration rate of 39% instead of 87% in the year 2000.

POST-FAX EQUIPMENT
MONTREAL H1J 1S3
CR 213-31

7

7. PUBLIC TELEVISION

7. PUBLIC TELEVISION

7.1 Introduction

There are now 2 public television organizations in Canada which are:

- TV Ontario
- Radio-Québec

As we explained in Chapter 5, TV Ontario is already on the satellite while Radio-Québec has been given a clear mandate to develop local and regional programming functions.

Our approach in the present Chapter has thus been to evaluate the revenue potential of similar services in other regions of Canada, that is:

- Atlantic Provinces
- Manitoba/Saskatchewan
- Alberta/British Columbia

7.2 Assumptions

The services have been treated as subscriber financed services with the following assumptions:

- 100% penetration rate
- a monthly cost varying between $1.00 and $1.25 per household; this amount would be financed by the respective Provincial Governments.

7.3 Results

The results of this approach are presented in the following table and show that public television in other regions of Canada would probably contribute in a significant manner to public TV program production. Appendices F and G present detailed computer runs.

Table 7-1

OVERALL BUDGET OF NEW PUBLIC TELEVISION SERVICES IN CANADA
($ million)

Year	Minimum Value	Maximum Value	Mean Value	Mode Value	Simulation Result
1983	$22.2	$28.0	$25.0	$25.4	$24.8
1985	$24.7	$31.0	$27.2	$26.9	$27.6
1990	$32.6	$40.8	$36.4	$35.5	$36.0
1995	$38.9	$49.0	$43.4	$43.4	$43.0
2000	$43.0	$54.0	$48.5	$49.0	$48.1

7. PUBLIC TELEVISION

7.4 Overall feasibility

It is obviously difficult to talk about feasibility in the case of such services, so we have tried to establish the relative importance of space segment costs vis-à-vis overall budgets; this calculation has been made for a joint Alberta/B.C. service as well as for separate services.

Table 7-2

SPACE SEGMENT COSTS ASSUMING 3 NEW PUBLIC TV SERVICES
($ million)

	Anik "C"	6 beam DBS 36 channels	6 beam DBS 72 channels	4 beam DBS 24 channels	4 beam DBS 48 channels
NPV of Space segment costs	$ 23.1	$ 51.2	$ 43.0	$ 50.5	$ 40.8
NPV of budget	$ 270.1	$ 270.1	$ 270.1	$ 270.1	$ 270.1
Space segment costs in % of revenues	8.5%	18.9%	15.9%	18.7%	15.1%

Table 7-3

SPACE SEGMENT COSTS ASSUMING 4 NEW PUBLIC TV SERVICES
($ million)

	Anik "C"	6 beam DBS 36 channels	6 beam DBS 72 channels	4 beam DBS 24 channels	4 beam DBS 48 channels
NPV of Space segment costs	$ 30.8	$ 51.2	$ 43.0	$ 67.4	$ 54.4
NPV of budget	$ 270.1	$ 270.1	$ 270.1	$ 270.1	$ 270.1
Space segment costs in % of revenues	11.4%	18.9%	15.9%	24.9%	20.1%

7. PUBLIC TELEVISION (cont'd)

7.4 Overall feasibility (cont'd)

These figures, as well as the cost per household assumptions used, would compare favorably with the present budget characteristics of TV Ontario (1):

Operating revenues in 1980	:	$ 24 million
Revenues per month per Ontario household (all households)	:	$ 0.69
Revenues per month per Ontario household (households reached by the service which TV Ontario estimates at 85%)	:	$ 0.81
Broadcast distribution (includes not only satellite costs but UHF broadcast and microwave costs as well)	:	$ 2.7 million
Percentage of operating revenues spent on broadcast distribution	:	11.2%

(1) Source: TV Ontario, The Annual Report of the Ontario Educational Communications Authority, 1979/1980.

POST-FAX EQUIPMENT
MONTREAL H1J 1S3
CR 213-31

8

8. ENGLISH LANGUAGE CHILDREN PROGRAMMING

8. ENGLISH LANGUAGE CHILDREN PROGRAMMING

8.1 General

The concept examined is that of a single monthly package distributed in all of Canada. Because the package is an English language service, we have assumed a smaller penetration in the Province of Quebec.

8.2 Programming

The programming service is intended for the four to fourteen age group, and would consist of features films, drama, adventure and comedy stories; the service would be educational and free of advertising material.

8.3 Assumptions

We have assumed that penetration of the service within the target 4-14 age group would grow to 50% within a 5 year period; taking into account the relative importance of this age group in the overall Canadian population (14% - 15% of total population) this would represent a 'net' pay to basic ratio that would reach 7.4% in 1988 and after in English speaking Canada; that ratio was cut in half for the Province of Quebec. The service is treated from the conceptual point of view as a pay television service where the service provider would receive $1 per month per subscriber. The assumptions used are presented in tables 8-1 and 8-2 respectively.

Table 8-1

ENGLISH LANGUAGE CHILDREN PROGRAMMING
PAY TO BASIC RATIOS

		Net Ratio in %	
Year	Target group penetration rate	English Canada	Quebec
1983	4%	0.6%	0.30%
1984	17%	2.5%	1.25%
1985	25%	3.7%	1.85%
1986	33%	4.9%	2.45%
1987	42%	6.2%	3.10%
1988 and after	50%	7.4%	3.70%

8. ENGLISH LANGUAGE CHILDREN PROGRAMMING (cont'd)

Table 8-2

RISK ANALYSIS ASSUMPTIONS
ENGLISH LANGUAGE CHILDREN PROGRAMMING

Variable	Mode Value	Downward fluctuation	Upward fluctuation	Downward probability
Pay to Basic Ratio				
English Canada	Max: 7.4%	.9	1.2	40%
Quebec	Max: 3.7%	.9	1.2	40%
Wholesale Price	$1.00	.9	1.1	50%

8.4 Results

Annual revenues for the service would grow from less than $200,000 in 1983 to approximately $5 million in 1990 and close to $8 million by year 2000. Table 8-2 summarized these results. Detailed computer runs are presented in Appendices H and I.

Table 8-3

ANNUAL REVENUES OF
ENGLISH LANGUAGE CHILDREN PROGRAMMING
($ 000)

Year	Minimum Value	Maximum Value	Mean Value	Mode Value	Simulation Result
1983	$ 148	$ 206	$ 168	$ 168	$ 163
1985	$ 1,270	$ 1,776	$ 1,483	$ 1,443	$ 1,440
1990	$ 4,884	$ 7,089	$ 5,831	$ 5,619	$ 5,644
1995	$ 6,155	$ 8,136	$ 7,020	$ 7,024	$ 6,786
2000	$ 6,743	$ 9,609	$ 8,011	$ 7,725	$ 7,705

8. ENGLISH LANGUAGE CHILDREN PROGRAMMING (cont'd)

8.5 Analysis

Even when using Anik "C" rates with 1/4 Canada coverage and the use of 4 beams, the service is not by itself feasible; the use of Half Canada beams substantially improves the feasibility of the service but there is still, in our opinion, a much too high proportion of revenues being spent on distribution.

Table 8-4

ENGLISH LANGUAGE CHILDREN PROGRAMMING
REVENUES AND DISTRIBUTION COSTS
($ million)

NPV	1/4 Canada (4 beams)	1/2 Canada (2 beams)
Revenues	$30.3	$30.3
Distribution costs with Anik "C"	$30.9	$15.4
Difference	$ 0.6	$14.9
% of revenues spent on distribution	More than 100%	51%

In addition to the use of Half Canada beams there are other possible ways to improve the feasibility of the service:

- The first way is to delay the start of the service for a few years until converter penetration with cable subscribers has reached a more significant level.

- The second way is to share the transponder with another service, a possibility which is examined later on in this report.

- There is also a possibility of a slight increase in the monthly revenue per subscriber from, say $1.00 to $1.25.

By using a combination of the preceeding means, it would thus be possible to reduce the importance of distribution costs to 15%-20% of overall revenues; this would enable the provider of such a service to allocate more funds to original program production.

Nevertheless, the results point out that for a specialized service such as children programming, the minimization of distribution costs is of utmost importance if such a service is to become feasible.

POST-FAX EQUIPMENT
MONTREAL H1J 1S3
CR 213-31

9

9. AN ALL CANADA SUPERSTATION

9. AN ALL CANADA SUPERSTATION

9.1 Introduction

The concept examined in this chapter is that of an English language superstation that would use a DBS as well as cable to reach audiences.

It would be a "clean' superstation, i.e. it would acquire national rights for programs that would be used to generate advertising revenues; the service would be free to anyone willing and equipped to receive it.

9.2 Assumptions

A number of assumptions were developed concerning the following variables:

- Converter penetration
  It was assumed the service would be available on the converter service, for which we have assumed a penetration rate of 30% in 1980 up to 100% in 1990.

- Viewing levels
  These would vary between 14% and 16% for an 18 hour programming day.

- Audience share
  The superstation would attract between 8% and 12% of the viewing audience.

- Cost per thousand
  The cost per thousand has been established at $2.75 to $3.00.

- Commercial policy and booking rates
  The commercial policy would be that of a normal broadcaster, that is 12 minutes of advertising material per hour. The booking rate or percentage of inventory sold was estimated as follows:

1983	: 40%
1984	: 50%
1985	: 60%
1986	: 70%
1987 and after	: 80%

These assumptions are briefly summarized in the following table.

9. AN ALL CANADA SUPERSTATION

9.2 Assumptions (cont'd)

Table 9-1

ASSUMPTIONS USED FOR AN ALL CANADA SUPERSTATION

Variable	Mode Value	Downward fluctuation	Upward fluctuation	Downward probability
Viewing level	15%	0.95	1.05	50%
Audience share	10%	0.80	1.20	50%
Cost per thousand	$2.85	0.95	1.05	50%
Commercial Minutes/Hour	12	-	-	-
Booking rate	Max. 80%	-	-	-

9.3 Results

The service would generate substantial revenues that would grow from $18 million in 1983 to more than $100 million after 1990. The results are briefly summarized in the following table. Detailed computer runs are presented in Appendices J and K.

Table 9-2

ANNUAL REVENUES OF AN ALL CANADA SUPERSTATION
($ million)

Year	Minimum Value	Maximum Value	Mean Value	Mode Value	Simulation Result
1983	$ 15.0	$ 22.1	$ 18.1	$ 18.3	$ 18.4
1985	$ 30.3	$ 46.9	$ 39.2	$ 39.5	$ 38.9
1990	$ 79.7	$116.3	$ 98.6	$103.5	$ 98.4
1995	$ 91.7	$138.1	$115.0	$117.4	$114.4
2000	$104.6	$148.1	$124.9	$119.5	$125.4

9. AN ALL CANADA SUPERSTATION (cont'd)

9.4 Conclusions

9.4.1 Overall feasibility

An all Canada superstation would definitely generate substantial advertising revenues; whether the project is feasible or not depends to a large extent on the impact such a superstation would have on program acquisition costs (U.S. programs especially); needless to say this would be a very serious issue from a policy point of view.

9.4.2 Sensitivity analysis

Through sensitivity analysis, we have been able to assess the cost effectiveness of a DBS; the results for a 4 beam, 48 channels DBS can be expressed as follows:

- A true DBS would require a penetration rate of TVRO's approximately 65% to 70% greater than the penetration rate that would be associated with Anik "C", in order to generate the same net present value of revenues, after allowing for the difference in distribution costs; put another way, if the TVRO penetration rate associated with Anik "C" was reduced by 40% (1), the net present value of revenues, other things being equal, would be identical to the one associated with a DBS.

Table 9-3

SENSITIVITY ANALYSIS: AN ALL CANADA SUPERSTATION
($ million)

% reduction in TVRO penetration rate	NPV of revenues	Difference over base case	Net DBS effect 6 beam (72 ch)	Net DBS effect 4 beam (48 ch)
Base Case	$ 576	-	- $33.7	- $23.5
10%	$ 570	$ 6	- $27.7	- $17.5
20%	$ 564	$ 12	- $21.7	- $11.5
30%	$ 558	$ 18	- $15.7	- $ 5.5
40%	$ 552	$ 24	- $ 9.7	+ $ 0.5
50%	$ 546	$ 30	- $ 3.7	+ $ 6.5
55%	$ 543	$ 33	- $ 0.7	+ $ 9.5
60%	$ 540	$ 36	+ $ 2.3	+ $12.5

(1)This would mean for example a TVRO penetration rate of 53% instead of 81% in the year 2000.

POST-FAX EQUIPMENT
MONTREAL H1J 1S3
CR 213-31

10

10. AN ATLANTIC SUPERSTATION

10. AN ATLANTIC SUPERSTATION

10.1 Introduction

The object of the present chapter is to analyse the viability of introducing a third commercial English Speaking service in the Atlantic Provinces.

The concept would be similar to that of the national superstation analysed in the preceeding chapter but it is hoped that from a policy point of view, such a service would raise less objections, since Atlantic Canada is presently underserved in terms of 'basic' Canadian services; in any case, the concept is certainly better than importing one additional U.S. signal.

10.2 Private television broadcasting in Atlantic Canada

Basic information on the private television broadcasting industry in Atlantic Canada is presented in the following table.

Table 10-1

OPERATING REVENUES AND PROFITS
OF THE PRIVATE TELEVISION BROADCASTING INDUSTRY
IN THE ATLANTIC PROVINCES
($ 000)

Year	Revenues	Profits	After tax Margin in %
1972	$ 7,233	$1,152	15.9%
1973	$10,357	$ 867	8.4%
1974	$12,007	$ 924	7.7%
1975	$13,604	$1,211	8.9%
1976	$16,809	$1,558	9.3%
1977	$18,934	$1,956	10.3%
1978	$22,977	$4,153	18.1%
1979	$26,229	$2,585	9.9%

Source: Statistics Canada

10. AN ATLANTIC SUPERSTATION (cont'd)

10.3 Concept and assumptions

The concept would be that of an independent station serving the Atlantic Provinces via satellite and cable. Converter penetration throughout this chapter has been assumed to be 100% since the service would most probably be carried on the basic service.

Viewing levels were assumed to be in the 16% to 18% range, while the audience share of the station would vary between 16% and 20%; this would seem reasonable in view of CTV's audience share for example which varies from 41% to 60% in the Atlantic Provinces (1). Finally, commercial minutes were set at 12 per hour and the cost per thousand would vary between $2.70 and $3.00.

These assumptions are briefly summarized in the following table.

Table 10-2

ASSUMPTIONS FOR AN ATLANTIC SUPERSTATION

Variable	Mode Value	Downward fluctuation	Upward fluctuation	Downward probability
Viewing level	17%	0.95	1.05	50%
Audience share	18%	0.90	1.10	50%
Cost per thousand	$2.85	0.95	1.05	50%
Number of Commercial Minutes/Hour	12	-	-	-
Booking rate	Max. 80%	-	-	-

(1) Source: CRTC, Special report on broadcasting, 1968-1978

10. AN ATLANTIC SUPERSTATION (cont'd)

10.4 Results

The results associated with these assumptions are briefly summarized in the following table. Appendices L and M present the detailed computer runs.

Table 10-3

ANNUAL REVENUES OF AN ATLANTIC SUPERSTATION
($ million)

Year	Minimum Value	Maximum Value	Mean Value	Mode Value	Simulation Result
1983	$ 4.2	$ 5.3	$ 4.7	$ 4.7	$ 4.7
1985	$ 7.3	$ 9.1	$ 8.2	$ 8.1	$ 8.2
1990	$14.2	$18.0	$16.0	$15.6	$16.1
1995	$17.5	$21.4	$19.5	$19.7	$19.5
2000	$18.1	$23.3	$20.9	$20.4	$20.9

10. AN ATLANTIC SUPERSTATION (cont'd)

10.5 Conclusions

10.5.1 Overall feasibility

In our opinion, the revenue potential of an Atlantic Superstation is fairly impressive; again though, the question of programming costs remains unanswered, but as the following table will show, programming costs have been growing rapidly since 1975. An Atlantic superstation would thus probably provoke further increases in programming costs in that area.

Table 10-4

PROGRAMMING EXPENSES AS A PERCENTAGE OF REVENUES
ATLANTIC CANADA
1975 - 1979

Year	Percentage
1975	33.8%
1976	36.8%
1977	36.1%
1978	40.3%
1979	41.4%

10.5.2 Sensitivity analysis

Sensitivity analysis was also used to evaluate the effect on revenues of various satellite systems. The results show that a DBS would be fairly competitive with Anik "C":

- a six beam, 72 channels DBS would be competitive with Anik "C" if the latter induced a 15% drop in the TVRO penetration rate.

- a four beam, 48 channels DBS would be competitive with Anik "C" if the latter induced a 30% drop in the TVRO penetration rate.

10. AN ATLANTIC SUPERSTATION (cont'd)

10.5 Conclusions (cont'd)

10.5.2 Sensitivity analysis (cont'd)

Table 10-5

SENSITIVITY ANALYSIS: AN ATLANTIC SUPERSTATION
($ million)

% reduction in TVRO penetration rate	NPV of revenues	Difference over base case	Net DBS effect 6 beam (72 ch)	Net DBS effect 4 beam (48 ch)
Base Case	$ 104	-	- $ 3.0	- $ 5.9
5%	$ 103	$ 1	- $ 2.0	- $ 4.9
10%	$ 102	$ 2	- $ 1.0	- $ 3.9
15%	$ 101	$ 3	nil	- $ 2.9
20%	$ 100	$ 4	+ $ 1.0	- $ 1.9
25%	$ 99	$ 5	+ $ 2.0	- $ 0.9
30%	$ 98	$ 6	+ $ 3.0	+ $ 0.1

10.5.3 Extension of the concept

Since the Province of Quebec is also underserved in terms of 'basic' English Language Canadian services, the Atlantic superstation concept could be extented to become an Eastern Canada superstation. In our opinion, revenues associated with such a concept would increase substantially.

11

POST-FAX EQUIPMENT
MONTREAL H1J 1S3
CR 213-31

11. SPECIALIZED PROGRAMMING CHANNELS

11. SPECIALIZED PROGRAMMING CHANNELS

11.1 Introduction

As we mentioned in Chapter 5, this is a fast growing programming concept presently delivered by U.S. satellites. Present or soon to be introduced services include:

- sports
- information
- programming aimed at ethnic minorities
- health and education
- etc.

All of these services are financed by a mixture of subscriber revenues and advertising on the satellite feed; advertising is also permitted on a local/regional basis on cable.

11.2 Concept and assumptions

The scope of the present project did not permit us to look in detail at each of these programming concepts. Our objective was thus to establish a realistic range of assumptions regarding:

- subscriber revenues and penetration
- audience share of these services
- cost per thousand

11.2.1 Part time versus full time use

We also had to examine the possibility of a part time operation for such services; for example, programming could be aired at night only, during maximum viewing level periods, while during the day, the RF channel would be used for other purposes such as children or educational programming.

11.2.2 Subscriber revenues and penetration

Subscriber revenues were uniformily set at $0.25 per month; this would be the amount actually paid to the packager of the service, the retail price having to be at least twice that.

The penetration rate of these services was assumed to grow over a five year period after introduction to a maximum of 50% of DBS clients (1); since the services were assumed to be in the English language, that penetration rate was cut in half for the Province of Québec. These penetration rates were also subjected to a risk factor of 20% on either side (i.e. the maximum penetration would most likely be 50% but could be as low as 40% or as high as 60%).

---

(1) TVRO households plus cable subscribers equipped with a converter.

11. SPECIALIZED PROGRAMMING CHANNELS (cont'd)

11.2 Concept and assumptions (cont'd)

11.2.3 Viewing levels and audience share

It was assumed that viewing levels would be consistent with those assumed in Chapter 9, that is 16% to 18% during an 18 hour programming schedule; those viewing levels were cut in half for the Province of Quebec.

For services that would be aired only in prime time, viewing levels were assumed to be in the 35% to 38% range and again this was cut in half for the Province of Quebec.

As far as the audience share is concerned, we made the assumption that it could vary between 3% to 5% for the more appealing services such as sports programming for example.

11.2.4 Cost per thousand for a 30 second commercial

The cost per thousand for such specialized services would vary between $3.50 and $4.00, which is slightly higher than on conventional television; we feel this is justified by the fact that sponsors would be able to reach an audience more tailored to their products or services.

11.2.5 Inventory and booking rates

The advertising policy for such specialized services would consist of 8 to 10 minutes of advertising material per hour (versus 12 for conventional broadcasters); the booking rate or percentage of inventory sold was assumed to be as follows:

1983	:	40%
1984	:	50%
1985	:	60%
1986	:	70%
1987 and after	:	80%

11. SPECIALIZED PROGRAMMING CHANNELS (cont'd)

11.2 Concept and assumptions (cont'd)

11.2.6 Summary

The assumptions used for these specialized services have been summarized in the following table:

Table 11-1

ASSUMPTIONS FOR SPECIALIZED PROGRAMMING

Variable	Mode Value	Downward fluctuation from the mode	Upward fluctuation from the mode	Downward probability
Subscriber price	$0.25	-	-	-
Penetration rate	Maximum of 50%	0.8	1.2	50%
Viewing level (case 1)	17%	0.95	1.05	50%
(case 2)	36%	0.95	1.05	50%
Audience share	4%	0.75	1.25	50%
Cost per thousand	3.75	0.95	1.05	50%
Commercial Minutes/Hour	9	0.8888	1.1111	50%
Booking rate	Max. 80%	-	-	-

11. SPECIALIZED PROGRAMMING CHANNELS (cont'd)

11.3 Results

The results associated with these assumptions are briefly summarized in the following three tables for:

- specialized programming (18 hours/day)
- specialized programming (6 hours/day)
- combination package (i.e. 6 hours of specialized programming plus children programming)

Detailed computer runs for specialized programming (18 hours/day and 6 hours per day) can be found in Appendices N, O, P and Q.

Table 11-2

ANNUAL REVENUES
SPECIALIZED PROGRAMMING
(18 hours/day)
($ million)

Year	Minimum Value	Maximum Value	Mean Value	Mode Value	Simulation Result
1983	$ 1.2	$ 1.8	$ 1.4	$ 1.5	$ 1.5
1985	$ 5.8	$10.0	$ 7.8	$ 7.6	$ 7.9
1990	$23.6	$38.8	$30.1	$27.5	$30.3
1995	$28.1	$43.9	$35.3	$35.1	$35.6
2000	$31.1	$48.6	$39.4	$37.2	$39.5

Table 11-3

ANNUAL REVENUES
SPECIALIZED PROGRAMMING
(6 hours/day)
($ million)

Year	Minimum Value	Maximum Value	Mean Value	Mode Value	Simulation Result
1983	$ 1.0	$ 1.5	$ 1.2	$ 1.2	$ 1.3
1985	$ 5.3	$ 8.3	$ 6.6	$ 6.6	$ 6.6
1990	$19.8	$32.4	$25.1	$25.4	$25.0
1995	$23.2	$39.5	$29.8	$28.8	$29.4
2000	$25.4	$41.6	$33.1	$32.7	$32.7

11. SPECIALIZED PROGRAMMING CHANNELS (cont'd)

11.3 Results (cont'd)

Table 11-4

ANNUAL REVENUES
SPECIALIZED PROGRAMMING (6 HOURS/DAY)
AND CHILDREN PROGRAMMING
($ million)

Year	Minimum Value	Maximum Value	Mean Value	Mode Value	Simulation Result
1983	$ 1.1	$ 1.7	$ 1.4	$ 1.4	$ 1.4
1985	$ 6.6	$10.1	$ 8.1	$ 8.0	$ 8.0
1990	$24.6	$39.5	$30.9	$31.0	$30.6
1995	$29.4	$47.6	$36.8	$35.8	$36.2
2000	$32.1	$51.2	$41.1	$40.4	$40.4

11.4 Conclusions

11.4.1 Overall feasibility

Although the concepts examined in this report would generate impressive revenues after 1990, their economic viability could be threatened by low converter penetration in the early stages of introduction.

As the following table also indicates a fairly important part of revenues would be spent on distribution costs.

Table 11-5

DISTRIBUTION COSTS AS A PERCENTAGE OF REVENUES

Net present value / Service	Specialized Programming (18 hours/day)	Specialized Programming (6 hours/day) + Children programming
Revenues	$ 164.8	$ 166.8
Distribution costs (1)	$ 54.4	$ 54.4
Percent of revenues spent on distribution	33.0%	32.6%

A 4 beam, 48 channel DBS was assumed.

11. SPECIALIZED PROGRAMMING CHANNELS (cont'd)

11.4 Conclusions (cont'd)

11.4.1 Overall feasibility (cont'd)

Since in reality only Anik "C" service would be available in 1983, the percentage of revenues spent on distribution would be much lower; assuming 2 Half Canada beams on Anik "C" for a 6 year period (1983-1988), this would reduce distribution costs to a net present value of $32.3 million which would represent 19.6% of overall revenues.

Other possible ways to improve the feasibility of the project would include:

- delaying introduction of the service until converter penetration has reached a more significant level

- adopting a more aggressive policy concerning advertising sales; the booking rate (percentage of advertising inventory sold) has been assumed to grow from 40% to 80%; reaching the 80% level more quickly would have a significant impact on revenues

- introducing the service more gradually on a geographical basis, starting with the most populated regions, and then extending the availability of the service coast to coast.

11.4.2 Content costs

The question of content and associated costs could not be addressed to any extent in the present research project; it seems obvious though that present Canadian content rules are impossible to meet for such services.

POST-FAX EQUIPMENT
MONTREAL H1J 1S3
CR 213-31

12

12. A FRENCH LANGUAGE SUPERSTATION

12. A FRENCH LANGUAGE SUPERSTATION

12.1 Introduction

12.1.1 Private television broadcasting in Québec

Total revenues of the private television broadcasting industry in Quebec have been estimated at $138 million at the end of 1980, compared to $38 million in 1972; this represents an average annual growth rate of 18% throughout the period.

The growth in profits, on the other hand has been even more impressive; these have increased from $4.6 million in 1972 to approximately $24 million in 1980, for an average annual growth rate of 23%.

Table 12-1

OPERATING REVENUES AND PROFITS
OF THE PRIVATE TELEVISION BROADCASTING INDUSTRY IN QUEBEC
1972 - 1978
($ 000)

Year	Operating Revenues	Profits	After tax Margin in %
1972	$ 38,162	$ 4,642	12.2%
1973	$ 47,476	$ 6,744	14.2%
1974	$ 51,106	$ 7,535	14.7%
1975	$ 59,667	$ 8,105	13.6%
1976	$ 73,681	$12,694	17.2%
1977	$ 81,243	$11,014	13.6%
1978	$ 98,755	$16,036	16.2%
1979	$119,718	$19,908	16.6%
1980 (1)	$138,000	$24,000	17.4%

Source: Statistics Canada
(1) Estimated by Tamec Inc.

12. A FRENCH LANGUAGE SUPERSTATION (cont'd)

12.1 Introduction (cont'd)

12.1.1 Private television broadcasting in Québec (cont'd)

Compared to the entire television broadcasting industry in Canada, Quebec television stations have experienced a relative decline in terms of revenues; their share of Canadian revenues decreased slightly from 29% to 25% during the period; their share of profits on the other hand did not exhibit the same characteristics and was kept well above their share of revenues; good year, bad year, the private television broadcasting industry in Quebec generates 35% to 40% of total Canadian profits of that industry.

Table 12-2

CANADIAN SHARE OF REVENUES AND PROFITS
BY THE QUEBEC TELEVISION BROADCASTING INDUSTRY

Year	Share of Revenues	Share of Profits
1972	28.9%	32.2%
1973	27.8%	40.5%
1974 (1)	26.3%	121.3%
1975	26.7%	43.6%
1976	26.1%	38.7%
1977	24.5%	34.6%
1978	24.5%	36.9%
1979	25.3%	37.6%
1980 (2)	25.0%	38.0%

Source: Statistics Canada
(1) Global experienced serious financial difficulties in 1974
(2) Estimated by Tamec Inc.

12. A FRENCH LANGUAGE SUPERSTATION (cont'd)

12.1 Introduction (cont'd)

12.1.2 Télé-Métropole

Télé-Métropole is obviously the dominant television broadcaster in the Province of Quebec; it's revenues have grown from a little over $17 million in 1972 to more than $68 million in 1980, a fourfold increase in eight years; most important earnings from operations (1) grew from $1.9 million in 1972 to $11.2 million in 1980 which represents an average annual growth rate of 25%; this has resulted in an increase in the after tax margin, from 11.0% in 1972 to more than 16% in 1980.

Table 12-3

REVENUES AND PROFITS
OF
TÉLÉ-MÉTROPOLE
($ 000)

Year	Operating Revenues	Net earnings from operations	After tax Margin in %
1972	$17,667	$ 1,937	11.0%
1973	$21,357	$ 2,805	13.1%
1974	$23,928	$ 3,359	14.0%
1975	$27,460	$ 4,333	15.8%
1976	$34,994	$ 5,861	16.7%
1977	$39,623	$ 5,718	14.4%
1978	$48,024	$ 7,697	16.0%
1979	$56,289	$ 9,658	17.2%
1980	$68,178	$11,196	16.4%

Source: Télé-Métropole, Annual Reports

(1) After tax earnings but excluding share of non consolidated net earnings of affiliated companies.

12. A FRENCH LANGUAGE SUPERSTATION (cont'd)

12.2 Concept

In our opinion Télé-Métropole, and to some extent the entire Quebec television broadcasting industry, make abnormally large profits because of a simple lack of competition, which enables Quebec's broadcasters to exert a significant influence on the cost of acquisition and/or production of programs. This is especially true of Télé-Métropole (the only French speaking commercial broadcaster outside of Radio-Canada in a market as big as Montreal) but also of Télé-Capitale which operates in Quebec City; even CFCF, the CTV affiliate in Montreal, competes only with CBC for the acquisition of programs; in cities like Calgary or Edmonton where the English speaking population is still smaller than in Montreal, the CTV affiliate has to face the competition of an independent station in addition to that of the CBC.

The concept that will be examined in this report is that of a 'commercial' broadcaster which would have the following characteristics:

- it would use a DBS and cable to reach audiences; it would have no conventional off air VHF or UHF transmitter

- it's programming philosophy would sit somewhere between Télé-Métropole and Radio-Canada, i.e. slightly less 'commercial' than the former and slightly less 'highbrow' than the latter.

12.3 Audience characteristics

The following table presents the audience characteristics of the Montreal market, for the spring and autumn periods of 1980. It was assumed that a DBS francophone superstation would mostly fragment the audience of French speaking stations such as:

- CFTM : Télé-Métropole
- CBFT : Société Radio-Canada
- CIVM : Radio-Québec

12. A FRENCH LANGUAGE SUPERSTATION (cont'd)

12.3 Audience characteristics (cont'd)

Table 12-4

AUDIENCE CHARACTERISTICS
MONTREAL MARKET

Period of the day	Station	Spring 80 Rating	Spring 80 Audience Share	Autumn 80 Rating	Autumn 80 Audience Share
6h.00 AM	CFTM	6	34	7	37
2h.00 AM	CBFT	4	21	3	19
(All day)	CIVM	-	2	-	2
	Others	7	43	8	42
	All	17	100	18	100
7h.00 PM	CFTM	12	31	13	32
11h.00 PM	CBFT	9	23	10	23
MON - SUN	CIVM	1	4	1	3
	Others	18	42	17	42
	All	40	100	41	100
4h.30 PM	CFTM	9	32	17	49
6h.00 PM	CBFT	5	18	2	7
MON - FRI	CIVM	-	1	-	1
	Others	13	49	15	43
	All	27	100	34	100
11h.30 PM	CFTM	3	30	3	28
MDNT	CBFT	2	20	1	14
MON - SUN	CIVM	-	2	-	3
	Others	4	48	6	55
	All	9	100	10	100
10h.00 AM	CFTM	4	43	4	40
NOON	CBFT	2	18	2	24
MON - FRI	CIVM	-	-	-	-
	Others	4	39	4	36
	All	10	100	10	100

Source: BBM data, Population aged 2+

12. A FRENCH LANGUAGE SUPERSTATION (cont'd)

12.3 Audience characteristics (cont'd)

Since a francophone superstation would also be distributed in the entire Province of Quebec, and not only in the Montreal area where there is a significant anglophone population, we were also interested in obtaining information on audience characteristics in other markets where the French speaking population is susceptible to have an even more significant influence; the typical market chosen was Quebec City and the audience characteristics are presented in the following table:

Table 12-5

AUDIENCE CHARACTERISTICS
QUEBEC CITY MARKET

		Spring 80		Autumn 80	
Period of the day	Station	Rating	Audience Share	Rating	Audience Share
6h.00 AM to 2h.00 AM	CBVT	5	31	5	31
	CFCM	9	49	8	48
	CIVQ	1	3	1	4
	Others	2	17	3	17
	All	17	100	17	100

Source: BBM, Population aged 2+

12. A FRENCH LANGUAGE SUPERSTATION (cont'd)

12.4 Assumptions used

12.4.1 Viewing levels (all stations)

BBM data normally relates to the population aged 2 and over; since our population forecasts deal with the entire Canadian population (i.e. they include the population aged under 2) we made a slight adjustment to the average viewing levels which were estimated at 17% on average for an 18 hour programming day. Converter penetration was also assumed to be 100% throughout the period, since such a station would most probably be distributed by cable on the basic service.

12.4.2 Audience share of the superstation

As mentioned previously the programming philosophy of the superstation would be:

- slightly less 'commercial' than Télé-Métropole
- slightly less 'highbrow' than Radio-Canada

We estimate that with such a programming concept, the superstation would generate an audience share varying between 18% and 22%.

12.4.3 Cost per thousand for a 30 second commercial

The cost per thousand of the superstation would be competitive with those of Télé-Métropole and Radio-Canada, that is it would vary between $2.75 and $3.00; it has to be noted that these rates would be very competitive in other markets.

12.4.4 Inventory and booking rates

The advertising policy of the superstation would be that of a normal broadcaster, i.e. 12 minutes per hour or 24 thirty second commercials; it was also assumed that the booking rate or percentage of inventory sold would be as follows:

1983	: 40%
1984	: 50%
1985	: 60%
1986	: 70%
1987 & after	: 80%

12. A FRENCH LANGUAGE SUPERSTATION (cont'd)

12.4 Assumptions used (cont'd)

12.4.5 Summary

The assumptions used in the present chapter have been summarized in the following table.

Table 12-6

FRENCH SPEAKING SUPERSTATION ASSUMPTIONS

Variable	Mode Value	Downward fluctuation	Upward fluctuation	Downward probability
Viewing levels	18%	0.95	1.05	50%
Audience share	20%	0.90	1.10	50%
Cost per thousand	$2.85	0.95	1.05	50%

12. A FRENCH LANGUAGE SUPERSTATION (cont'd)

12.5 Results

The results associated with these assumptions are briefly summarized in the following table and show that such a superstation would generate significant revenues. Detailed computer runs are presented in Appendices R and S.

Table 12-7

REVENUE PROJECTION
FRENCH SPEAKING SUPERSTATION
($ million)

Year	Minimum Value	Maximum Value	Mean Value	Mode Value	Simulation Result
1983	$15.4	$19.6	$17.6	$17.2	$17.8
1985	$26.3	$33.4	$29.8	$30.9	$29.9
1990	$45.9	$60.0	$52.6	$52.3	$52.6
1995	$54.7	$69.8	$62.0	$64.5	$61.9
2000	$60.8	$77.7	$67.6	$66.8	$67.6

12. A FRENCH LANGUAGE SUPERSTATION (cont'd)

12.6 Operating costs

Due to time and budget constraints, it was not possible in the present project to examine in great detail the question of operating costs and especially programming costs. It has to be noted though that private French speaking television stations in the Province of Quebec allocate a much lower proportion of their revenues to programming than their counterparts in English speaking Canada.

Table 12-8

PERCENTAGE OF OPERATING REVENUES
SPENT ON PROGRAMMING BY
THE PRIVATE TELEVISION BROADCASTING INDUSTRY
1975 - 1979

Year	Quebec	Other Provinces
1975	33.4%	43.9%
1976	31.6%	41.8%
1977	34.4%	44.1%
1978	30.2%	48.1%
1979	32.4%	48.3%

Source: Statistics Canada

12. A FRENCH LANGUAGE SUPERSTATION (cont'd)

12.7 Conclusions

12.7.1 Overall feasibility

In our opinion, the revenue potential of a French speaking superstation is fairly impressive. The project would still involve substantial risks associated with initial capital costs and acquisition of programs; it is also quite possible that some 'persuasion' might be required so that advertising agencies provide early support to the project.

Present space segment rates on Anik "C" would appear to be fairly reasonable in light of revenues and a sensitivity analysis was also performed, using a lower penetration rate of TVROs with individual users, because of the requirement for a fairly large (1.8 m) antenna.

The results show that if Anik "C" satellites were to provoke a reduction in the TVRO penetration rate in the order of 10% - 15%, then a DBS would provide net benefits to a French speaking superstation.

Table 12-9

SENSITIVITY ANALYSIS: A FRENCH LANGUAGE SUPERSTATION
($ million)

% reduction in TVRO penetration rate	NPV of revenues	Reduction over base case	Net increase due to DBS over Anik "C"	
			6 beam (72 ch)	4 beam (48 ch)
Base Case	$348	-	-	-
5%	$346	$ 2.0	-$0.7	-$3.3
10%	$344	$ 4.0	+$1.3	-$1.3
15%	$342	$ 6.0	+$3.3	+$0.7
20%	$340	$ 8.0	+$5.3	+$2.7
25%	$338	$10.0	+$7.3	+$4.7
30%	$336	$12.0	+$9.3	+$6.7

12. A FRENCH LANGUAGE SUPERSTATION (cont'd)

12.7 Conclusions (cont'd)

12.7.1 Overall feasibility (cont'd)

Finally, the assumptions neglected the fact that such a service, and other satellite delivered services as well, could improve cable penetration in the Province of Quebec; we also know for a fact that the present management of the largest cable operator in the province aims at rapidly reaching an 80% penetration rate.

12.7.2 Six beams versus four beams

The analysis has also neglected the French speaking audiences outside the Province of Quebec; these are located mostly in the Maritimes and in Ontario. We believe these are much too small to materially affect the advertising revenues of the superstation; if it was judged desirable to provide such a service to as large as proportion of these audiences as possible, then a four beam model would have a definite advantage over a six beam model, by reducing additional space segment costs.

12.7.3 Extension of the concept

A single superstation was assumed throughout this chapter; this assumption could be relaxed to permit regional input of programming and regional/local advertising as well (1).

This is so because the cable television industry in Quebec is developping a true network architecture consisting of very high capacity microwave (VHCM) linking cable systems on a regional basis; these facilities would permit the establishment of a network concept with potential affiliates, in addition to the Montreal market, in the following regions:

- Quebec
- Hull/Ottawa
- Sherbrooke - (Eastern Townships)
- Trois-Rivières - (Mauricie)
- Chicoutimi - (Saguenay-Lac St-Jean)

Individual TVRO owners in such a concept would be served by the Montreal affiliate.

---

(1) Local advertising represents 36% of sales of air time in the Province of Quebec.

POST-FAX EQUIPMENT
MONTREAL H1J 1S3
CR 213-31

13

13. FRENCH LANGUAGE PAY TV

13. FRENCH LANGUAGE PAY TV

13.1 General

The concept examined in this report is that of a single monthly package. We do not believe that the French speaking market is large enough to justify more than one service because of its size per se, and also because of the cable penetration problem in the Province of Quebec.

13.2 Programming

Feature films would form the core of the service and there would be 6 to 8 such films per month.

Whether there would be other types of programming really depends on revenues left after payments for:

- start up expenses
- satellite distribution
- administrative and overhead
- variable programming cost associated with the acquisition of feature films

13.3 Assumptions

We have assumed that the pay to basic ratio would reach a maximum of 25%, 5 years after the introduction of the service.

Table 13-1

FRENCH LANGUAGE PAY TV
PAY TO BASIC RATIOS

Year	Ratio in %
1983	2.9%
1984	5.8%
1985	10.3%
1986	22.5%
1987 and after	25.0%

13. FRENCH LANGUAGE PAY TV (cont'd)

13.3 Assumptions (cont'd)

In addition these assumptions, as well as the wholesale price of $4.50 a month, were subjected to risk analysis.

Table 13-2

RISK ANALYSIS ASSUMPTIONS

	Mode Value	Downward fluctuation	Upward fluctuation	Downward probability
Pay to basic ratio	Max. of 25%	0.9	1.2	40%
Wholesale price	$4.50	0.9	1.1	50%

13.4 Results

Annual revenues from the service would grow from less than $1 million in 1983 to approximatively $20 million at the end of the decade and $26 million by the year 2000. These results are summarized in the following table; detailed computer runs are presented in Appendices T and U.

Table 13-3

ANNUAL REVENUES OF
FRENCH LANGUAGE PAY-TV
($ 000)

Year	Minimum Value	Maximum Value	Mean Value	Mode Value	Simulation Result
1983	$ 648	$ 947	$ 771	$ 728	$ 751
1985	$ 3,465	$ 4,957	$ 4,012	$ 3,995	$ 3,870
1990	$16,948	$23,457	$19,750	$19,276	$19,121
1995	$20,002	$29,174	$24,204	$24,115	$23,270
2000	$23,236	$34,672	$27,415	$26,220	$26,315

13. FRENCH LANGUAGE PAY TV (cont'd)

13.5 Analysis

The NPV of revenues was analysed to determine whether it was sufficiently high to justify original programming expenditures such as:

- variety specials
- sports
- etc

Again the same approach was used as for English speaking Pay TV, i.e. we attempted to determine to what extent the service would be able to invest in the development of original production.

Table 13-4

OVERALL FEASIBILITY OF FRENCH LANGUAGE PAY TV

Cost Category ($ million)	Anik "C"	Satellite system: DBS (6 beams) 36 channels	DBS (6 beams) 72 channels	DBS (4 beams) 24 channels	DBS (4 beams) 48 channels
Revenues	$104.7	$104.7	$104.7	$104.7	$104.7
Costs					
Variable programming(1)	$ 41.9	$ 41.9	$ 41.9	$ 41.9	$ 41.9
Start up expenses	$ 2.0	$ 2.0	$ 2.0	$ 2.0	$ 2.0
Administration and overhead (2)	$ 12.2	$ 12.2	$ 12.2	$ 12.2	$ 12.2
Satellite distribution	$ 7.7	$ 12.8	$ 10.8	$ 16.8	$ 13.6
Sub-Total	$ 63.8	$ 68.8	$ 66.9	$ 72.9	$ 69.7
Balance available for original production	$ 40.9	$ 35.9	$ 37.8	$ 31.8	$ 35.0
NPV of benefits	nil	nil	nil	nil	nil
Original production on an annual basis	$ 5.0	$ 4.4	$ 4.7	$ 3.9	$ 4.3
Distribution costs as a percentage of revenues	7.4%	12.2%	10.3%	16.0%	13.0%

(1) 40% of revenues
(2) $1.5 million annually

13. FRENCH LANGUAGE PAY TV (cont'd)

13.5 Analysis (cont'd)

It is difficult to evaluate in the present report whether the annual amount of $4 to $5 million on original production is sufficient to attract subscriber loyalty and interest. If the project was judged to present high risks there would be two possible ways to improve its feasibility:

- one way would be to delay the introduction of the service until converter penetration reaches a more significant level.

- one could also delay the introduction of the service until the basic cable penetration rate shows definite signs of improvement.

The service was also subjected to sensitivity analysis to determine the impact of a different TVRO penetration rate; the results are illustrated in table 13-5.

Table 13-5

SENSITIVITY ANALYSIS: FRENCH LANGUAGE PAY-TV
($ million)

% reduction in TVRO penetration rate	NPV of revenues	Difference over true DBS case	Net increase due to DBS	
			6 beam (72 ch.)	4 beam (48 ch.)
0%	$104.6	$ -	- $2.7	- $5.6
5%	$103.9	$ .7	- $2.0	- $4.9
10%	$103.2	$1.4	- $1.3	- $4.2
15%	$102.4	$2.2	- $0.5	- $3.4
20%	$101.7	$2.9	+ $0.2	- $2.7
25%	$101.0	$3.6	+ $0.9	- $2.0
30%	$100.2	$4.4	+ $1.7	- $1.2
35%	$ 99.5	$5.1	+ $2.4	- $0.5
40%	$ 98.8	$5.8	+ $3.1	+ $0.2
45%	$ 98.0	$6.6	+ $3.9	+ $1.0
50%	$ 97.3	$7.3	+ $4.6	+ $1.7

13. FRENCH LANGUAGE PAY TV (cont'd)

13.5 Analysis (cont'd)

The conclusion that can be drawn from this analysis is that a 6 beam, 72 channel DBS would be fairly cost effective; if an Anik "C" generated a TVRO penetration rate 20% lower than the one forecasted (70% instead of 88% in the year 2000) the two satellite systems would produce the same net present value of revenues.

POST-FAX EQUIPMENT
MONTREAL H1J 1S3
CR 213-31

14

14. CONCLUSIONS AND RECOMMENDATIONS

14. CONCLUSIONS AND RECOMMENDATIONS

14.1 General

Throughout this research project, we have attempted to answer 2 basic questions which can be formulated as follows:

a) Do the services examined produce sufficiently large revenues to be considered as likely DBS candidates?

b) At what point is a higher powered DBS cost effective vs a low powered service? Assuming that the 'second best' alternative is service on an Anik "C" satellite, would a DBS produce a sufficiently large increase in revenues to offset the probable increase in space segment costs over that 'second best' alternative?

After having attempted to answer these questions on a service by service basis, the present chapter will try to provide an overall answer to these questions.

14.2 Revenue generation potential

The following table presents a summary of the revenue forecasts which we have developed for the various services.

Our approach to assess the overall attractiveness of a DBS has been to evaluate the percentage of revenues that would be spent on distribution with three different satellite systems:

- Anik "C"
- A 4 beam, 48 channel DBS
- A 6 beam, 72 channel DBS

The results associated with this evaluation are presented in tables 14-2 and 14-3.

14. CONCLUSIONS AND RECOMMENDATIONS (cont'd)

14.2 Revenue generation potential (cont'd)

Table 14-1

ANNUAL REVENUES BY SERVICE, 1983-2000
($ million)

Coverage Required	Service	1983	1985	1990	1995	2000
National	Pay TV-High penetration	$ 3.1	$13.1	$68.6	$ 82.5	$ 93.7
	-Medium penetration	$ 1.5	$ 6.6	$34.3	$ 41.2	$ 46.9
	-Low penetration	$ 0.8	$ 3.3	$17.2	$ 20.6	$ 23.4
	Children programming	$ 0.2	$ 1.4	$ 5.6	$ 6.8	$ 7.7
	All Canada Superstation	$18.4	$38.9	$98.4	$114.4	$125.5
	Specialized programming	$ 1.5	$ 7.9	$30.3	$ 35.6	$ 39.5
	Mixed Service	$ 1.5	$ 8.0	$30.6	$ 36.2	$ 40.4
Regional	Public TV-Atlantic	$ 3.8	$ 4.5	$ 6.8	$ 8.5	$ 9.4
	-Manitoba/Sask.	$ 4.2	$ 4.7	$ 6.3	$ 7.3	$ 7.5
	-Alberta/B.C.	$16.7	$18.4	$22.9	$ 27.2	$ 31.2
	Atlantic Superstation	$ 4.7	$ 8.2	$16.1	$ 19.5	$ 20.9
	French Language Superstation	$17.8	$29.9	$52.6	$ 61.9	$ 67.6
	French Language Pay TV	$ 0.8	$ 3.9	$19.1	$ 23.3	$ 26.3

14. CONCLUSIONS AND RECOMMENDATIONS (cont'd)

14.2 Revenue generation potential (cont'd)

Table 14-2

PERCENTAGE OF REVENUES SPENT ON DISTRIBUTION BY EACH SERVICE

	Anik "C" (4 beam)				DBS (4 beam, 48 ch.)				DBS (6 beam, 72 ch.)			
SERVICE	1985	1990	1995	2000	1985	1990	1995	2000	1985	1990	1995	2000
NATIONAL												
Pay TV												
- High penetration	29.0%	5.6%	4.7%	4.1%	51.1%	9.8%	8.2%	7.2%	60.6%	11.6%	9.7%	8.5%
- Medium penetration	55.9%	11.1%	9.2%	8.1%	98.5%	19.6%	16.2%	14.2%	(1)	23.3%	19.2%	16.8%
- Low penetration	(1)	22.1%	18.5%	16.2%	(1)	39.0%	32.6%	28.6%	(1)	46.3%	38.7%	33.9%
All Canada superstation	9.8%	3.9%	3.3%	3.1%	17.2%	6.8%	5.8%	5.4%	20.4%	8.1%	6.9%	6.4%
Specialized programming	48.1%	12.6%	10.7%	9.6%	84.8%	22.2%	18.8%	17.0%	(1)	26.3%	22.3%	20.2%
Mixed service	47.5%	12.4%	10.5%	9.4%	83.8%	21.8%	18.6%	16.6%	99.4%	25.9%	22.1%	20.0%
REGIONAL												
Public TV												
- Atlantic	21.1%	14.0%	11.2%	10.1%	37.2%	24.6%	19.7%	17.8%	29.4%	19.5%	15.6%	14.1%
- Manitoba/Sask.	20.2%	15.1%	13.0%	12.6%	35.6%	26.6%	22.9%	22.3%	28.2%	21.0%	18.1%	17.6%
- Alberta/B.C.	5.2%	4.1%	3.5%	3.1%	9.1%	7.3%	6.2%	5.4%	14.4%	11.5%	9.8%	8.5%
Atlantic Superstation	11.6%	5.9%	4.9%	4.5%	20.4%	10.4%	8.6%	8.0%	16.1%	8.2%	6.8%	6.3%
French Language Superstation	3.2%	1.8%	1.5%	1.4%	5.6%	3.2%	2.7%	2.5%	4.4%	2.5%	2.1%	2.0%
French Language Pay TV	24.3%	5.0%	4.1%	3.6%	42.9%	8.8%	7.2%	6.4%	33.9%	7.0%	5.7%	5.1%

(1) More than 100%

14. CONCLUSIONS AND RECOMMENDATIONS (cont'd)

14.2 Revenue generation potential (cont'd)

Table 14-3

NUMBER OF SERVICES BY PERCENTAGE CATEGORY OF REVENUES SPENT ON DISTRIBUTION

Year	Satellite System	Less than 10%	10-15%	15%-20%	20-25%	More than 25%	Total Services
1985	Anik "C"	3	1	-	3	5	12
	DBS (4 beam, 48 ch.)	2	-	1	1	8	12
	DBS (6 beam, 72 ch.)	1	1	1	1	8	12
1990	Anik "C"	6	4	1	1	-	12
	DBS (4 beam, 48 ch.)	5	1	1	3	2	12
	DBS (6 beam, 72 ch.)	4	2	1	2	3	12
1995	Anik "C"	7	4	1	-	-	12
	DBS (4 beam, 48 ch.)	6	-	4	1	1	12
	DBS (6 beam, 72 ch.)	6	-	3	2	1	12
2000	Anik "C"	9	2	1	-	-	12
	DBS (4 beam, 48 ch.)	6	1	3	1	1	12
	DBS (6 beam, 72 ch.)	6	1	2	2	1	12

14. CONCLUSIONS AND RECOMMENDATIONS (cont'd)

14.2 Revenue generation potential (cont'd)

It is evidently difficult, in the context of the present report, to precisely evaluate what percentage of revenues each service provider would be willing to commit to distribution. Nevertheless, if one assumes that service providers would prefer to allocate resources to content rather than distribution, and if one arbitrarily chooses a maximum of 10% of revenues spent on distribution, the following conclusions can be drawn.

1) Under the 10% criterion (1), half of the services (6 out of 12) would never make it on a DBS system. These services are:

   - Pay TV (medium penetration)
   - Pay TV (low penetration)
   - Specialized programming
   - Mixed service
   - Public TV (Atlantic)
   - Public TV (Manitoba/Sask.)

2) Out of the 6 services that do not meet the 10% criteria, 4 of these are national in scope and, in a general sense, they would offer Canadians 'true viewing alternatives'.

3) The two regional services which would not meet the 10% criteria are public television services in the following regions:

   - Atlantic Canada
   - Manitoba/Saskatchewan

   Again, these services would offer Canadians true viewing alternatives, and their inability to meet the 10% criteria can be essentially associated with the small population base of the provinces that form these regions.

4) The early candidates for a DBS system, that is those services which could satisfy the 10% criteria before 1990, are:

   - public television in British Columbia and Alberta

   - a French language superstation

   These services exhibit two common characteristics which are:

   - they would serve regions with a large population base.

   - They would not be hampered in the early stage by low converter penetration, since carriage on the basic service for DBS cable subscribers was assumed.

---

(1) i.e. 10% of revenues spent on distribution.

14. CONCLUSIONS AND RECOMMENDATIONS (cont'd)

14.2 Revenue generation potential (cont'd)

5) There are four (4) candidates which would satisfy the 10% criteria in 1990 and after; these are:

- Pay TV (high penetration) (1)
- All Canada Superstation
- Atlantic Superstation
- French Language Pay TV

Except for the Atlantic superstation, which was assumed to be offered on the basic service to cable subscribers, the converter penetration rate exerts a significant influence on the probability that these services could meet the 10% criteria.

14.3 Beam combining features

The preceeding analysis has not taken into account beam combining features that are presently available with Anik "C". While we are not in a position to adequately discuss this feature on a DBS from the technical point of view, the economic impact of such a theoretical possibility is sufficiently important to warrant discussion.

The following table illustrates the impact such a feature would have on the percentage of revenues spent by each service on distribution. Using rates associated with a 4 beam, 48 channel DBS, the table shows that the number of services where distribution costs represent less than 10%, would be affected in a significant manner in the post 1990 period; there would be 9 such services out of 12 in the year 2,000 instead of 6 in the case where the beam combining feature is not available.

(1) The high penetration service would be subscribed to by a maximum of 20% of DBS clients.

14. CONCLUSIONS AND RECOMMENDATIONS (cont'd)

14.3 Beam combining features (cont'd)

Table 14-4

PERCENTAGE OF REVENUES SPENT ON DISTRIBUTION COSTS, WITHOUT AND WITH BEAM COMBINING FEATURES (4 BEAM, 48 CHANNELS DBS)

		Without beam combining			With beam combining (1)		
Coverage Required	Service	1990	1995	2000	1990	1995	2000
National	Pay TV-High penetration	9.8%	8.2%	7.2%	4.8%	4.1%	3.6%
	-Medium penetration	19.6%	16.2%	14.2%	9.8%	8.1%	7.1%
	-Low penetration	39.0%	32.6%	28.6%	19.5%	16.3%	14.3%
	All Canada Superstation	6.8%	5.8%	5.4%	3.4%	2.9%	2.7%
	Specialized programming	22.2%	18.8%	17.0%	11.1%	9.4%	8.5%
	Mixed Service	21.8%	18.6%	16.6%	10.9%	9.3%	8.3%
Regional	Public TV-Atlantic	24.6%	19.7%	17.8%	24.6%	19.7%	17.8%
	-Manitoba/Sask.	26.6%	22.9%	22.3%	26.6%	22.9%	22.3%
	-Alberta/B.C.	7.3%	6.2%	5.4%	7.3%	6.2%	5.4%
	Atlantic Superstation	10.4%	8.6%	8.0%	10.4%	8.6%	8.0%
	French Language Supers.	3.2%	2.7%	2.5%	3.2%	2.7%	2.5%
	French Language Pay TV	8.8%	7.2%	6.4%	8.8%	7.2%	6.4%
Number of services by percentage category:							
	Less than 10%	5	6	6	6	9	9
	10% - 15%	1	-	1	3	-	1
	15% - 20%	1	4	3	1	2	1
	More than 20%	5	2	2	2	1	1
	Total services	12	12	12	12	12	12

(1) Half Canada coverage would be possible for national services only.

14. CONCLUSIONS AND RECOMMENDATIONS (cont'd)

14.4 Cost effectiveness

It was assumed throughout this report that a DBS system would serve cable subscribers as well as individual TVRO households; this assumption appears reasonable because:

- All services examined in the present report are 'new' services not presently available off air.

- Because of the importance of content costs associated with these new services, these will have to be absorbed over a subscriber base as large as possible.

It was chosen by the authors of this report to view the cost effectiveness of a DBS system from the point of view of the providers of the various programming services. From that point of view, it can be safely assumed that:

- a DBS system would have no effect on cable subscribers

- the only effect of a higher powered DBS system would be on the penetration rate of TVROs with individual households. This is so because a lower power satellite system than the one envisaged in this report would require a more costly and more cumbersome earth station.

The approach we have taken in this report is thus to attempt to determine whether the increase in revenues that would be associated with a true DBS would justify the probable increase in space segment costs resulting from the same DBS.

Through the use of sensitivity analysis, other things being equal (including programming costs), we have, for each service examined, gradually reduced the penetration rate of TVROs associated with individual households; the difference in revenues was then compared to the probable difference in space segment costs between a true DBS and the next best alternative (Anik "C"). This approach enabled us to formulate judgements such as:

- To be cost effective, a DBS, used to distribute a French language superstation in the Province of Quebec, would require a TVRO penetration rate in the order of 10% - 15% greater than would otherwise be the case with an Anik "C", to produce the same net present value of revenues.

The smaller the difference, percentage wise, the more cost effective a DBS would be and vice versa.

14. CONCLUSIONS AND RECOMMENDATIONS (cont'd)

14.4 Cost effectiveness (cont'd)

The conclusions we have reached were presented on a service by service basis throughout this report, but overall they can be expressed as follows.

1) A true DBS will be more cost effective for services which are financed entirely through advertising. Any subscription costs will reduce the number of TVRO households contributing to the service, which in turn further limits the revenues generated from these TVRO households.

2) The same conclusion would basically apply to public television services since these are non discretionary as well.

3) The approach previously described was used as if a DBS was available as of 1983, and that in fact, service providers had a choice at that exact moment between service on Anik "C" and service on a DBS; this obviously tends to penalize a DBS because of the low TVRO penetration in the early years and because of the discounting process. If in reality a true DBS is introduced later on in this decade, its cost effectiveness might be much higher.

   To illustrate, we have chosen an hypothetical service whose national distribution cost would be $5 million higher annually than would be the case with Anik "C". While this increase in cost seems high in absolute terms, it must be remembered that some of the services considered in this report have a fairly high revenue generation potential; on a monthly basis Pay TV would generate $4.50 and the equivalent figure for the French speaking superstation would be approximately $3.00. For such services, the increase in TVRO households that would be required to justify the additional cost of $5 million, varies between 92,000 and 139,000; this would represent 10%-14% of the forecasted 1 million TVRO households, which would seem a reasonable objective to attain.

   On the other hand, for services such as children programming or public television, which were assumed to generate approximately $1 per month, the required increase in TVRO households would have to be slightly more than 400,000 or 40% of the forecasted 1 million TVRO households.

4) Because of Canada's population breakdown on a geographic basis, the cost effectiveness of a DBS would vary greatly on a regional basis; as the following table indicates roughly 60% of the forecasted TVRO households would be located in Quebec and Ontario. Taking into account rational economic behavior only, there could thus be an incentive for some providers to serve to the larger population areas only.

Table 14-5

TVRO HOUSEHOLDS BY REGION, 1983-2000

	1983		1985		1990		1995		2000	
	(000)	%	(000)	%	(000)	%	(000)	%	(000)	%
Atlantic	8	12.3%	28	12.2%	116	13.7%	152	13.1%	121	11.0%
Quebec	17	26.2%	59	25.8%	212	25.0%	276	23.9%	244	22.2%
Ontario	23	35.4%	80	34.9%	299	35.2	427	36.9%	434	39.6%
Manitoba/Saskatchewan	7	10.8%	25	10.9%	94	11.1%	119	10.3%	96	8.8%
Alberta	5	7.7%	18	7.8%	68	8.0%	93	8.0%	92	8.4%
British Columbia	6	9.2%	19	8.3%	61	7.2%	91	7.9%	112	10.2%
Canada	65	100.0%	229	100.0%	849	100.0%	1,157	100.0%	1,097	100.0%

14. CONCLUSIONS AND RECOMMENDATIONS (cont'd)

14.4 Cost effectiveness (cont'd)

5) The authors of this report have assumed that the ratio of households passed by cable to total households would grow slowly from 78% in 1979 to 92% by the year 2000; while we have used risk analysis to allow for variations in this forecast, a dramatically different scenario could prevail. The following table illustrates such a possibility where the preceeding ratio would remain at 78% throughout the period while other things remain equal.

The results show that such an assumption would generate a large increase in TVRO households, from 1 million to more than 2 million in the 90's; needless to say the cost effectiveness of a DBS would be much more important under that scenario. But on the other hand, as the following table also illustrates, the increase in TVRO households would be more than compensated by the decrease in cable subscribers. We can thus conclude that other things being equal, drastically different assumptions concerning the ratio of households passed by cable would not improve the overall feasibility of programming services.

Table 14-6

14.3 Cost effectiveness (cont'd)

IMPACT OF DIFFERENT ASSUMPTIONS CONCERNING THE RATIO OF HOUSEHOLDS PASSED BY CABLE

	1983		1985		1990		1995		2000	
	Original	Modified	Original	Modified	Original	Modified	Original	Modified	Original	Modified
Total households	8,254	8,254	8,561	8,561	9,342	9,342	10,104	10,104	10,834	10,834
% passed by cable	80.6%	77.8%	82.0%	77.8%	85.3%	77.8%	88.5%	77.8%	92,0%	77.8%
Households passed	6,651	6,422	7,017	6,660	7,969	7,268	8,942	7,861	9,919	8,429
Households not passed	1,601	1,832	1,543	1,901	1,371	2,074	1,159	2,243	912	2,405
TVRO pen. rate(not passed)	2.0%	2.0%	8.0%	8.0%	44.5%	44.5%	76.7%	76.7%	87.7%	87.7%
TVRO (not passed)	32	37	123	152	610	923	889	1,720	800	2,109
TVRO pen. rate (passed)	0.5%	0.5%	1.5%	1.5%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
TVRO (passed)	33	32	105	100	239	218	268	235	298	253
TOTAL TVRO HOUSEHOLDS	65	69	228	252	849	1,141	1,157	1,955	1,098	2,362
Basic cable pen. rate	71.9%	71.9%	73.7%	73.7%	80.0%	80.0%	82.2%	82.2%	86.2%	86.2%
Cable subscribers	4,785	4,617	5,173	4,908	6,215	5,814	7,347	6,462	8,555	7,266
Converter pen. rate	51.0%	51.0%	65.0%	65.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Subscribers with converter	1,441	2,355	3,362	3,190	6,215	5,814	7,347	6,462	8,555	7,266
TOTAL DBS CLIENTS	2,506	2,424	3,591	3,442	7,074	6,955	8,504	8,417	9,652	9,628

14. CONCLUSIONS AND RECOMMENDATIONS (cont'd)

14.5 Recommendations

14.5.1 Design considerations

In our opinion, the availability of Anik "C" satellites to distribute TV signals is proving to be a major breakthrough over the Anik "A" and "D" generation of satellites; this is so not only because Anik "C" makes possible the use of smaller earth stations more suitable for individual reception, but especially because it considerably reduces the costs of community reception; this feat is achieved through a multi beam configuration that greatly alleviates problems associated with Canada's different time zones and makes possible the distribution of TV signals on a regional basis.

Without doubting the ability of satellite designers to innovate and to develop significant new features, we believe that for the next generation of satellites, no such major breakthroughs would seem to be in sight.

We thus recommend that the Department of Communications focuses its attention on detailed trade off analyses between power, space and ground segment costs, and beam configuration; in that respect, the ability to combine beams together, a feature presently available on Anik "C", is of special importance.

14.5.2 Policy considerations

The present report has made a number of implicit assumptions related to policy and regulatory considerations. The most important of these are:

1 - We have assumed that the Anik "C" generation of satellites would effectively become an interim DBS, i.e. individuals would be allowed to own TVROs.

2 - Present broadcasting policy including Canadian content rules, although not explicitely discarded completely, has not been given much weight in the present project; total adherence to such a policy would have simply meant an early rejection of many of the services considered in this report, be it on grounds that these would have a large impact on the broadcasting industry, in the case of services that have substantial appeal, or that it would be impossible to meet Canadian content rules in the case of specialized services.

14. CONCLUSIONS AND RECOMMENDATIONS (cont'd)

14.5 Recommendations (cont'd)

14.5.2 Policy considerations (cont'd)

3 - We have finally assumed that distribution of any DBS TV signal would be permitted on cable, and that it would be up to the marketplace to decide whether Canadians would subscribe to cable or purchase a TVRO; needless to say this assumption is not exactly in line with recent CRTC decisions on extension of services.

We thus recommend that the Department of Communications attach great importance to these policy considerations; taking into account forthcoming DBS developments in the United States, failure to properly address these issues, would in our opinion have dramatic consequences for Canada.

14.5.3 Other considerations

The present report did not address to any great extent the question of peripheral hardware that would have to be associated with DBS delivery of TV signals. This peripheral equipment would consist mostly of converters with cable subscribers and scrambling/descrambling equipment with individual TVRO households, that would be required for the delivery of discretionary services; the avaibility, performance and cost of such equipment are in our opinion of great importance, even in the present context, but especially so in a true DBS context; we thus think this could be a particularly fruitful area of research for the Department of Communications.

APPENDIX A

DBS Clients Forecast

DBS CLIENTS FORECAST 81/05/04

FEASIBILITY CDN DBS PROGRAM PACKAGE

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
POPULATION FORECAST (000)	23914	24201	24491	24785	25083	25384	25663	25945	26231	26519	26811
HOUSEHOLDS FORECAST (000)	7815	7958	8104	8254	8406	8561	8711	8864	9020	9179	9342
AVE PERS/HOUSEHOLD	3.1	3.0	3.0	3.0	3.0	3.0	2.9	2.9	2.9	2.9	2.9
HOUSEHOLDS BY PROVINCE (000)											
**********											
NEWF	145	147	150	153	156	158	161	164	167	170	173
P.E.I.	34	35	35	36	36	36	37	37	38	38	38
NOVA SCOTIA	256	258	260	263	265	267	269	272	274	276	278
NEW BRUNSWICK	204	206	208	210	212	214	216	218	220	222	224
QUEBEC	2048	2073	2098	2124	2150	2176	2200	2224	2249	2274	2299
ONTARIO	2911	2979	3048	3119	3192	3267	3340	3414	3491	3569	3649
MANITOBA	342	345	348	351	354	357	360	362	365	368	370
SASKATCHEWAN	314	312	310	308	305	303	299	296	293	289	285
ALBERTA	663	676	689	702	716	730	743	757	771	786	801
B.C.,N.W.T.,YUKON	897	926	956	987	1019	1052	1084	1117	1151	1186	1222
HOUSEHOLDS BY REGION (000)											
**********											
ATLANTIC PROVINCES	638	646	653	661	669	676	683	691	698	705	713
QUEBEC	2048	2073	2098	2124	2150	2176	2200	2224	2249	2274	2299
ONTARIO	2911	2979	3048	3119	3192	3267	3340	3414	3491	3569	3649
MAN. AND SASK.	656	657	658	659	660	660	659	659	658	657	655
ALBERTA	663	676	689	702	716	730	743	757	771	786	801
B C.,NWT AND YUKON	897	926	956	987	1019	1052	1084	1117	1151	1186	1222
HOUSEHOLDS PASSED BY CABLE BY REGION (000)											
**********											
ATLANTIC PROVINCES	322	337	352	368	383	400	416	432	449	466	483
QUEBEC	1600	1633	1668	1703	1738	1775	1810	1845	1881	1918	1956
ONTARIO	2419	2489	2560	2634	2709	2787	2864	2943	3025	3108	3194
MAN. AND SASK.	394	403	412	420	429	437	445	453	461	468	475
ALBERTA	543	557	571	586	601	616	631	647	663	679	696
B.C.,NWT AND YUKON	855	883	911	941	971	1002	1033	1065	1097	1131	1165
CANADA	6133	6302	6474	6651	6832	7017	7199	7385	7576	7770	7969
HOUSEHOLDS NOT PASSED BY CABLE BY REGION (000)											
**********											
ATLANTIC PROVINCES	316	309	301	293	285	277	268	259	249	240	230
QUEBEC	449	440	430	421	411	401	390	379	368	356	344
ONTARIO	492	490	488	486	483	480	476	471	466	461	455
MAN. AND SASK.	262	254	247	239	231	222	214	205	197	188	180
ALBERTA	120	119	118	116	115	114	112	110	109	107	105
B.C.,NWT AND YUKON	42	44	45	46	48	49	51	53	54	56	57
CANADA	1682	1656	1629	1601	1573	1543	1511	1477	1443	1407	1371

DBS CLIENTS FORECAST 81/05/04

FEASIBILITY CDN DBS PROGRAM PACKAGE

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
HOUSEHOLDS NOT PASSED BY CABLE WITH TVRO BY REGION (000)											
ATLANTIC PROVINCES	0	0	0	6	12	22	32	48	60	79	102
QUEBEC	0	0	0	8	17	32	47	70	89	118	153
ONTARIO	0	0	0	10	20	38	58	87	113	153	203
MAN. AND SASK.	0	0	0	5	10	18	26	38	48	62	80
ALBERTA	0	0	0	2	5	9	14	20	26	35	47
B.C.,NWT AND YUKON	0	0	0	1	2	4	6	10	13	18	26
CANADA	0	0	0	32	66	123	183	272	349	466	610
HOUSEHOLDS PASSED BY CABLE WITH TVRO BY REGION (000)											
ATLANTIC PROVINCES	0	0	0	2	4	6	8	11	13	14	14
QUEBEC	0	0	0	9	17	27	36	46	56	58	59
ONTARIO	0	0	0	13	27	42	57	74	91	93	96
MAN. SASK.	0	0	0	2	4	7	9	11	14	14	14
ALBERTA	0	0	0	3	6	9	13	16	20	20	21
NWT - YUKON	0	0	0	5	10	15	21	27	33	34	35
CANADA	0	0	0	33	68	105	144	185	227	233	239
CANADIAN TVRO HOUSEHOLDS	0	0	0	65	134	229	327	456	576	699	849
CABLE SUBSCRIBERS BY REGION (000)											
ATLANTIC PROVINCES	236	249	263	278	293	309	325	341	358	376	394
QUEBEC	782	819	858	897	938	980	1023	1066	1111	1157	1205
ONTARIO	1838	1908	1980	2056	2133	2214	2295	2379	2466	2555	2648
MAN. - SASK.	279	289	299	309	320	330	341	351	361	371	381
ALBERTA	354	369	386	403	421	439	458	477	497	517	538
B.C.,NWT AND YUKON	761	787	814	842	871	900	930	958	987	1018	1048
CANADA	4249	4422	4601	4785	4976	5173	5370	5572	5780	5994	6215
CABLE SUBSCRIBERS WITH CONVERTER BY REGION (000)											
ATLANTIC PROVINCES	71	92	116	142	170	201	234	270	308	349	394
QUEBEC	235	303	377	458	544	637	736	842	956	1076	1205
ONTARIO	551	706	871	1048	1237	1439	1652	1879	2120	2376	2648
MAN. - SASK.	84	107	132	158	186	215	245	277	310	345	381
ALBERTA	106	137	170	206	244	285	329	377	427	481	538
B.C.,NWT AND YUKON	228	291	358	429	505	585	669	757	849	946	1048
CANADA	1275	1636	2024	2441	2886	3362	3867	4402	4971	5575	6215

****
DBS CLIENTS FORECAST 81/05/04
****

FEASIBILITY CDN DBS PROGRAM PACKAGE

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
TOTAL DBS CLIENTS(000)											
**********											
ATLANTIC PROVINCES	71	92	116	150	186	229	275	328	382	443	511
QUEBEC	235	303	377	475	579	696	820	958	1101	1252	1416
ONTARIO	551	706	871	1071	1285	1519	1767	2040	2324	2622	2946
MAN, _ SASK,	84	107	132	165	199	239	280	326	372	422	476
ALBERTA	106	137	170	211	255	304	356	413	473	537	606
B.C.,NWT AND YUKON	228	291	358	435	517	604	696	793	895	999	1109
CANADA	1275	1636	2024	2506	3020	3591	4193	4858	5547	6274	7064

FOUR BEAM MODEL

TVRO HOUSEHOLDS (000)											
NOT PASSED BY CABLE											
**********											
EAST BEAM	0	0	0	14	29	54	80	117	149	197	255
EAST CENTRAL BEAM	0	0	0	10	20	38	58	87	113	153	203
WEST CENTRAL BEAM	0	0	0	5	10	18	26	38	48	62	80
WEST BEAM	0	0	0	3	7	13	20	30	39	54	72
TOTAL TVRO HOUSEHOLDS (000)											
**********											
EAST BEAM	0	0	0	10	21	33	45	57	70	72	73
EAST CENTRAL BEAM	0	0	0	13	27	42	57	74	91	93	96
WEST CENTRAL BEAM	0	0	0	2	4	7	9	11	14	14	14
WEST BEAM	0	0	0	8	16	24	33	43	53	54	56
TOTAL DBS CLIENTS											
**********											
EAST BEAM	305	395	493	624	765	925	1094	1286	1483	1694	1927
EAST CENTRAL BEAM	551	706	871	1071	1285	1519	1767	2040	2324	2622	2946
WEST CENTRAL BEAM	84	107	132	165	199	239	280	326	372	422	476
WEST BEAM	334	428	528	646	772	908	1052	1206	1368	1535	1715

****

DBS CLIENTS FORECAST 81/05/04

****

FEASIBILITY CDN DBS PROGRAM PACKAGE

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
POPULATION FORECAST (000)	27052	27296	27541	27789	28039	28236	28433	28632	28833	29034
HOUSEHOLDS FORECAST (000)	9489	9638	9791	9946	10104	10245	10388	10534	10683	10834
AVE PERS/HOUSEHOLD	2.9	2.8	2.8	2.8	2.8	2.8	2.7	2.7	2.7	2.7
HOUSEHOLDS BY PROVINCE (000)										
**********										
NEWF	176	178	181	184	187	190	192	195	198	200
P.E.I.	39	39	39	40	40	40	40	41	41	41
NOVA SCOTIA	279	281	283	284	286	287	288	289	289	290
NEW BRUNSWICK	225	227	228	230	231	232	233	234	235	236
QUEBEC	2320	2342	2363	2385	2407	2424	2441	2459	2476	2494
ONTARIO	3724	3800	3878	3958	4039	4114	4190	4268	4348	4429
MANITOBA	372	374	376	378	380	381	382	383	384	385
SASKATCHEWAN	280	275	270	265	259	253	246	240	233	225
ALBERTA	814	828	842	856	870	884	897	910	924	938
B.C.,N.W.T.,YUKON	1257	1292	1328	1365	1403	1439	1476	1514	1552	1591
HOUSEHOLDS BY REGION (000)										
**********										
ATLANTIC PROVINCES	719	725	731	737	744	749	753	758	763	768
QUEBEC	2320	2342	2363	2385	2407	2424	2441	2459	2476	2494
ONTARIO	3724	3800	3878	3958	4039	4114	4190	4268	4348	4429
MAN. AND SASK.	652	649	646	643	639	634	628	622	616	610
ALBERTA	814	828	842	856	870	884	897	910	924	938
B.C.,NWT AND YUKON	1257	1292	1328	1365	1403	1439	1476	1514	1552	1591
HOUSEHOLDS PASSED BY CABLE BY REGION (000)										
**********										
ATLANTIC PROVINCES	499	516	533	550	568	585	601	619	636	653
QUEBEC	1990	2024	2059	2094	2130	2162	2195	2228	2261	2294
ONTARIO	3276	3360	3446	3534	3625	3710	3798	3887	3979	4073
MAN. AND SASK.	482	487	493	498	503	507	511	514	516	519
ALBERTA	712	728	745	761	779	795	811	828	845	863
B.C.,NWT AND YUKON	1198	1231	1266	1301	1337	1372	1407	1443	1479	1517
CANADA	8156	8347	8542	8740	8942	9131	9323	9518	9716	9919
HOUSEHOLDS NOT PASSED BY CABLE BY REGION (000)										
**********										
ATLANTIC PROVINCES	220	209	198	187	176	164	152	140	127	115
QUEBEC	331	318	304	290	276	261	246	231	215	200
ONTARIO	448	440	432	423	414	404	393	381	369	356
MAN. AND SASK.	171	162	153	144	135	126	117	109	100	91
ALBERTA	102	100	97	95	92	89	85	82	79	75
B.C.,NWT AND YUKON	59	61	62	64	66	68	69	71	73	75
CANADA	1331	1289	1247	1204	1159	1112	1063	1014	963	912

****
DBS CLIENTS FORECAST 81/05/04
****

FEASIBILITY CDN DBS PROGRAM PACKAGE

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
HOUSEHOLDS NOT PASSED BY CABLE WITH TVRO BY REGION (000)										
ATLANTIC PROVINCES	117	127	134	135	135	133	128	120	111	101
QUEBEC	176	193	206	210	212	212	207	199	188	175
ONTARIO	239	267	293	306	318	328	331	328	322	312
MAN. AND SASK.	91	98	104	104	104	103	99	94	87	80
ALBERTA	54	61	66	68	70	72	72	71	69	66
B.C.,NWT AND YUKON	31	37	42	46	51	55	58	61	64	66
CANADA	709	783	845	870	889	903	895	874	840	800
HOUSEHOLDS PASSED BY CABLE WITH TVRO BY REGION (000)										
ATLANTIC PROVINCES	15	15	16	17	17	18	18	19	19	20
QUEBEC	60	61	62	63	64	65	66	67	68	69
ONTARIO	98	101	103	106	109	111	114	117	119	122
MAN.,SASK.	14	15	15	15	15	15	15	15	15	16
ALBERTA	21	22	22	23	23	24	24	25	25	26
NWT - YUKON	36	37	38	39	40	41	42	43	44	46
CANADA	245	250	256	262	268	274	280	286	291	298
CANADIAN TVRO HOUSEHOLDS	954	1033	1102	1132	1157	1177	1175	1159	1131	1097
CABLE SUBSCRIBERS BY REGION (000)										
ATLANTIC PROVINCES	411	430	448	467	487	506	526	546	567	588
QUEBEC	1251	1298	1347	1397	1448	1497	1548	1599	1652	1705
ONTARIO	2739	2832	2928	3028	3130	3230	3332	3438	3547	3659
MAN. - SASK.	391	400	410	419	428	436	444	451	458	465
ALBERTA	559	581	603	626	650	673	697	721	747	773
B.C.,NWT AND YUKON	1078	1108	1139	1171	1204	1234	1266	1298	1331	1365
CANADA	6429	6649	6876	7108	7347	7577	7812	8054	8301	8555
CABLE SUBSCRIBERS WITH CONVERTER BY REGION (000)										
ATLANTIC PROVINCES	411	430	448	467	487	506	526	546	567	588
QUEBEC	1251	1298	1347	1397	1448	1497	1548	1599	1652	1705
ONTARIO	2739	2832	2928	3028	3130	3230	3332	3438	3547	3659
MAN.- SASK.	391	400	410	419	428	436	444	451	458	465
ALBERTA	559	581	603	626	650	673	697	721	747	773
B.C.,NWT AND YUKON	1078	1108	1139	1171	1204	1234	1266	1298	1331	1365
CANADA	6429	6649	6876	7108	7347	7577	7812	8054	8301	8555

DBS CLIENTS FORECAST 81/05/04

FEASIBILITY CDN DBS PROGRAM PACKAGE

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
TOTAL DBS CLIENTS(000)										
ATLANTIC PROVINCES	543	572	599	619	639	657	672	685	697	708
QUEBEC	1487	1552	1615	1670	1724	1774	1821	1865	1907	1949
ONTARIO	3076	3200	3325	3440	3557	3669	3777	3883	3988	4093
MAN, - SASK,	497	513	528	538	547	554	558	560	561	561
ALBERTA	635	663	691	717	744	769	793	817	841	865
B.C.,NWT AND YUKON	1145	1182	1220	1256	1294	1331	1367	1403	1439	1476
CANADA	7383	7682	7977	8240	8504	8753	8987	9213	9433	9652

FOUR BEAM MODEL

TVRO HOUSEHOLDS (000) NOT PASSED BY CABLE										
EAST BEAM	293	320	340	345	347	345	335	320	299	276
EAST CENTRAL BEAM	239	267	293	306	318	328	331	328	322	312
WEST CENTRAL BEAM	91	98	104	104	104	103	99	94	87	80
WEST BEAM	86	97	108	115	121	127	130	132	132	132
TOTAL TVRO HOUSEHOLDS (000)										
EAST BEAM	75	76	78	79	81	82	84	85	87	88
EAST CENTRAL BEAM	98	101	103	106	109	111	114	117	119	122
WEST CENTRAL BEAM	14	15	15	15	15	15	15	15	15	16
WEST BEAM	57	59	60	62	63	65	67	68	70	71
TOTAL DBS CLIENTS										
EAST BEAM	2030	2124	2213	2289	2363	2431	2493	2550	2604	2657
EAST CENTRAL BEAM	3076	3200	3325	3440	3557	3669	3777	3883	3988	4093
WEST CENTRAL BEAM	497	513	528	538	547	554	558	560	561	561
WEST BEAM	1781	1845	1911	1974	2038	2099	2160	2220	2280	2341

APPENDIX B

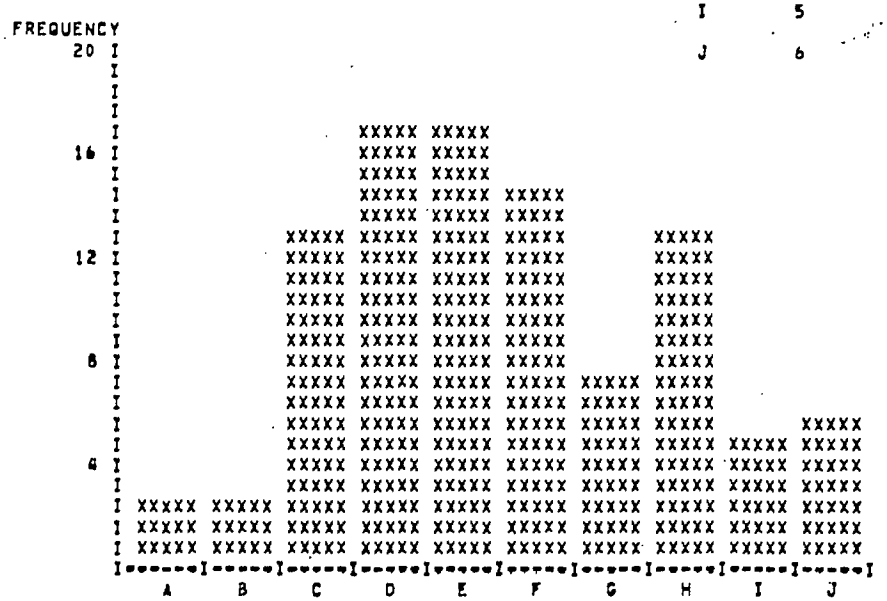
Risk Analysis: Results for TVRO Households

```
************************************
*  TVRO HOUSEHOLDS                 *
*  ------------------------------  *
*  ITEM   257        PERIOD     4  *
************************************
*                                  *
*  MINIMUM VALUE          58,9283  *
*                                  *
*  MAXIMUM VALUE          72,4286  *
*                                  *
*  MEAN VALUE             65,7245  *
*                                  *
*  STANDARD DEVIATION      3,0236  *
*                                  *
*  MODE VALUE             63,6615  *
*                                  *
*  NO. OF ITERATIONS        100    *
************************************
```

HISTOGRAM INTERPRETATION FOR - TVRO HOUSEHOLDS

CLASS	FREQ.	LOWER LIMIT	UPPER LIMIT	PERCENT CHANCE OF OCCURRENCE: WITHIN THE CLASS	OUTSIDE THE CLASS: TO LEFT	OUTSIDE THE CLASS: TO RIGHT
A	3	58,93	60,28	3,00	0,00	97,00
B	3	60,28	61,63	3,00	3,00	94,00
C	13	61,63	62,98	13,00	6,00	81,00
D	17	62,98	64,33	17,00	19,00	64,00
E	17	64,33	65,68	17,00	36,00	47,00
F	15	65,68	67,03	15,00	53,00	32,00
G	8	67,03	68,38	8,00	68,00	24,00
H	13	68,38	69,73	13,00	76,00	11,00
I	5	69,73	71,08	5,00	89,00	6,00
J	6	71,08	72,43	6,00	94,00	,00

** H I S T O G R A M **



CASE ** TVRO HOUSEHOLDS FORECAST

```
*********************************
*  TVRD HOUSEHOLDS              *
*  ---------------------------  *
*  ITEM   257        PERIOD   6 *
*********************************
*                               *
*  MINIMUM VALUE        207.0915 *
*                               *
*  MAXIMUM VALUE        253.0559 *
*                               *
*  MEAN VALUE           230.9741 *
*                               *
*  STANDARD DEVIATION    10.2714 *
*                               *
*  MODE VALUE           223.1656 *
*                               *
*  NO. OF ITERATIONS        100 *
*********************************
```

HISTOGRAM INTERPRETATION FOR - TVRD HOUSEHOLDS

CLASS	FREQ.	LOWER LIMIT	UPPER LIMIT	PERCENT CHANCE OF OCCURRENCE: WITHIN THE CLASS	OUTSIDE THE CLASS: TO LEFT	OUTSIDE THE CLASS: TO RIGHT
A	3	207.09	211.69	3.00	0.00	97.00
B	4	211.69	216.28	4.00	3.00	93.00
C	9	216.28	220.88	9.00	7.00	84.00
D	17	220.88	225.48	17.00	16.00	67.00
E	16	225.48	230.07	16.00	33.00	51.00
F	17	230.07	234.67	17.00	49.00	34.00
G	11	234.67	239.27	11.00	66.00	23.00
H	12	239.27	243.86	12.00	77.00	11.00
I	6	243.86	248.46	6.00	89.00	5.00
J	5	248.46	253.06	5.00	95.00	.00

** H I S T O G R A M **

```
FREQUENCY
   20 I
      I
      I
      I
      I                  XXXXX       XXXXX
   16 I                  XXXXX       XXXXX
      I                  XXXXX XXXXX XXXXX
      I                  XXXXX XXXXX XXXXX
      I                  XXXXX XXXXX XXXXX
      I                  XXXXX XXXXX XXXXX
   12 I                  XXXXX XXXXX XXXXX
      I                  XXXXX XXXXX XXXXX       XXXXX
      I                  XXXXX XXXXX XXXXX XXXXX XXXXX
      I                  XXXXX XXXXX XXXXX XXXXX XXXXX
      I            XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
    8 I            XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I            XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I            XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I            XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I            XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
    4 I            XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I      XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I------I-----I-----I-----I-----I-----I-----I-----I-----I-----I
          A     B     C     D     E     F     G     H     I     J
```

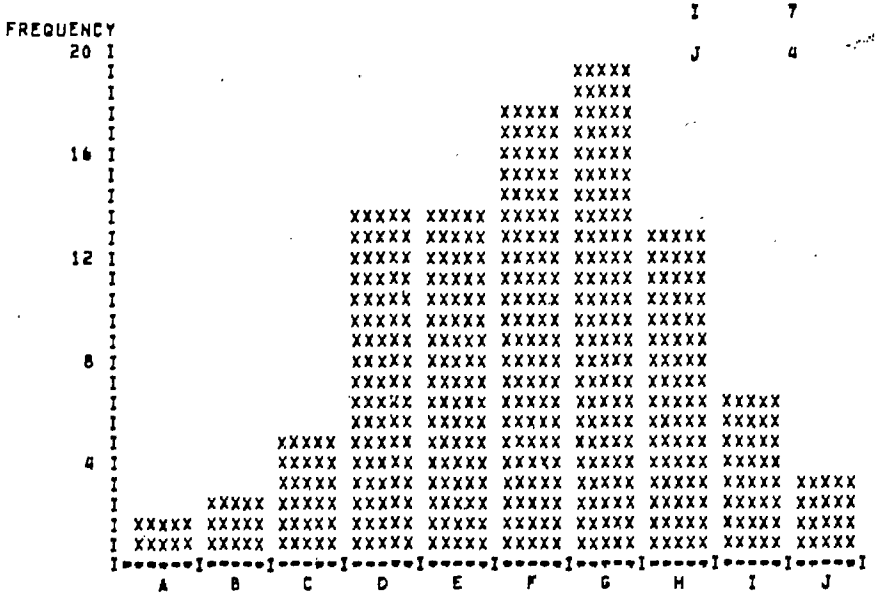
CASE ** TVRD HOUSEHOLDS FORECAST

```
*********************************
*  TVRO HOUSEHOLDS              *
*  ---------------------------  *
*  ITEM   257        PERIOD   11 *
*********************************
*                               *
*  MINIMUM VALUE        753.3441 *
*                               *
*  MAXIMUM VALUE        930.2544 *
*                               *
*  MEAN VALUE           851.8572 *
*                               *
*  STANDARD DEVIATION    35.6639 *
*                               *
*  MODE VALUE           868.8416 *
*                               *
*  NO. OF ITERATIONS        100 *
*********************************
```

HISTOGRAM INTERPRETATION FOR = TVRO HOUSEHOLDS

CLASS	FREQ.	LOWER LIMIT	UPPER LIMIT	PERCENT CHANCE OF OCCURRENCE: WITHIN THE CLASS	OUTSIDE THE CLASS: TO LEFT	OUTSIDE THE CLASS: TO RIGHT
A	2	753.34	771.04	2.00	0.00	98.00
B	3	771.04	788.73	3.00	2.00	95.00
C	5	788.73	806.42	5.00	5.00	90.00
D	14	806.42	824.11	14.00	10.00	76.00
E	14	824.11	841.80	14.00	24.00	62.00
F	18	841.80	859.49	18.00	38.00	44.00
G	20	859.49	877.18	20.00	56.00	24.00
H	13	877.18	894.87	13.00	76.00	11.00
I	7	894.87	912.56	7.00	89.00	4.00
J	4	912.56	930.25	4.00	96.00	.00

** H I S T O G R A M **



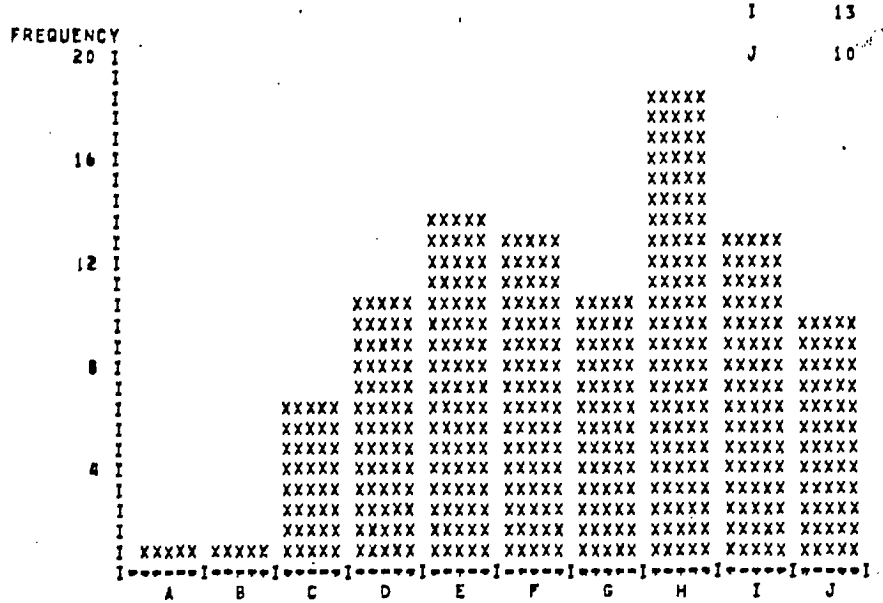
CASE ** TVRO HOUSEHOLDS FORECAST

```
*********************************
*  TVRO HOUSEHOLDS              *
*  ---------------------------  *
*  ITEM   257        PERIOD   16 *
*********************************
*                               *
*  MINIMUM VALUE        1029,3951 *
*                               *
*  MAXIMUM VALUE        1261,4924 *
*                               *
*  MEAN VALUE           1172,1711 *
*                               *
*  STANDARD DEVIATION     51,4052 *
*                               *
*  MODE VALUE           1204,7604 *
*                               *
*  NO, OF ITERATIONS         100 *
*********************************
```

HISTOGRAM INTERPRETATION FOR = TVRO HOUSEHOLDS

CLASS	FREQ,	LOWER LIMIT	UPPER LIMIT	PERCENT CHANCE OF OCCURRENCE: WITHIN THE CLASS	OUTSIDE THE CLASS: TO LEFT	OUTSIDE THE CLASS: TO RIGHT
A	1	1029,40	1052,60	1,00	0,00	99,00
B	1	1052,60	1075,81	1,00	1,00	98,00
C	7	1075,81	1099,02	7,00	2,00	91,00
D	11	1099,02	1122,23	11,00	9,00	80,00
E	14	1122,23	1145,44	14,00	20,00	66,00
F	13	1145,44	1168,65	13,00	34,00	53,00
G	11	1168,65	1191,86	11,00	47,00	42,00
H	19	1191,86	1215,07	19,00	58,00	23,00
I	13	1215,07	1238,28	13,00	77,00	10,00
J	10	1238,28	1261,49	10,00	90,00	,00

** H I S T O G R A M **



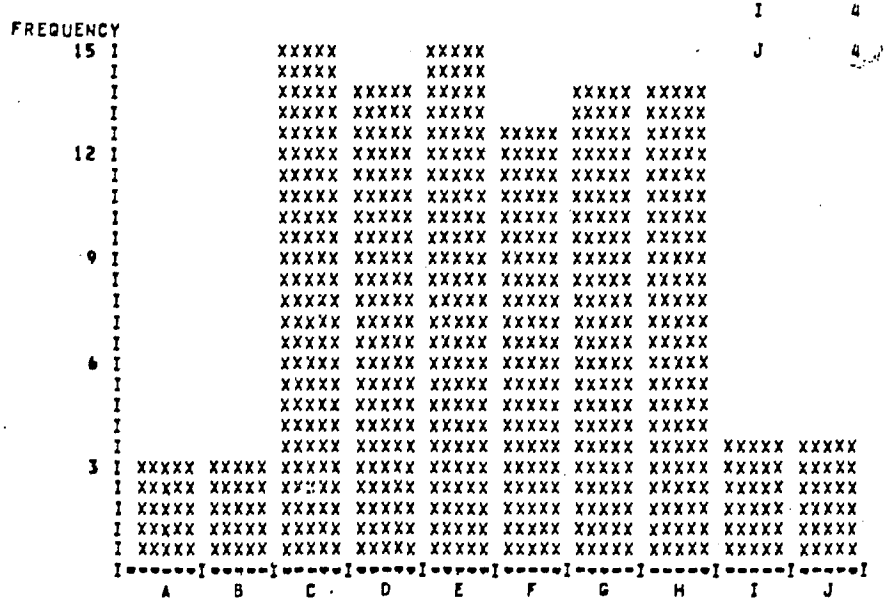
CASE ** TVRO HOUSEHOLDS FORECAST

```
*********************************
*  TVRO HOUSEHOLDS              *
*  ---------------------------  *
*  ITEM   257        PERIOD   21 *
*********************************
*                               *
*  MINIMUM VALUE        997,7824 *
*                               *
*  MAXIMUM VALUE       1235,7795 *
*                               *
*  MEAN VALUE          1118,1150 *
*                               *
*  STANDARD DEVIATION    52,2354 *
*                               *
*  MODE VALUE          1103,8183 *
*                               *
*  NO. OF ITERATIONS        100 *
*********************************
```

HISTOGRAM INTERPRETATION FOR - TVRO HOUSEHOLDS

CLASS	FREQ.	LOWER LIMIT	UPPER LIMIT	PERCENT CHANCE OF OCCURRENCE: WITHIN THE CLASS	OUTSIDE THE CLASS: TO LEFT	OUTSIDE THE CLASS: TO RIGHT
A	3	997,78	1021,58	3,00	0,00	97,00
B	3	1021,58	1045,38	3,00	3,00	94,00
C	15	1045,38	1069,18	15,00	6,00	79,00
D	14	1069,18	1092,98	14,00	21,00	65,00
E	16	1092,98	1116,78	16,00	35,00	49,00
F	13	1116,78	1140,58	13,00	51,00	36,00
G	14	1140,58	1164,38	14,00	64,00	22,00
H	14	1164,38	1188,18	14,00	78,00	8,00
I	4	1188,18	1211,98	4,00	92,00	4,00
J	4	1211,98	1235,78	4,00	96,00	,00

** H I S T O G R A M **



CASE ** TVRO HOUSEHOLDS FORECAST

APPENDIX C

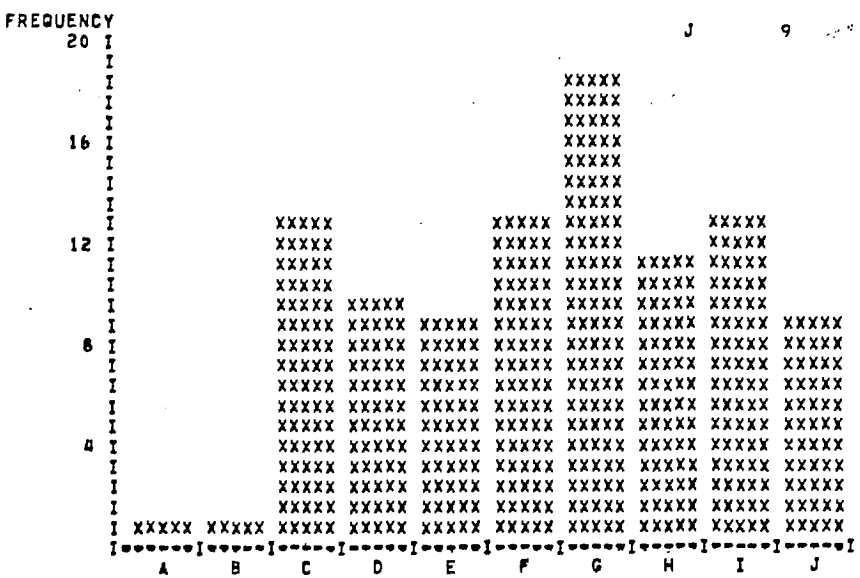
Risk Analysis: Results for DBS Clients

```
*********************************
*  DBS CLIENTS (HHLDS)          *
*  ---------------------------  *
*  ITEM    59        PERIOD    4 *
*********************************
*                               *
*  MINIMUM VALUE       2379,1576 *
*                               *
*  MAXIMUM VALUE       2594,6898 *
*                               *
*  MEAN VALUE          2506,6292 *
*                               *
*  STANDARD DEVIATION    49,2760 *
*                               *
*  MODE VALUE          2518,5557 *
*                               *
*  NO, OF ITERATIONS        100  *
*********************************
```

HISTOGRAM INTERPRETATION FOR - DBS CLIENTS (HHLDS)

CLASS	FREQ.	LOWER LIMIT	UPPER LIMIT	PERCENT CHANCE OF OCCURRENCE: WITHIN THE CLASS	OUTSIDE THE CLASS: TO LEFT	OUTSIDE THE CLASS: TO RIGHT
A	1	2379,16	2400,71	1,00	0,00	99,00
B	1	2400,71	2422,26	1,00	1,00	98,00
C	13	2422,26	2443,82	13,00	2,00	85,00
D	10	2443,82	2465,37	10,00	15,00	75,00
E	9	2465,37	2486,92	9,00	25,00	66,00
F	13	2486,92	2508,48	13,00	34,00	53,00
G	19	2508,48	2530,03	19,00	47,00	34,00
H	12	2530,03	2551,58	12,00	66,00	22,00
I	13	2551,58	2573,14	13,00	78,00	9,00
J	9	2573,14	2594,69	9,00	91,00	,00

** H I S T O G R A M **



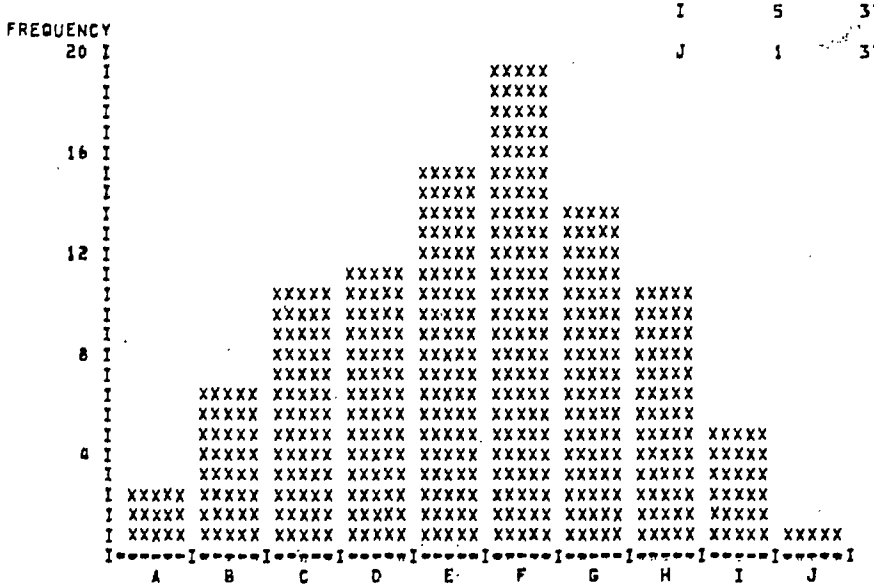
CASE ** DBS CLIENTS FORECAST

```
************************************
*  DBS CLIENTS (HHLDS)             *
*  -------------------------------*
*  ITEM    59        PERIOD     6 *
************************************
*                                  *
*  MINIMUM VALUE        3420,5146 *
*                                  *
*  MAXIMUM VALUE        3795,1084 *
*                                  *
*  MEAN VALUE           3603,8290 *
*                                  *
*  STANDARD DEVIATION     79,4360 *
*                                  *
*  MODE VALUE           3623,6929 *
*                                  *
*  NO. OF ITERATIONS          100 *
************************************
```

HISTOGRAM INTERPRETATION FOR = DBS CLIENTS (HHLDS)

CLASS	FREQ.	LOWER LIMIT	UPPER LIMIT	PERCENT CHANCE OF OCCURRENCE: WITHIN THE CLASS	OUTSIDE THE CLASS: TO LEFT	OUTSIDE THE CLASS: TO RIGHT
A	3	3420,51	3457,97	3,00	0,00	97,00
B	7	3457,97	3495,43	7,00	3,00	90,00
C	11	3495,43	3532,89	11,00	10,00	79,00
D	12	3532,89	3570,35	12,00	21,00	67,00
E	16	3570,35	3607,81	16,00	33,00	51,00
F	20	3607,81	3645,27	20,00	49,00	31,00
G	14	3645,27	3682,73	14,00	69,00	17,00
H	11	3682,73	3720,19	11,00	83,00	6,00
I	5	3720,19	3757,65	5,00	94,00	1,00
J	1	3757,65	3795,11	1,00	99,00	,00

** H I S T O G R A M **



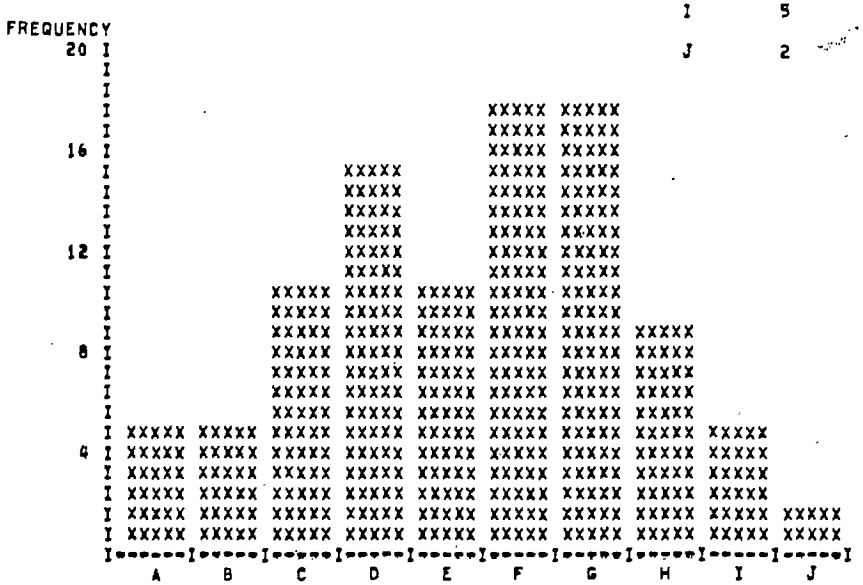
CASE: ** DBS CLIENTS FORECAST

```
************************************
*  DBS CLIENTS (HHLDS)             *
*  ------------------------------  *
*  ITEM    59        PERIOD    11  *
************************************
*                                  *
*  MINIMUM VALUE        6756.6230  *
*                                  *
*  MAXIMUM VALUE        7478.6124  *
*                                  *
*  MEAN VALUE           7109.9996  *
*                                  *
*  STANDARD DEVIATION    161.6549  *
*                                  *
*  MODE VALUE           7148.3317  *
*                                  *
*  NO. OF ITERATIONS         100   *
************************************
```

HISTOGRAM INTERPRETATION FOR - DBS CLIENTS (HHLDS)

CLASS	FREQ.	LOWER LIMIT	UPPER LIMIT	PERCENT CHANCE OF OCCURRENCE: WITHIN THE CLASS	OUTSIDE THE CLASS: TO LEFT	OUTSIDE THE CLASS: TO RIGHT
A	5	6756.62	6828.82	5.00	0.00	95.00
B	5	6828.82	6901.02	5.00	5.00	90.00
C	11	6901.02	6973.22	11.00	10.00	79.00
D	16	6973.22	7045.42	16.00	21.00	63.00
E	11	7045.42	7117.62	11.00	37.00	52.00
F	18	7117.62	7189.82	18.00	48.00	34.00
G	18	7189.82	7262.02	18.00	66.00	16.00
H	9	7262.02	7334.21	9.00	84.00	7.00
I	5	7334.21	7406.41	5.00	93.00	2.00
J	2	7406.41	7478.61	2.00	98.00	.00

** H I S T O G R A M **



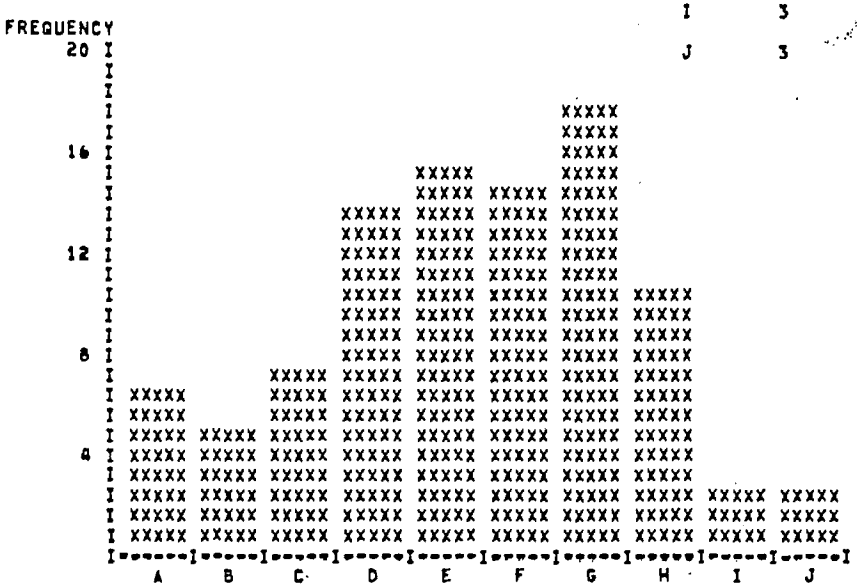
CASE ** DBS CLIENTS FORECAST

```
*********************************
*  DBS CLIENTS (HHLDS)          *
*  ---------------------------  *
*  ITEM    59        PERIOD   16 *
*********************************
*                               *
*  MINIMUM VALUE        8127,6246 *
*                               *
*  MAXIMUM VALUE        8945,9822 *
*                               *
*  MEAN VALUE           8527,4629 *
*                               *
*  STANDARD DEVIATION    183,0435 *
*                               *
*  MODE VALUE           8657,8457 *
*                               *
*  NO, OF ITERATIONS         100 *
*********************************
```

HISTOGRAM INTERPRETATION FOR * DBS CLIENTS (HHLDS)

CLASS	FREQ.	LOWER LIMIT	UPPER LIMIT	PERCENT CHANCE OF OCCURRENCE: WITHIN THE CLASS	OUTSIDE THE CLASS: TO LEFT	OUTSIDE THE CLASS: TO RIGHT
A	7	8127,62	8209,46	7,00	0,00	93,00
B	5	8209,46	8291,30	5,00	7,00	88,00
C	8	8291,30	8373,13	8,00	12,00	80,00
D	14	8373,13	8454,97	14,00	20,00	66,00
E	16	8454,97	8536,80	16,00	34,00	50,00
F	15	8536,80	8618,64	15,00	50,00	35,00
G	18	8618,64	8700,47	18,00	65,00	17,00
H	11	8700,47	8782,31	11,00	83,00	6,00
I	3	8782,31	8864,15	3,00	94,00	3,00
J	3	8864,15	8945,98	3,00	97,00	,00

** H I S T O G R A M **



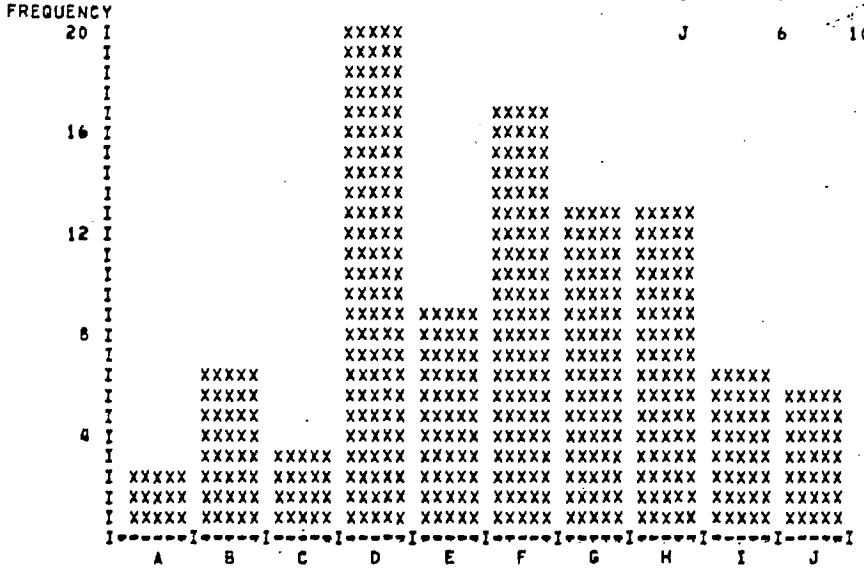
CASE ** DBS CLIENTS FORECAST

```
************************************
*  DBS CLIENTS (HHLDS)             *
*  ---------------------------     *
*  ITEM    59        PERIOD    21  *
************************************
*                                  *
*  MINIMUM VALUE        9203,8790  *
*                                  *
*  MAXIMUM VALUE       10108,8878  *
*                                  *
*  MEAN VALUE           9684,0346  *
*                                  *
*  STANDARD DEVIATION    214,0738  *
*                                  *
*  MODE VALUE           9516,1555  *
*                                  *
*  NO, OF ITERATIONS         100   *
************************************
```

HISTOGRAM INTERPRETATION FOR - DBS CLIENTS (HHLDS)

CLASS	FREQ.	LOWER LIMIT	UPPER LIMIT	PERCENT CHANCE OF OCCURRENCE: WITHIN THE CLASS	OUTSIDE THE CLASS: TO LEFT	OUTSIDE THE CLASS: TO RIGHT
A	3	9203,88	9294,38	3,00	0,00	97,00
B	7	9294,38	9384,88	7,00	3,00	90,00
C	4	9384,88	9475,38	4,00	10,00	86,00
D	21	9475,38	9565,88	21,00	14,00	65,00
E	9	9565,88	9656,38	9,00	35,00	56,00
F	17	9656,38	9746,88	17,00	44,00	39,00
G	13	9746,88	9837,39	13,00	61,00	26,00
H	13	9837,39	9927,89	13,00	74,00	13,00
I	7	9927,89	10018,39	7,00	87,00	6,00
J	6	10018,39	10108,89	6,00	94,00	,00

** H I S T O G R A M **



CASE ** DBS CLIENTS FORECAST

APPENDIX D

English Language Pay-TV: Subscribers and Revenue Projection (High Penetration Service)

ENGLISH SPEAKING PAY-TV 81/05/04

SUBSCRIBER FINANCED SERVICES

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
PAY-TV SUBSCRIBERS (000)											
QUEBEC	0	0	0	6	14	26	73	96	110	125	142
ATLANTIC PROVINCES	0	0	0	4	9	17	49	66	76	89	102
ONTARIO	0	0	0	27	60	114	315	408	465	524	589
MAN._SASK.	0	0	0	4	9	18	50	65	74	84	95
ALBERTA	0	0	0	5	12	23	63	83	95	107	121
B.C.,NWT._YUKON	0	0	0	11	24	45	124	159	179	200	222
CANADA	0	0	0	58	128	243	673	876	999	1130	1271
PAY-TV REVENUES ($000)											
QUEBEC	0	0	0	320	734	1409	3939	5174	5945	6758	7648
ATLANTIC PROVINCES	0	0	0	206	472	928	2641	3544	4125	4782	5514
ONTARIO	0	0	0	1475	3261	6153	16986	22027	25099	28320	31821
MAN._SASK.	0	0	0	227	506	968	2691	3523	4017	4554	5139
ALBERTA	0	0	0	290	647	1230	3418	4461	5111	5795	6543
B.C.,NWT._YUKON	0	0	0	599	1311	2446	6692	8567	9669	10786	11977
CANADA	0	0	0	3117	6931	13134	36367	47297	53965	60996	68641
NPV PAY-TV REVENUES ($000)											
CANADA	0	0	0	3117	9306	19776	45662	75720	106341	137243	168293
PAY-TV REVENUES/BEAM ($000)											
EAST	0	0	0	526	1206	2337	6580	8718	10070	11540	13162
EAST CENTRAL	0	0	0	1475	3261	6153	16986	22027	25099	28320	31821
WEST CENTRAL	0	0	0	227	506	968	2691	3523	4017	4554	5139
WEST	0	0	0	889	1958	3676	10110	13028	14779	16581	18519

ENGLISH SPEAKING PAY-TV 81/05/04

SUBSCRIBER FINANCED SERVICES

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
PAY-TV SUBSCRIBERS (000)										
QUEBEC	149	155	161	167	172	177	182	187	191	195
ATLANTIC PROVINCES	109	114	120	124	128	131	134	137	139	142
ONTARIO	615	640	665	688	711	734	755	777	798	819
MAN._SASK.	99	103	106	108	109	111	112	112	112	112
ALBERTA	127	133	138	143	149	154	159	163	168	173
B.C.+NWT._YUKON	229	236	244	251	259	266	273	281	288	295
CANADA	1328	1381	1434	1481	1528	1573	1615	1656	1696	1735
PAY-TV REVENUES ($000)										
QUEBEC	8030	8380	8721	9016	9308	9581	9832	10071	10300	10526
ATLANTIC PROVINCES	5869	6176	6464	6686	6900	7094	7256	7398	7525	7646
ONTARIO	33216	34560	35907	37152	38415	39626	40791	41937	43066	44205
MAN._SASK.	5362	5544	5705	5810	5905	5979	6024	6049	6058	6058
ALBERTA	6859	7163	7467	7747	8031	8304	8566	8825	9080	9338
B.C.+NWT._YUKON	12370	12766	13171	13570	13978	14369	14759	15151	15544	15942
CANADA	71706	74589	77434	79980	82536	84954	87229	89431	91573	93715
NPV PAY-TV REVENUES ($000)										
CANADA	197254	224152	249083	272076	293261	312730	330579	346917	361855	375504
PAY-TV REVENUES/BEAM ($000)										
EAST	13898	14556	15185	15702	16208	16676	17088	17469	17824	18172
EAST CENTRAL	33216	34560	35907	37152	38415	39626	40791	41937	43066	44205
WEST CENTRAL	5362	5544	5705	5810	5905	5979	6024	6049	6058	6058
WEST	19229	19929	20638	21316	22009	22673	23326	23976	24624	25280

APPENDIX E

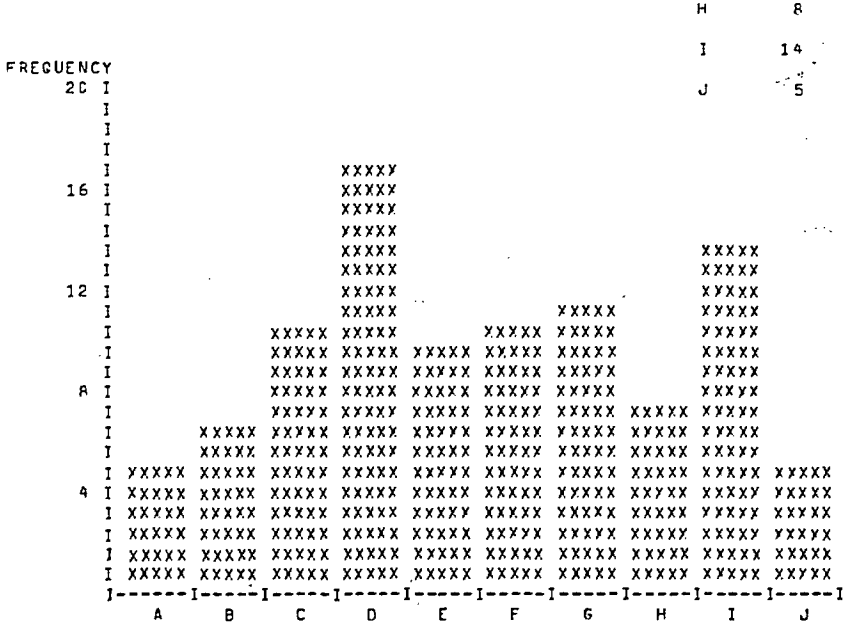
Risk Analysis: Results for English Language Pay-TV Revenues (High Penetration Service)

PAY-TV REVENUES	
ITEM 112	PERIOD 4
MINIMUM VALUE	2753.0265
MAXIMUM VALUE	3642.9298
MEAN VALUE	3207.0741
STANDARD DEVIATION	221.5428
MODE VALUE	3071.9558
NO. OF ITERATIONS	100

HISTOGRAM INTERPRETATION FOR - PAY-TV REVENUES

CLASS	FREQ.	LOWER LIMIT	UPPER LIMIT	PERCENT CHANCE OF OCCURRENCE: WITHIN THE CLASS	OUTSIDE THE CLASS: TO LEFT	OUTSIDE THE CLASS: TO RIGHT
A	5	2753.03	2842.02	5.00	0.00	95.00
B	7	2842.02	2931.01	7.00	5.00	88.00
C	11	2931.01	3020.00	11.00	12.00	77.00
D	17	3020.00	3108.99	17.00	23.00	60.00
E	10	3108.99	3197.98	10.00	40.00	50.00
F	11	3197.98	3286.97	11.00	50.00	39.00
G	12	3286.97	3375.96	12.00	61.00	27.00
H	8	3375.96	3464.95	8.00	73.00	19.00
I	14	3464.95	3553.94	14.00	81.00	5.00
J	5	3553.94	3642.93	5.00	95.00	.00

** H I S T O G R A M **



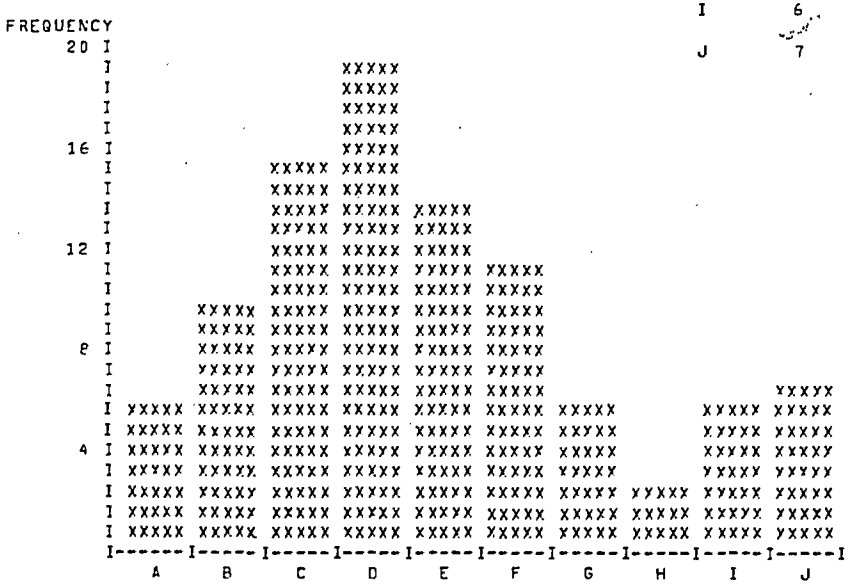
CASE ** ENGLISH SPEAKING PAY-TV

```
*********************************
*  PAY-TV REVENUES              *
*  ---------------------------  *
*  ITEM   112        PERIOD   6 *
*********************************
*                               *
*  MINIMUM VALUE       11528.8464 *
*                               *
*  MAXIMUM VALUE       15713.4309 *
*                               *
*  MEAN VALUE          13349.7807 *
*                               *
*  STANDARD DEVIATION   1032.9135 *
*                               *
*  MODE VALUE          13016.8590 *
*                               *
*  NO. OF ITERATIONS        100  *
*********************************
```

HISTOGRAM INTERPRETATION FOR - PAY-TV REVENUES

CLASS	FREQ.	LOWER LIMIT	UPPER LIMIT	PERCENT CHANCE OF OCCURRENCE: WITHIN THE CLASS	OUTSIDE THE CLASS: TO LEFT	OUTSIDE THE CLASS: TO RIGHT
A	6	11528.85	11947.30	6.00	0.00	94.00
B	10	11947.30	12365.76	10.00	6.00	84.00
C	16	12365.76	12784.22	16.00	16.00	68.00
D	20	12784.22	13202.68	20.00	32.00	48.00
E	14	13202.68	13621.14	14.00	52.00	34.00
F	12	13621.14	14039.60	12.00	66.00	22.00
G	6	14039.60	14458.06	6.00	78.00	16.00
H	3	14458.06	14876.51	3.00	84.00	13.00
I	6	14876.51	15294.97	6.00	87.00	7.00
J	7	15294.97	15713.43	7.00	93.00	.00

** H I S T O G R A M **



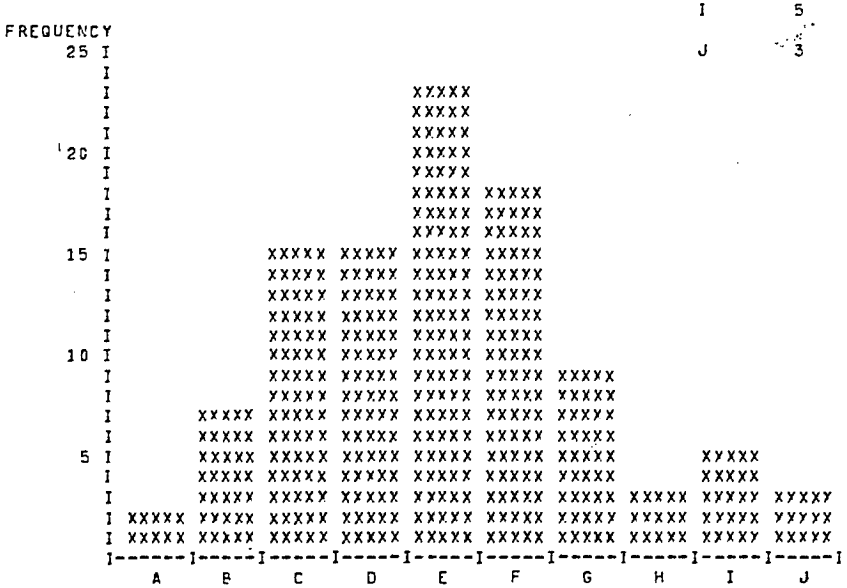
CASE ** ENGLISH SPEAKING PAY-TV

PAY-TV REVENUES	
ITEM 112	PERIOD 11
MINIMUM VALUE	58795.6253
MAXIMUM VALUE	84481.0685
MEAN VALUE	70419.8358
STANDARD DEVIATION	5160.1254
MODE VALUE	70294.2166
NO. OF ITERATIONS	100

HISTOGRAM INTERPRETATION FOR - PAY-TV REVENUES

CLASS	FREQ.	LOWER LIMIT	UPPER LIMIT	PERCENT CHANCE OF OCCURRENCE: WITHIN THE CLASS	OUTSIDE THE CLASS: TO LEFT	OUTSIDE THE CLASS: TO RIGHT
A	2	58795.63	61364.17	2.00	0.00	98.00
B	7	61364.17	63932.71	7.00	2.00	91.00
C	15	63932.71	66501.26	15.00	9.00	76.00
D	15	66501.26	69069.80	15.00	24.00	61.00
E	23	69069.80	71638.35	23.00	39.00	38.00
F	18	71638.35	74206.89	18.00	62.00	20.00
G	9	74206.89	76775.44	9.00	80.00	11.00
H	3	76775.44	79343.98	3.00	89.00	8.00
I	5	79343.98	81912.52	5.00	92.00	3.00
J	3	81912.52	84481.07	3.00	97.00	.00

** H I S T O G R A M **



CASE ** ENGLISH SPEAKING PAY-TV

```
*********************************
*  PAY-TV REVENUES              *
*  ----------------------------*
*  ITEM   112        PERIOD    1*
*********************************
*                               *
*  MINIMUM VALUE       72414.6729 *
*                               *
*  MAXIMUM VALUE       98663.4471 *
*                               *
*  MEAN VALUE          84767.4155 *
*                               *
*  STANDARD DEVIATION   5751.9570 *
*                               *
*  MODE VALUE          84177.3596 *
*                               *
*  NO. OF ITERATIONS          100 *
*********************************
```

HISTOGRAM INTERPRETATION FOR - PAY-TV REVENUES

CLASS	FREQ.	LOWER LIMIT	UPPER LIMIT	PERCENT CHANCE OF OCCURRENCE: WITHIN THE CLASS	OUTSIDE THE CLASS: TO LEFT	OUTSIDE THE CLASS: TO RIGHT
A	4	72414.67	75039.55	4.00	0.00	96.00
B	3	75039.55	77664.43	3.00	4.00	93.00
C	17	77664.43	80289.31	17.00	7.00	76.00
D	17	80289.31	82914.18	17.00	24.00	59.00
E	18	82914.18	85539.06	18.00	41.00	41.00
F	13	85539.06	88163.94	13.00	59.00	28.00
G	10	88163.94	90788.81	10.00	72.00	18.00
H	10	90788.81	93413.69	10.00	82.00	8.00
I	5	93413.69	96038.57	5.00	92.00	3.00
J	3	96038.57	98663.45	3.00	97.00	.00

** H I S T O G R A M **

```
FREQUENCY
    20 I
       I
       I
       I                        XXXXX
       I             XXXXX XXXXX XXXXX
    16 I             XXXXX XXXXX XXXXX
       I             XXXXX XXXXX XXXXX
       I             XXXXX XXXXX XXXXX
       I             XXXXX XXXXX XXXXX
       I             XXXXX XXXXX XXXXX XXXXX
    12 I             XXXXX XXXXX XXXXX XXXXX
       I             XXXXX XXXXX XXXXX XXXXX
       I             XXXXX XXXXX XXXXX XXXXX
       I             XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
       I             XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
     8 I             XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
       I             XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
       I             XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
       I             XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
       I             XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
     4 I             XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
       I XXXXX       XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
       I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
       I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
       I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
       I------I-----I-----I-----I-----I-----I-----I-----I-----I-----I
           A     B     C     D     E     F     G     H     I     J
```

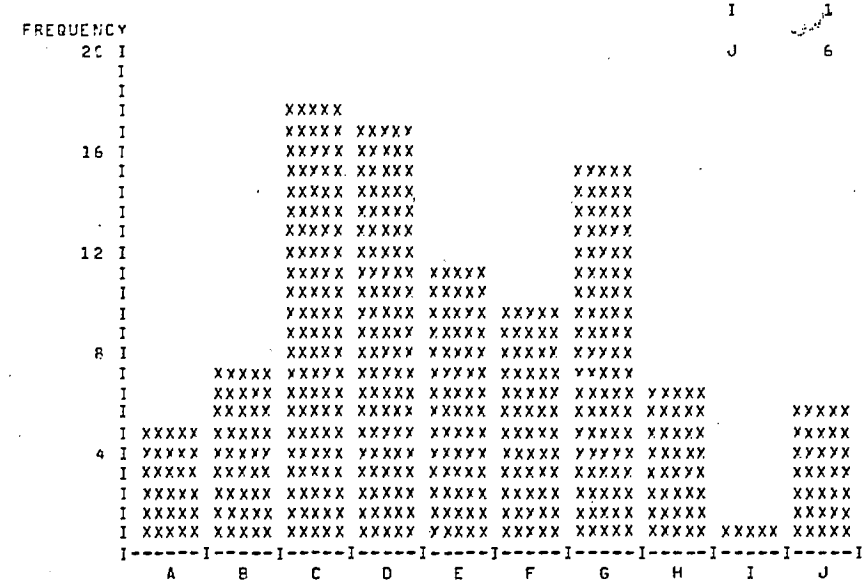
CASE ** ENGLISH SPEAKING PAY-TV

```
*********************************
*  PAY-TV REVENUES              *
*  ---------------------------  *
*  ITEM   I12        PERIOD   21 *
*********************************
*                               *
*  MINIMUM VALUE       82237.2428 *
*                               *
*  MAXIMUM VALUE      112973.1204 *
*                               *
*  MEAN VALUE          96076.8274 *
*                               *
*  STANDARD DEVIATION   7300.9304 *
*                               *
*  MODE VALUE          89878.5748 *
*                               *
*  NO. OF ITERATIONS         100 *
*********************************
```

HISTOGRAM INTERPPETATION FOR - PAY-TV REVENUES

CLASS	FREQ.	LOWER LIMIT	UPPER LIMIT	PERCENT CHANCE OF OCCURRENCE: WITHIN THE CLASS	OUTSIDE THE CLASS: TO LEFT	OUTSIDE THE CLASS: TO RIGHT
A	5	82237.24	85310.83	5.00	0.00	95.00
B	8	85310.83	88384.42	8.00	5.00	87.00
C	18	88384.42	91458.01	18.00	13.00	69.00
D	17	91458.01	94531.59	17.00	31.00	52.00
E	12	94531.59	97605.18	12.00	48.00	40.00
F	10	97605.18	100678.77	10.00	60.00	30.00
G	16	100678.77	103752.36	16.00	70.00	14.00
H	7	103752.36	106825.94	7.00	86.00	7.00
I	1	106825.94	109899.53	1.00	93.00	6.00
J	6	109899.53	112973.12	6.00	94.00	.00

** H I S T O G R A M **



CASE ** ENGLISH SPEAKING PAY-TV

APPENDIX F

Public Television: Budget Projection

SUBSCRIBER FINANCED SERVICES

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
PAY-TV SUBSCRIBERS (000)											
QUEBEC	0	0	0	0	0	0	0	0	0	0	0
ATLANTIC PROVINCES	0	0	0	286	309	337	366	400	432	469	511
ONTARIO	0	0	0	0	0	0	0	0	0	0	0
MAN.-SASK.	0	0	0	316	334	355	375	400	422	448	476
ALBERTA	0	0	0	408	432	457	484	513	543	573	606
B.C.,N.W.T.-YUKON	0	0	0	848	882	919	957	994	1034	1070	1109
CANADA	0	0	0	1858	1957	2068	2181	2307	2431	2559	2701
PAY-TV REVENUES ($000)											
QUEBEC	0	0	0	0	0	0	0	0	0	0	0
ATLANTIC PROVINCES	0	0	0	3812	4122	4496	4876	5331	5762	6254	6807
ONTARIO	0	0	0	0	0	0	0	0	0	0	0
MAN.-SASK.	0	0	0	4218	4451	4729	5004	5332	5633	5969	6344
ALBERTA	0	0	0	5443	5753	6098	6449	6842	7236	7637	8077
B.C.,N.W.T.-YUKON	0	0	0	11302	11765	12254	12753	13260	13780	14266	14786
CANADA	0	0	0	24776	26092	27577	29083	30764	32411	34126	36014
NPV PAY-TV REVENUES ($000)											
CANADA	0	0	0	24776	48072	70056	90757	110308	128699	145988	162279
PAY-TV REVENUES/BEAM ($000)											
EAST	0	0	0	3812	4122	4496	4876	5331	5762	6254	6807
EAST CENTRAL	0	0	0	0	0	0	0	0	0	0	0
WEST CENTRAL	0	0	0	4218	4451	4729	5004	5332	5633	5969	6344
WEST	0	0	0	16746	17518	18352	19203	20102	21016	21903	22863

PUBLIC TELEVISION 81/05/06

SUBSCRIBER FINANCED SERVICES

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
PAY-TV SUBSCRIBERS (000)										
QUEBEC	0	0	0	0	0	0	0	0	0	0
ATLANTIC PROVINCES	543	572	599	619	639	657	672	685	697	708
ONTARIO	0	0	0	0	0	0	0	0	0	0
MAN.,_SASK.	497	513	528	538	547	554	558	560	561	561
ALBERTA	635	663	691	717	744	769	793	817	841	865
B.C.,NWT.,_YUKON	1145	1182	1220	1256	1294	1331	1367	1403	1439	1476
CANADA	2820	2930	3038	3131	3223	3310	3389	3465	3538	3610
PAY-TV REVENUES ($000)										
QUEBEC	0	0	0	0	0	0	0	0	0	0
ATLANTIC PROVINCES	7245	7625	7980	8255	8518	8758	8958	9134	9290	9440
ONTARIO	0	0	0	0	0	0	0	0	0	0
MAN.,_SASK.	6620	6844	7043	7173	7290	7381	7437	7468	7479	7479
ALBERTA	8468	8843	9218	9564	9914	10251	10576	10895	11210	11529
B.C.,NWT.,_YUKON	15272	15761	16261	16752	17257	17740	18221	18705	19190	19681
CANADA	37605	39072	40502	41744	42979	44131	45192	46202	47169	48129
NPV PAY-TV REVENUES ($000)										
CANADA	177468	191558	204598	216599	227630	237744	246991	255432	263126	270136
PAY-TV REVENUES/BEAM ($000)										
EAST	7245	7625	7980	8255	8518	8758	8958	9134	9290	9440
EAST CENTRAL	0	0	0	0	0	0	0	0	0	0
WEST CENTRAL	6620	6844	7043	7173	7290	7381	7437	7468	7479	7479
WEST	23740	24604	25479	26316	27171	27991	28797	29600	30401	31210

APPENDIX G

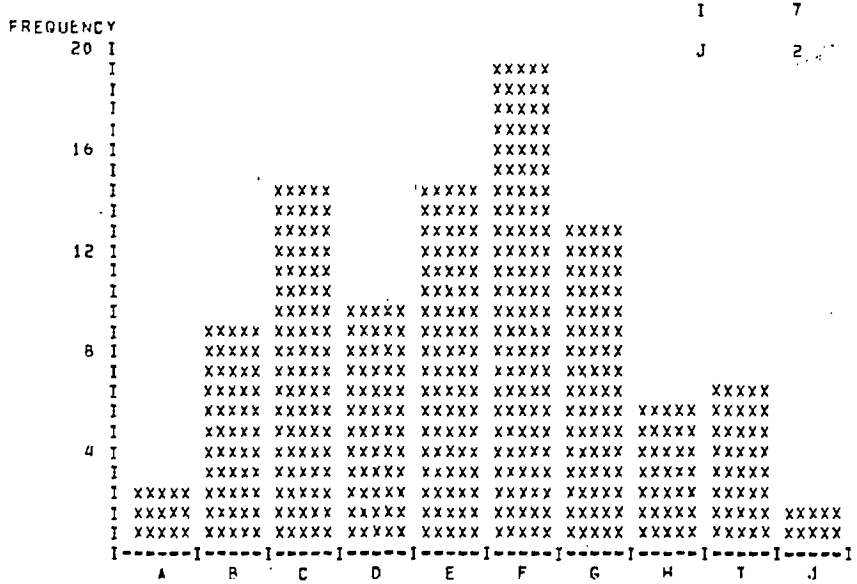
Risk Analysis: Results for Public Television Budget

```
*********************************
*  PAY-TV REVENUES              *
*  ----------------------------  *
*  ITEM   112        PERIOD    4  *
*********************************
*                               *
*  MINIMUM VALUE       22246,9744  *
*                               *
*  MAXIMUM VALUE       27996,3940  *
*                               *
*  MEAN VALUE          24995,0774  *
*                               *
*  STANDARD DEVIATION   1277,5476  *
*                               *
*  MODE VALUE          25446,3397  *
*                               *
*  NO. OF ITERATIONS          100  *
*********************************
```

HISTOGRAM INTERPRETATION FOR - PAY-TV REVENUES

CLASS	FREQ.	LOWER LIMIT	UPPER LIMIT	PERCENT CHANCE OF OCCURRENCE: WITHIN THE CLASS	OUTSIDE THE CLASS: TO LEFT	OUTSIDE THE CLASS: TO RIGHT
A	3	22246,97	22821,92	3,00	0,00	97,00
B	9	22821,92	23396,86	9,00	3,00	88,00
C	15	23396,86	23971,80	15,00	12,00	73,00
D	10	23971,80	24546,74	10,00	27,00	63,00
E	15	24546,74	25121,68	15,00	37,00	48,00
F	20	25121,68	25696,63	20,00	52,00	28,00
G	13	25696,63	26271,57	13,00	72,00	15,00
H	6	26271,57	26846,51	6,00	85,00	9,00
I	7	26846,51	27421,45	7,00	91,00	2,00
J	2	27421,45	27996,39	2,00	98,00	,00

** H I S T O G R A M **



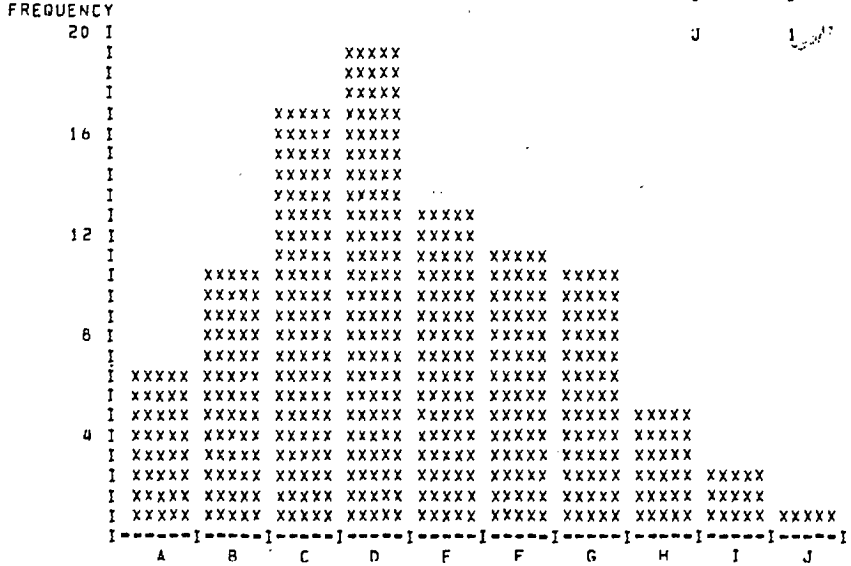
CASE ** PUBLIC TELEVISION

```
************************************
*  PAY-TV REVENUES                 *
*  ------------------------------  *
*  ITEM   112        PERIOD     6  *
************************************
*                                  *
*  MINIMUM VALUE        24718.9039 *
*                                  *
*  MAXIMUM VALUE        31018.9301 *
*                                  *
*  MEAN VALUE           27240.5143 *
*                                  *
*  STANDARD DEVIATION    1336.4003 *
*                                  *
*  MODE VALUE           26935.7036 *
*                                  *
*  NO. OF ITERATIONS           100 *
************************************
```

HISTOGRAM INTERPRETATION FOR - PAY-TV REVENUES

CLASS	FREQ.	LOWER LIMIT	UPPER LIMIT	PERCENT CHANCE OF OCCURRENCE: WITHIN THE CLASS	OUTSIDE THE CLASS: TO LEFT	OUTSIDE THE CLASS: TO RIGHT
A	7	24718.90	25348.91	7.00	0.00	93.00
B	11	25348.91	25978.91	11.00	7.00	82.00
C	17	25978.91	26608.91	17.00	18.00	65.00
D	20	26608.91	27238.91	20.00	35.00	45.00
E	13	27238.91	27868.92	13.00	55.00	32.00
F	12	27868.92	28498.92	12.00	68.00	20.00
G	11	28498.92	29128.92	11.00	80.00	9.00
H	5	29128.92	29758.92	5.00	91.00	4.00
I	3	29758.92	30388.93	3.00	96.00	1.00
J	1	30388.93	31018.93	1.00	99.00	.00

** H I S T O G R A M **



CASE ** PUBLIC TELEVISION

```
*********************************
*  PAY-TV REVENUES              *
*  ----------------------------*
*  ITEM   112        PERIOD   11 *
*********************************
*                               *
*  MINIMUM VALUE       32578.2802 *
*                               *
*  MAXIMUM VALUE       40817.3171 *
*                               *
*  MEAN VALUE          36445.0830 *
*                               *
*  STANDARD DEVIATION   1750.0525 *
*                               *
*  MODE VALUE          35487.9514 *
*                               *
*  NO. OF ITERATIONS        100 *
*********************************
```

HISTOGRAM INTERPRETATION FOR - PAY-TV REVENUES

CLASS	FREQ.	LOWER LIMIT	UPPER LIMIT	PERCENT CHANCE OF OCCURRENCE: WITHIN THE CLASS	OUTSIDE THE CLASS: TO LEFT	OUTSIDE THE CLASS: TO RIGHT
A	3	32578.28	33402.18	3.00	0.00	97.00
B	8	33402.18	34226.09	8.00	3.00	89.00
C	12	34226.09	35049.99	12.00	11.00	77.00
D	17	35049.99	35873.89	17.00	23.00	60.00
E	15	35873.89	36697.80	15.00	40.00	45.00
F	17	36697.80	37521.70	17.00	55.00	28.00
G	15	37521.70	38345.61	15.00	72.00	13.00
H	8	38345.61	39169.51	8.00	87.00	5.00
I	2	39169.51	39993.41	2.00	95.00	3.00
J	3	39993.41	40817.32	3.00	97.00	.00

** H I S T O G R A M **

```
FREQUENCY
     20 I
        I
        I
        I
        I                 XXXXX       XXXXX
     16 I                 XXXXX       XXXXX
        I                 XXXXX       XXXXX
        I                 XXXXX XXXXX XXXXX XXXXX
        I                 XXXXX XXXXX XXXXX XXXXX
        I                 XXXXX XXXXX XXXXX XXXXX
     12 I                 XXXXX XXXXX XXXXX XXXXX
        I           XXXXX XXXXX XXXXX XXXXX XXXXX
        I           XXXXX XXXXX XXXXX XXXXX XXXXX
        I           XXXXX XXXXX XXXXX XXXXX XXXXX
        I           XXXXX XXXXX XXXXX XXXXX XXXXX
      8 I           XXXXX XXXXX XXXXX XXXXX XXXXX
        I     XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I     XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I     XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I     XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      4 I     XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I     XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX       XXXXX
        I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I------I-----I-----I-----I-----I-----I-----I-----I-----I-----I
            A     B     C     D     E     F     G     H     I     J
```

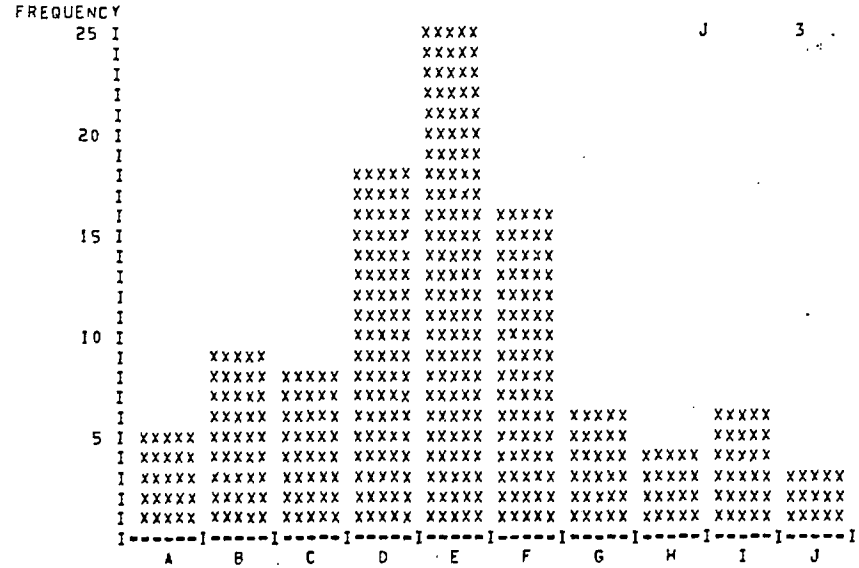
CASE ** PUBLIC TELEVISION

```
*********************************
*  PAY-TV REVENUES              *
*  ----------------------------*
*  ITEM   112        PERIOD   16 *
*********************************
*                               *
*  MINIMUM VALUE       38868,1602 *
*                               *
*  MAXIMUM VALUE       49054,6369 *
*                               *
*  MEAN VALUE          43417,8243 *
*                               *
*  STANDARD DEVIATION   2169,7547 *
*                               *
*  MODE VALUE          43415,6474 *
*                               *
*  NO, OF ITERATIONS         100 *
*********************************
```

HISTOGRAM INTERPRETATION FOR - PAY-TV REVENUES

CLASS	FREQ.	LOWER LIMIT	UPPER LIMIT	PERCENT CHANCE OF OCCURRENCE: WITHIN THE CLASS	OUTSIDE THE CLASS: TO LEFT	OUTSIDE THE CLASS: TO RIGHT
A	5	38868,16	39886,81	5,00	0,00	95,00
B	9	39886,81	40905,46	9,00	5,00	86,00
C	8	40905,46	41924,10	8,00	14,00	78,00
D	18	41924,10	42942,75	18,00	22,00	60,00
E	25	42942,75	43961,40	25,00	40,00	35,00
F	16	43961,40	44980,05	16,00	65,00	19,00
G	6	44980,05	45998,69	6,00	81,00	13,00
H	4	45998,69	47017,34	4,00	87,00	9,00
I	6	47017,34	48035,99	6,00	91,00	3,00
J	3	48035,99	49054,64	3,00	97,00	,00

** H I S T O G R A M **



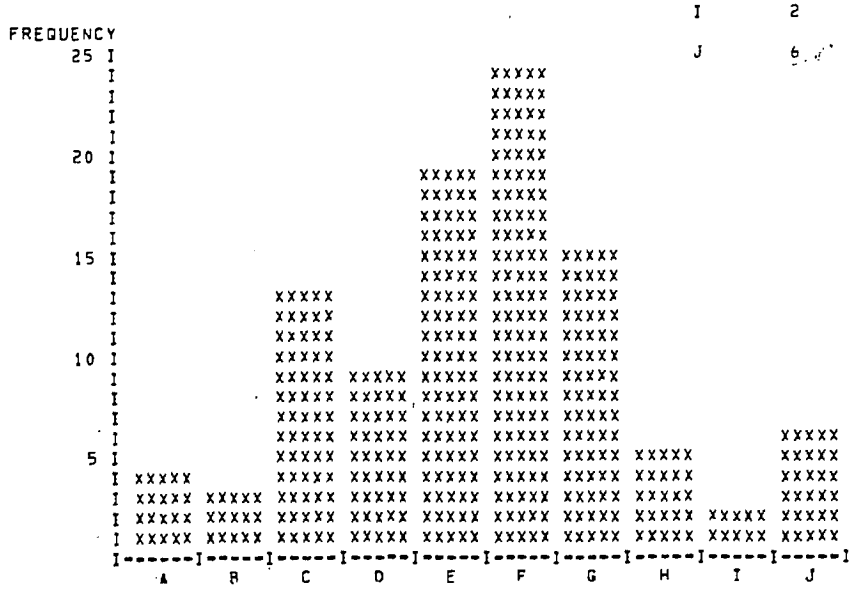
CASE ** PUBLIC TELEVISION

```
*********************************
*  PAY-TV REVENUES              *
*  ----------------------------*
*  ITEM   112        PERIOD    21  *
*********************************
*                                 *
*  MINIMUM VALUE       43051,1691 *
*                                 *
*  MAXIMUM VALUE       53951,4365 *
*                                 *
*  MEAN VALUE          48465,6417 *
*                                 *
*  STANDARD DEVIATION   2306,1219 *
*                                 *
*  MODE VALUE          48962,4054 *
*                                 *
*  NO. OF ITERATIONS          100 *
*********************************
```

HISTOGRAM INTERPRETATION FOR - PAY-TV REVENUES

CLASS	FREQ.	LOWER LIMIT	UPPER LIMIT	PERCENT CHANCE OF OCCURRENCE: WITHIN THE CLASS	OUTSIDE THE CLASS: TO LEFT	OUTSIDE THE CLASS: TO RIGHT
A	4	43051,17	44141,20	4,00	0,00	96,00
B	3	44141,20	45231,22	3,00	4,00	93,00
C	13	45231,22	46321,25	13,00	7,00	80,00
D	9	46321,25	47411,28	9,00	20,00	71,00
E	19	47411,28	48501,30	19,00	29,00	52,00
F	24	48501,30	49591,33	24,00	48,00	28,00
G	15	49591,33	50681,36	15,00	72,00	13,00
H	5	50681,36	51771,38	5,00	87,00	8,00
I	2	51771,38	52861,41	2,00	92,00	6,00
J	6	52861,41	53951,44	6,00	94,00	,00

** H I S T O G R A M **



CASE ** PUBLIC TELEVISION

APPENDIX H

English Language Children Programming: Subscribers and Revenue Projections

CHILDREN ENGLISH SPEAKING PAY-TV 81/05/05

SUBSCRIBER FINANCED SERVICES

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
PAY-TV SUBSCRIBERS (000)											
QUEBEC	0	0	0	1	7	13	20	30	41	46	52
ATLANTIC PROVINCES	0	0	0	1	5	8	13	20	28	33	38
ONTARIO	0	0	0	6	32	56	87	126	172	194	218
MAN.,SASK.	0	0	0	1	5	9	14	20	28	31	35
ALBERTA	0	0	0	1	6	11	17	26	35	40	45
B.C.,NWT.,YUKON	0	0	0	3	13	22	34	49	66	74	82
CANADA	0	0	0	14	68	120	185	272	370	418	470
PAY-TV REVENUES ($000)											
QUEBEC	0	0	0	17	87	154	241	356	489	556	629
ATLANTIC PROVINCES	0	0	0	11	56	102	162	244	339	393	453
ONTARIO	0	0	0	77	385	675	1039	1517	2064	2329	2616
MAN.,SASK.	0	0	0	12	60	106	165	243	330	374	423
ALBERTA	0	0	0	15	76	135	209	307	420	476	538
B.C.,NWT.,YUKON	0	0	0	31	155	268	409	590	795	887	985
CANADA	0	0	0	163	819	1440	2225	3258	4437	5015	5644
NPV PAY-TV REVENUES ($000)											
CANADA	0	0	0	163	895	2043	3626	5697	8215	10755	13308
PAY-TV REVENUES/BEAM ($000)											
EAST	0	0	0	28	143	256	403	601	828	949	1082
EAST CENTRAL	0	0	0	77	385	675	1039	1517	2064	2329	2616
WEST CENTRAL	0	0	0	12	60	106	165	243	330	374	423
WEST	0	0	0	47	231	403	618	898	1215	1363	1523

CHILDREN ENGLISH SPEAKING PAY-TV 81/05/05

SUBSCRIBER FINANCED SERVICES

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
PAY-TV SUBSCRIBERS (000)										
QUEBEC	55	57	60	62	64	66	67	69	71	72
ATLANTIC PROVINCES	40	42	44	46	47	49	50	51	52	52
ONTARIO	228	237	246	255	263	272	279	287	295	303
MAN.,_SASK.	37	38	39	40	40	41	41	41	42	42
ALBERTA	47	49	51	53	55	57	59	60	62	64
B.C.,NWT.,_YUKON	85	87	90	93	96	98	101	104	107	109
CANADA	491	511	531	548	566	582	598	613	627	642
PAY-TV REVENUES ($000)										
QUEBEC	660	689	717	741	765	788	808	828	847	865
ATLANTIC PROVINCES	483	508	531	550	567	583	597	608	619	629
ONTARIO	2731	2842	2952	3055	3159	3258	3354	3448	3541	3635
MAN.,_SASK.	441	456	469	478	486	492	495	497	498	498
ALBERTA	564	589	614	637	660	683	704	726	747	768
B.C.,NWT.,_YUKON	1017	1050	1083	1116	1149	1181	1214	1246	1278	1311
CANADA	5896	6133	6367	6576	6786	6985	7172	7353	7529	7705
NPV PAY-TV REVENUES ($000)										
CANADA	15690	17901	19951	21842	23584	25184	26652	27995	29224	30346
PAY-TV REVENUES/BEAM ($000)										
EAST	1143	1197	1249	1291	1333	1371	1405	1436	1466	1494
EAST CENTRAL	2731	2842	2952	3055	3159	3258	3354	3448	3541	3635
WEST CENTRAL	441	456	469	478	486	492	495	497	498	498
WEST	1581	1639	1697	1753	1810	1864	1918	1971	2025	2079

APPENDIX I

Risk Analysis: Results for English Language Children Programming Revenues

```
*********************************
*  PAY-TV REVENUES              *
*  ----------------------------*
*  ITEM   112        PERIOD    4 *
*********************************
*                               *
*  MINIMUM VALUE        147,7168 *
*                               *
*  MAXIMUM VALUE        206,4411 *
*                               *
*  MEAN VALUE           167,5931 *
*                               *
*  STANDARD DEVIATION    12,5360 *
*                               *
*  MODE VALUE           168,0368 *
*                               *
*  NO, OF ITERATIONS        100 *
*********************************
```

HISTOGRAM INTERPRETATION FOR - PAY-TV REVENUES

CLASS	FREQ.	LOWER LIMIT	UPPER LIMIT	PERCENT CHANCE OF OCCURRENCE: WITHIN THE CLASS	OUTSIDE THE CLASS: TO LEFT	OUTSIDE THE CLASS: TO RIGHT
A	13	147,72	153,59	13,00	0,00	87,00
B	16	153,59	159,46	16,00	13,00	71,00
C	18	159,46	165,33	18,00	29,00	53,00
D	22	165,33	171,21	22,00	47,00	31,00
E	12	171,21	177,08	12,00	69,00	19,00
F	6	177,08	182,95	6,00	81,00	13,00
G	5	182,95	188,82	5,00	87,00	8,00
H	4	188,82	194,70	4,00	92,00	4,00
I	2	194,70	200,57	2,00	96,00	2,00
J	2	200,57	206,44	2,00	98,00	,00

** H I S T O G R A H **

```
FREQUENCY
   25 I
      I
      I
      I                 XXXXX
      I                 XXXXX
   20 I                 XXXXX
      I                 XXXXX
      I            XXXXX XXXXX
      I            XXXXX XXXXX
      I      XXXXX XXXXX XXXXX
   15 I      XXXXX XXXXX XXXXX
      I      XXXXX XXXXX XXXXX
      I XXXXX XXXXX XXXXX XXXXX
      I XXXXX XXXXX XXXXX XXXXX XXXXX
      I XXXXX XXXXX XXXXX XXXXX XXXXX
   10 I XXXXX XXXXX XXXXX XXXXX XXXXX
      I XXXXX XXXXX XXXXX XXXXX XXXXX
      I XXXXX XXXXX XXXXX XXXXX XXXXX
      I XXXXX XXXXX XXXXX XXXXX XXXXX
      I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
    5 I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I------I-----I-----I-----I-----I-----I-----I-----I-----I-----I
         A     B     C     D     E     F     G     H     I     J
```

CASE ** CHILDREN ENGLISH SPEAKING PAY-TV

```
*********************************
*  PAY-TV REVENUES              *
*  ----------------------------  *
*  ITEM   112        PERIOD    6  *
*********************************
*                                *
*  MINIMUM VALUE        1270,0425  *
*                                *
*  MAXIMUM VALUE        1775,9859  *
*                                *
*  MEAN VALUE           1483,0481  *
*                                *
*  STANDARD DEVIATION    110,5283  *
*                                *
*  MODE VALUE           1443,5101  *
*                                *
*  NO. OF ITERATIONS          100  *
*********************************
```

HISTOGRAM INTERPRETATION FOR - PAY-TV REVENUES

CLASS	FREQ.	LOWER LIMIT	UPPER LIMIT	PERCENT CHANCE OF OCCURRENCE: WITHIN THE CLASS	OUTSIDE THE CLASS: TO LEFT	OUTSIDE THE CLASS: TO RIGHT
A	4	1270,04	1320,64	4,00	0,00	96,00
B	14	1320,64	1371,23	14,00	4,00	82,00
C	11	1371,23	1421,83	11,00	18,00	71,00
D	22	1421,83	1472,42	22,00	29,00	49,00
E	17	1472,42	1523,01	17,00	51,00	32,00
F	12	1523,01	1573,61	12,00	68,00	20,00
G	9	1573,61	1624,20	9,00	80,00	11,00
H	5	1624,20	1674,80	5,00	89,00	6,00
I	5	1674,80	1725,39	5,00	94,00	1,00
J	1	1725,39	1775,99	1,00	99,00	,00

** H I S T O G R A M **

```
FREQUENCY
   25 I
      I
      I
      I                 XXXXX
      I                 XXXXX
   20 I                 XXXXX
      I                 XXXXX
      I                 XXXXX
      I                 XXXXX XXXXX
      I                 XXXXX XXXXX
   15 I                 XXXXX XXXXX
      I       XXXXX     XXXXX XXXXX
      I       XXXXX     XXXXX XXXXX
      I       XXXXX     XXXXX XXXXX XXXXX
      I       XXXXX XXXXX XXXXX XXXXX XXXXX
   10 I       XXXXX XXXXX XXXXX XXXXX XXXXX
      I       XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I       XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I       XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I       XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
    5 I       XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I------I-----I-----I-----I-----I-----I-----I-----I-----I-----I
          A     B     C     D     E     F     G     H     I     J
```

CASE ** CHILDREN ENGLISH SPEAKING PAY-TV

```
*********************************
*  PAY-TV REVENUES              *
*  ----------------------------*
*  ITEM   112        PERIOD   11 *
*********************************
*                               *
*  MINIMUM VALUE        4844,0417 *
*                               *
*  MAXIMUM VALUE        7089,6619 *
*                               *
*  MEAN VALUE           5831,9442 *
*                               *
*  STANDARD DEVIATION    414,2134 *
*                               *
*  MODE VALUE           5619,0547 *
*                               *
*  NO. OF ITERATIONS         100 *
*********************************
```

HISTOGRAM INTERPRETATION FOR - PAY-TV REVENUES

CLASS	FREQ.	LOWER LIMIT	UPPER LIMIT	PERCENT CHANCE OF OCCURRENCE: WITHIN THE CLASS	OUTSIDE THE CLASS: TO LEFT	OUTSIDE THE CLASS: TO RIGHT
A	1	4844,04	5068,60	1,00	0,00	99,00
B	9	5068,60	5293,17	9,00	1,00	90,00
C	13	5293,17	5517,73	13,00	10,00	77,00
D	22	5517,73	5742,29	22,00	23,00	55,00
E	21	5742,29	5966,85	21,00	45,00	34,00
F	13	5966,85	6191,41	13,00	66,00	21,00
G	13	6191,41	6415,98	13,00	79,00	8,00
H	4	6415,98	6640,54	4,00	92,00	4,00
I	2	6640,54	6865,10	2,00	96,00	2,00
J	2	6865,10	7089,66	2,00	98,00	,00

** H I S T O G R A M **

```
FREQUENCY
   25 I
      I
      I
      I                 XXXXX
      I                 XXXXX XXXXX
   20 I                 XXXXX XXXXX
      I                 XXXXX XXXXX
      I                 XXXXX XXXXX
      I                 XXXXX XXXXX
      I                 XXXXX XXXXX
   15 I                 XXXXX XXXXX
      I                 XXXXX XXXXX
      I           XXXXX XXXXX XXXXX XXXXX XXXXX
      I           XXXXX XXXXX XXXXX XXXXX XXXXX
      I           XXXXX XXXXX XXXXX XXXXX XXXXX
   10 I           XXXXX XXXXX XXXXX XXXXX XXXXX
      I     XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I     XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I     XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I     XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
    5 I     XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I     XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I     XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I     XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I------I-----I-----I-----I-----I-----I-----I-----I-----I-----I
          A     B     C     D     E     F     G     H     I     J
```

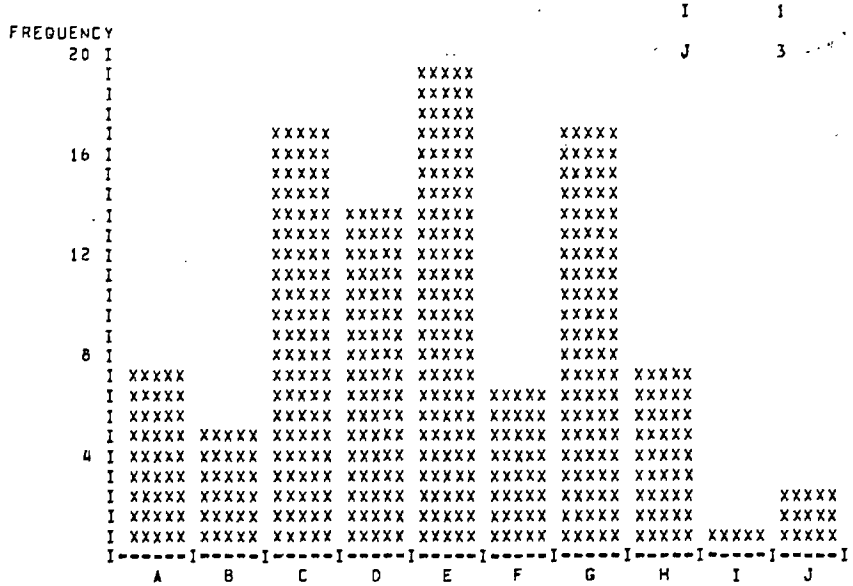
CASE ** CHILDREN ENGLISH SPEAKING PAY-TV

```
*********************************
*  PAY-TV REVENUES              *
*  ----------------------------*
*  ITEM   112        PERIOD   16 *
*********************************
*                               *
*  MINIMUM VALUE      6154,9530 *
*                               *
*  MAXIMUM VALUE      8135,4632 *
*                               *
*  MEAN VALUE         7019,9135 *
*                               *
*  STANDARD DEVIATION  438,3167 *
*                               *
*  MODE VALUE         7024,3961 *
*                               *
*  NO. OF ITERATIONS       100  *
*********************************
```

HISTOGRAM INTERPRETATION FOR - PAY-TV REVENUES

CLASS	FREQ.	LOWER LIMIT	UPPER LIMIT	PERCENT CHANCE OF OCCURRENCE: WITHIN THE CLASS	OUTSIDE THE CLASS: TO LEFT	OUTSIDE THE CLASS: TO RIGHT
A	8	6154,95	6353,00	8,00	0,00	92,00
B	5	6353,00	6551,06	5,00	8,00	87,00
C	17	6551,06	6749,11	17,00	13,00	70,00
D	14	6749,11	6947,16	14,00	30,00	56,00
E	20	6947,16	7145,21	20,00	44,00	36,00
F	7	7145,21	7343,26	7,00	64,00	29,00
G	17	7343,26	7541,31	17,00	71,00	12,00
H	8	7541,31	7739,36	8,00	88,00	4,00
I	1	7739,36	7937,41	1,00	96,00	3,00
J	3	7937,41	8135,46	3,00	97,00	,00

** H I S T O G R A M **



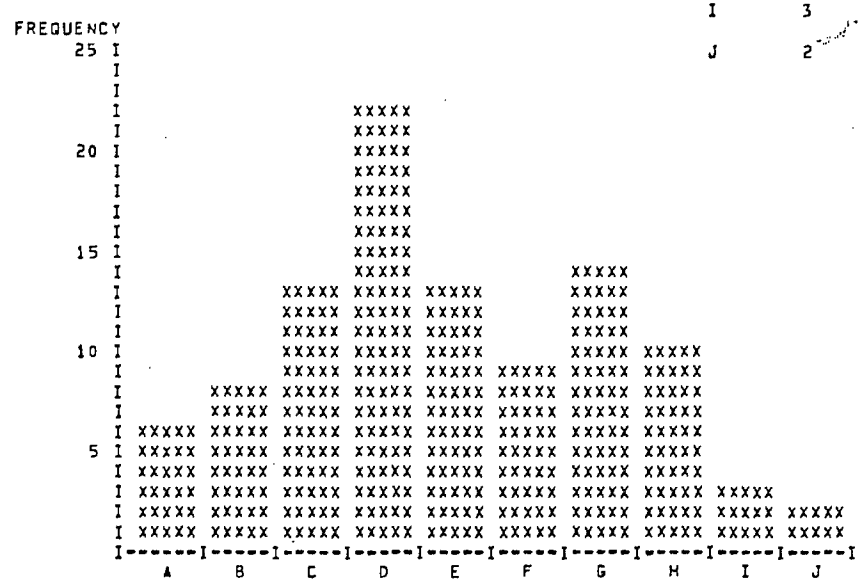
CASE ** CHILDREN ENGLISH SPEAKING PAY-TV

```
************************************
*  PAY-TV REVENUES                 *
*  ------------------------------  *
*  ITEM   112        PERIOD    21  *
************************************
*                                  *
*  MINIMUM VALUE        6742,5749  *
*                                  *
*  MAXIMUM VALUE        9608,7959  *
*                                  *
*  MEAN VALUE           8010,7978  *
*                                  *
*  STANDARD DEVIATION    637,8927  *
*                                  *
*  MODE VALUE           7725,1824  *
*                                  *
*  NO, OF ITERATIONS          100  *
************************************
```

MISTOGRAM INTERPRETATION FOR - PAY-TV REVENUES

CLASS	FREQ.	LOWER LIMIT	UPPER LIMIT	PERCENT CHANCE OF OCCURRENCE: WITHIN THE CLASS	OUTSIDE THE CLASS: TO LEFT	OUTSIDE THE CLASS: TO RIGHT
A	6	6742,57	7029,20	6,00	0,00	94,00
B	8	7029,20	7315,82	8,00	6,00	86,00
C	13	7315,82	7602,44	13,00	14,00	73,00
D	22	7602,44	7889,06	22,00	27,00	51,00
E	13	7889,06	8175,69	13,00	49,00	38,00
F	9	8175,69	8462,31	9,00	62,00	29,00
G	14	8462,31	8748,93	14,00	71,00	15,00
H	10	8748,93	9035,55	10,00	85,00	5,00
I	3	9035,55	9322,17	3,00	95,00	2,00
J	2	9322,17	9608,80	2,00	98,00	,00

** H I S T O G R A M **



CASE ** CHILDREN ENGLISH SPEAKING PAY-TV

APPENDIX J

An All Canada Superstation: Revenue Projection

ALL CANADA SUPERSTATION 81/05/06

ADVERTISER SUPPORTED SERVICES

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
DBS POPULATION (000)											
QUEBEC	718	922	1140	1425	1727	2063	2415	2805	3202	3616	4065
ATLANTIC PROVINCES	216	280	350	449	555	679	809	960	1111	1279	1465
ONTARIO	1687	2147	2633	3217	3834	4504	5206	5970	6758	7576	8456
MAN.,_SASK.	256	325	398	495	595	709	825	955	1082	1218	1366
ALBERTA	325	416	513	633	760	900	1048	1209	1376	1550	1739
B.C.,NWT.,_YUKON	699	886	1083	1307	1542	1791	2051	2322	2603	2885	3183
CANADA	3900	4976	6118	7525	9013	10647	12354	14221	16131	18124	20273
TOTAL AUDIENCE (000)											
QUEBEC	0	0	0	107	130	155	181	210	240	271	305
ATLANTIC PROVINCES	0	0	0	67	83	102	121	144	167	192	220
ONTARIO	0	0	0	483	575	676	781	895	1014	1136	1268
MAN.,_SASK.	0	0	0	74	89	106	124	143	162	183	205
ALBERTA	0	0	0	95	114	135	157	181	206	233	261
B.C.,NWT.,_YUKON	0	0	0	196	231	269	308	348	391	433	477
CANADA	0	0	0	1022	1222	1442	1672	1923	2180	2447	2736
STATION AUDIENCE (000)											
QUEBEC	0	0	0	11	13	15	18	21	24	27	30
ATLANTIC PROVINCES	0	0	0	7	8	10	12	14	17	19	22
ONTARIO	0	0	0	48	58	68	78	90	101	114	127
MAN.,_SASK.	0	0	0	7	9	11	12	14	16	18	20
ALBERTA	0	0	0	9	11	14	16	18	21	23	26
B.C.,NWT.,_YUKON	0	0	0	20	23	27	31	35	39	43	48
CANADA	0	0	0	102	122	144	167	192	218	245	274
STATION ADVERTISING RATE ($)											
QUEBEC	0	0	0	30	37	44	52	60	68	77	87
ATLANTIC PROVINCES	0	0	0	19	24	29	35	41	47	55	63
ONTARIO	0	0	0	138	164	193	223	255	289	324	362
MAN.,_SASK.	0	0	0	21	25	30	35	41	46	52	58
ALBERTA	0	0	0	27	33	38	45	52	59	66	74
B.C.,NWT.,_YUKON	0	0	0	56	66	77	88	99	111	123	136
CANADA	0	0	0	291	348	411	477	548	621	698	780

ADVERTISER SUPPORTED SERVICES

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
POTENTIAL ADVERT.REVENUES ($MILLION)											
QUEBEC	0.0	0.0	0.0	4.8	5.8	7.0	8.1	9.5	10.8	12.2	13.7
ATLANTIC PROVINCES	0.0	0.0	0.0	3.0	3.7	4.6	5.5	6.5	7.5	8.6	9.9
ONTARIO	0.0	0.0	0.0	21.7	25.8	30.4	35.1	40.2	45.6	51.1	57.0
MAN.-SASK.	0.0	0.0	0.0	3.3	4.0	4.8	5.6	6.4	7.3	8.2	9.2
ALBERTA	0.0	0.0	0.0	4.3	5.1	6.1	7.1	8.2	9.3	10.4	11.7
B.C.,NWT.-YUKON	0.0	0.0	0.0	8.8	10.4	12.1	13.8	15.7	17.5	19.4	21.5
CANADA	0.0	0.0	0.0	45.9	54.9	64.8	75.1	86.4	97.9	110.0	123.0
ANNUAL ADVERTISING REVENUES ($MILLION)											
QUEBEC	0.0	0.0	0.0	1.9	2.9	4.2	5.7	7.6	8.6	9.7	11.0
ATLANTIC PROVINCES	0.0	0.0	0.0	1.2	1.9	2.7	3.8	5.2	6.0	6.9	7.9
ONTARIO	0.0	0.0	0.0	8.7	12.9	18.2	24.6	32.2	36.4	40.9	45.6
MAN.-SASK.	0.0	0.0	0.0	1.3	2.0	2.9	3.9	5.1	5.8	6.6	7.4
ALBERTA	0.0	0.0	0.0	1.7	2.6	3.6	4.9	6.5	7.4	8.4	9.4
B.C.,NWT.-YUKON	0.0	0.0	0.0	3.5	5.2	7.2	9.7	12.5	14.0	15.6	17.2
CANADA	0.0	0.0	0.0	18.4	27.5	38.9	52.6	69.1	78.4	88.0	98.4
ADVERTISING REVENUES/BEAM ($MILLION)											
EAST	0.0	0.0	0.0	3.1	4.8	6.9	9.5	12.7	14.6	16.6	18.9
EAST CENTRAL	0.0	0.0	0.0	8.7	12.9	18.2	24.6	32.2	36.4	40.9	45.6
WEST CENTRAL	0.0	0.0	0.0	1.3	2.0	2.9	3.9	5.1	5.8	6.6	7.4
WEST	0.0	0.0	0.0	5.2	7.8	10.9	14.6	19.0	21.5	23.9	26.5

ALL CANADA SUPERSTATION 81/05/06

ADVERTISER SUPPORTED SERVICES

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
NUMBER OF SUBSCRIBERS (000)											
QUEBEC	0	0	0	475	579	696	820	958	1101	1252	1416
ATLANTIC PROVINCES	0	0	0	150	186	229	275	328	382	443	511
ONTARIO	0	0	0	1071	1285	1519	1767	2040	2324	2622	2946
MAN.,_SASK.	0	0	0	165	199	239	280	326	372	422	476
ALBERTA	0	0	0	211	255	304	356	413	473	537	606
B.C.,NWT.,_YUKON	0	0	0	435	517	604	696	793	895	999	1109
CANADA	0	0	0	2506	3020	3591	4193	4858	5547	6274	7064
REVENUES FROM SUBSCRIBERS ($MILLION)											
QUEBEC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ATLANTIC PROVINCES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ONTARIO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MAN.,_SASK.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ALBERTA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
B.C.,NWT,YUKON	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CANADA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
REVENUES FROM SUBSCRIBERS/BEAM ($MILLION)											
EAST	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
EAST CENTRAL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WEST CENTRAL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WEST	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL REVENUES ($MILLION)											
QUEBEC,	0.0	0.0	0.0	1.9	2.9	4.2	5.7	7.6	8.6	9.7	11.0
ATLANTIC PROVINCES	0.0	0.0	0.0	1.2	1.9	2.7	3.8	5.2	6.0	6.9	7.9
ONTARIO	0.0	0.0	0.0	8.7	12.9	18.2	24.6	32.2	36.4	40.9	45.6
MAN.,_SASK.	0.0	0.0	0.0	1.3	2.0	2.9	3.9	5.1	5.8	6.6	7.4
ALBERTA	0.0	0.0	0.0	1.7	2.6	3.6	4.9	6.5	7.4	8.4	9.4
B.C.,NWT_YUKON	0.0	0.0	0.0	3.5	5.2	7.2	9.7	12.5	14.0	15.6	17.2
CANADA	0.0	0.0	0.0	18.4	27.5	38.9	52.6	69.1	78.4	88.0	98.4
NPV TOTAL REVENUES ($MILLION)											
CANADA	0.0	0.0	0.0	18.4	42.9	73.9	111.3	155.3	199.7	244.3	288.8
TOTAL REVENUES/BEAM ($MILLION)											
EAST	0.0	0.0	0.0	3.1	4.8	6.9	9.5	12.7	14.6	16.6	18.9
EAST CENTRAL	0.0	0.0	0.0	8.7	12.9	18.2	24.6	32.2	36.4	40.9	45.6
WEST CENTRAL	0.0	0.0	0.0	1.3	2.0	2.9	3.9	5.1	5.8	6.6	7.4
WEST	0.0	0.0	0.0	5.2	7.8	10.9	14.6	19.0	21.5	23.9	26.5

ALL CANADA SUPERSTATION 81/05/06

ADVERTISER SUPPORTED SERVICES

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
DBS POPULATION (000)										
QUEBEC	4239	4395	4543	4665	4783	4890	4984	5069	5148	5224
ATLANTIC PROVINCES	1549	1620	1684	1730	1773	1810	1839	1862	1881	1897
ONTARIO	8768	9062	9352	9611	9870	10112	10338	10554	10763	10969
MAN.,SASK.	1416	1454	1486	1503	1517	1526	1527	1522	1514	1503
ALBERTA	1811	1878	1945	2004	2063	2119	2171	2221	2269	2317
B.C.,NWT.,YUKON	3266	3348	3431	3510	3592	3667	3740	3813	3885	3956
CANADA	21049	21756	22440	23024	23599	24124	24598	25041	25459	25867
TOTAL AUDIENCE (000)										
QUEBEC	318	330	341	350	359	367	374	380	386	392
ATLANTIC PROVINCES	232	243	253	259	266	272	276	279	282	285
ONTARIO	1315	1359	1403	1442	1481	1517	1551	1583	1614	1645
MAN.,SASK.	212	218	223	225	228	229	229	228	227	225
ALBERTA	272	282	292	301	310	318	326	333	340	348
B.C.,NWT.,YUKON	490	502	515	527	539	550	561	572	583	593
CANADA	2839	2934	3025	3104	3181	3252	3316	3376	3433	3488
STATION AUDIENCE (000)										
QUEBEC	32	33	34	35	36	37	37	38	39	39
ATLANTIC PROVINCES	23	24	25	26	27	27	28	28	28	28
ONTARIO	132	136	140	144	148	152	155	158	161	165
MAN.,SASK.	21	22	22	23	23	23	23	23	23	23
ALBERTA	27	28	29	30	31	32	33	33	34	35
B.C.,NWT.,YUKON	49	50	51	53	54	55	56	57	58	59
CANADA	284	293	303	310	318	325	332	338	343	349
STATION ADVERTISING RATE ($)										
QUEBEC	91	94	97	100	102	105	107	108	110	112
ATLANTIC PROVINCES	66	69	72	74	76	77	79	80	80	81
ONTARIO	375	387	400	411	422	432	442	451	460	469
MAN.,SASK.	61	62	64	64	65	65	65	65	65	64
ALBERTA	77	80	83	86	88	91	93	95	97	99
B.C.,NWT.,YUKON	140	143	147	150	154	157	160	163	166	169
CANADA	809	836	862	885	907	927	945	962	978	994

ALL CANADA SUPERSTATION 81/05/06

ADVERTISER SUPPORTED SERVICES

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
POTENTIAL ADVERT.REVENUES ($MILLION)										
QUEBEC	14.3	14.8	15.3	15.7	16.1	16.5	16.8	17.1	17.4	17.6
ATLANTIC PROVINCES	10.4	10.9	11.3	11.7	12.0	12.2	12.4	12.6	12.7	12.8
ONTARIO	59.1	61.1	63.0	64.8	66.5	68.2	69.7	71.1	72.5	73.9
MAN.,_SASK.	9.5	9.8	10.0	10.1	10.2	10.3	10.3	10.3	10.2	10.1
ALBERTA	12.2	12.7	13.1	13.5	13.9	14.3	14.6	15.0	15.3	15.6
B.C.,N*T.,_YUKON	22.0	22.6	23.1	23.7	24.2	24.7	25.2	25.7	26.2	26.7
CANADA	127.6	131.8	136.0	139.5	143.0	146.1	149.0	151.7	154.3	156.8
ANNUAL ADVERTISING REVENUES ($MILLION)										
QUEBEC	11.4	11.9	12.2	12.6	12.9	13.2	13.4	13.7	13.9	14.1
ATLANTIC PROVINCES	8.4	8.7	9.1	9.3	9.6	9.8	9.9	10.0	10.1	10.2
ONTARIO	47.3	48.9	50.4	51.8	53.2	54.5	55.7	56.9	58.0	59.2
MAN.,_SASK.	7.6	7.8	8.0	8.1	8.2	8.2	8.2	8.2	8.2	8.1
ALBERTA	9.8	10.1	10.5	10.8	11.1	11.4	11.7	12.0	12.2	12.5
B.C.,N*T.,_YUKON	17.6	18.1	18.5	18.9	19.4	19.8	20.2	20.6	20.9	21.3
CANADA	102.1	105.5	108.8	111.6	114.4	116.9	119.2	121.4	123.4	125.4
ADVERTISING REVENUES/BEAM ($MILLION)										
EAST	19.8	20.6	21.3	21.9	22.5	22.9	23.4	23.7	24.0	24.3
EAST CENTRAL	47.3	48.9	50.4	51.8	53.2	54.5	55.7	56.9	58.0	59.2
WEST CENTRAL	7.6	7.8	8.0	8.1	8.2	8.2	8.2	8.2	8.2	8.1
WEST	27.4	28.2	29.0	29.7	30.5	31.2	31.9	32.5	33.2	33.8

ALL CANADA SUPERSTATION 81/05/06

ADVERTISER SUPPORTED SERVICES

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
NUMBER OF SUBSCRIBERS (000)										
QUEBEC	1487	1552	1615	1670	1724	1774	1821	1865	1907	1949
ATLANTIC PROVINCES	543	572	599	619	639	657	672	685	697	708
ONTARIO	3076	3200	3325	3440	3557	3669	3777	3883	3988	4093
MAN.,SASK.	497	513	528	538	547	554	558	560	561	561
ALBERTA	635	663	691	717	744	769	793	817	841	865
B.C.,NWT.,YUKON	1145	1182	1220	1256	1294	1331	1367	1403	1439	1476
CANADA	7383	7682	7977	8240	8504	8753	8987	9213	9433	9652
REVENUES FROM SUBSCRIBERS ($MILLION)										
QUEBEC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ATLANTIC PROVINCES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ONTARIO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MAN.,SASK.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ALBERTA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
B.C.,NWT,YUKON	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CANADA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
REVENUES FROM SUBSCRIBERS/BEAM ($MILLION)										
EAST	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
EAST CENTRAL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WEST CENTRAL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WEST	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL REVENUES ($MILLION)										
QUEBEC,	11.4	11.9	12.2	12.6	12.9	13.2	13.4	13.7	13.9	14.1
ATLANTIC PROVINCES	8.4	8.7	9.1	9.3	9.6	9.8	9.9	10.0	10.1	10.2
ONTARIO	47.3	48.9	50.4	51.8	53.2	54.5	55.7	56.9	58.0	59.2
MAN.,SASK.	7.6	7.8	8.0	8.1	8.2	8.2	8.2	8.2	8.2	8.1
ALBERTA	9.8	10.1	10.5	10.8	11.1	11.4	11.7	12.0	12.2	12.5
B.C.,NWT_YUKON	17.6	18.1	18.5	18.9	19.4	19.8	20.2	20.6	20.9	21.3
CANADA	102.1	105.5	108.8	111.6	114.4	116.9	119.2	121.4	123.4	125.4
NPV TOTAL REVENUES ($MILLION)										
CANADA	330.0	368.1	403.1	435.2	464.5	491.3	515.7	537.9	558.0	576.3
TOTAL REVENUES/BEAM ($MILLION)										
EAST	19.8	20.6	21.3	21.9	22.5	22.9	23.4	23.7	24.0	24.3
EAST CENTRAL	47.3	48.9	50.4	51.8	53.2	54.5	55.7	56.9	58.0	59.2
WEST CENTRAL	7.6	7.8	8.0	8.1	8.2	8.2	8.2	8.2	8.2	8.1
WEST	27.4	28.2	29.0	29.7	30.5	31.2	31.9	32.5	33.2	33.8

APPENDIX K

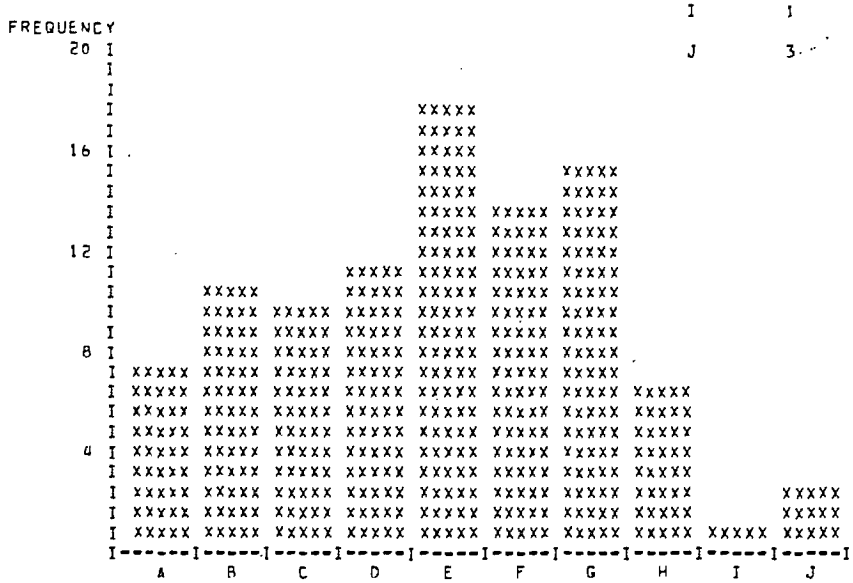
Risk Analysis: Results for an all Canada Superstation Revenues

TOTAL REVENUES	
ITEM 248	PERIOD 4
MINIMUM VALUE	15.0173
MAXIMUM VALUE	22.0655
MEAN VALUE	18.1371
STANDARD DEVIATION	1.6019
MODE VALUE	18.2625
NO. OF ITERATIONS	100

HISTOGRAM INTERPRETATION FOR - TOTAL REVENUES

CLASS	FREQ.	LOWER LIMIT	UPPER LIMIT	PERCENT CHANCE OF OCCURRENCE: WITHIN THE CLASS	OUTSIDE THE CLASS: TO LEFT	OUTSIDE THE CLASS: TO RIGHT
A	8	15.02	15.72	8.00	0.00	92.00
B	11	15.72	16.43	11.00	8.00	81.00
C	10	16.43	17.13	10.00	19.00	71.00
D	12	17.13	17.84	12.00	29.00	59.00
E	18	17.84	18.54	18.00	41.00	41.00
F	14	18.54	19.25	14.00	59.00	27.00
G	16	19.25	19.95	16.00	73.00	11.00
H	7	19.95	20.66	7.00	89.00	4.00
I	1	20.66	21.36	1.00	96.00	3.00
J	3	21.36	22.07	3.00	97.00	.00

** H I S T O G R A M **



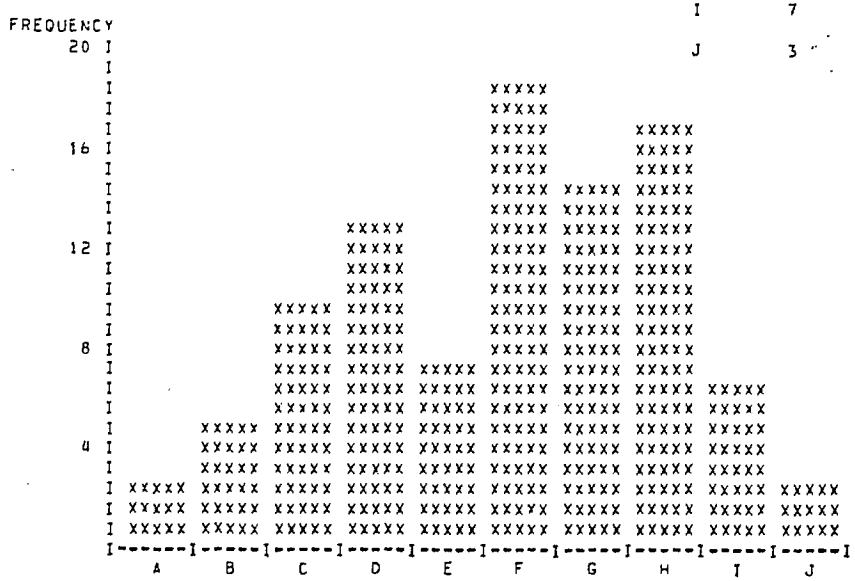
CASE ** ALL CANADA SUPERSTATION

```
*********************************
*  TOTAL REVENUES               *
*  ----------------------------  *
*  ITEM   248        PERIOD    6  *
*********************************
*                                *
*  MINIMUM VALUE        30.2931  *
*                                *
*  MAXIMUM VALUE        46.8597  *
*                                *
*  MEAN VALUE           39.1674  *
*                                *
*  STANDARD DEVIATION    3.6803  *
*                                *
*  MODE VALUE           39.4663  *
*                                *
*  NO. OF ITERATIONS        100  *
*********************************
```

HISTOGRAM INTERPRETATION FOR - TOTAL REVENUES

CLASS	FREQ.	LOWER LIMIT	UPPER LIMIT	PERCENT CHANCE OF OCCURRENCE: WITHIN THE CLASS	OUTSIDE THE CLASS: TO LEFT	OUTSIDE THE CLASS: TO RIGHT
A	3	30.29	31.95	3.00	0.00	97.00
B	5	31.95	33.61	5.00	3.00	92.00
C	10	33.61	35.26	10.00	8.00	82.00
D	13	35.26	36.92	13.00	18.00	69.00
E	8	36.92	38.58	8.00	31.00	61.00
F	19	38.58	40.23	19.00	39.00	42.00
G	15	40.23	41.89	15.00	58.00	27.00
H	17	41.89	43.55	17.00	73.00	10.00
I	7	43.55	45.20	7.00	90.00	3.00
J	3	45.20	46.86	3.00	97.00	.00

** H I S T O G R A M **



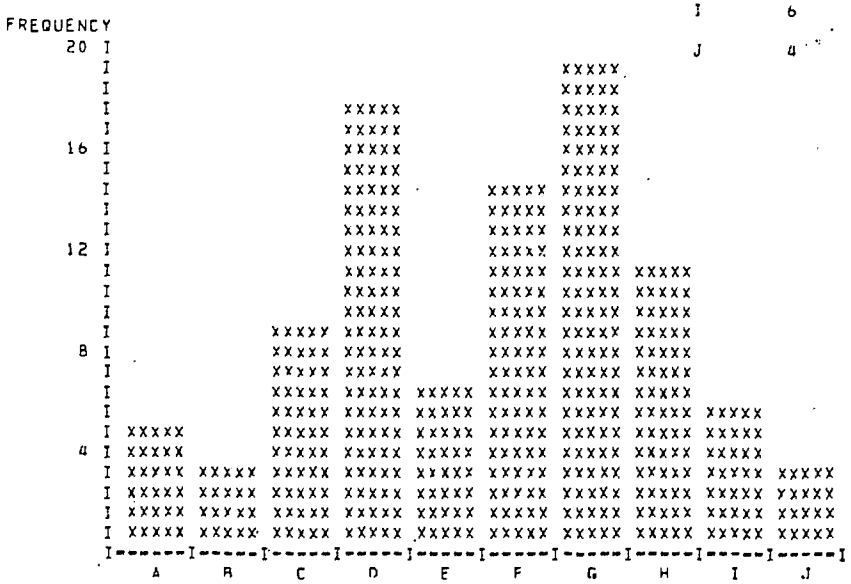
CASE ** ALL CANADA SUPERSTATION

```
*********************************
*  TOTAL REVENUES               *
*  -----------------------------*
*  ITEM   248        PERIOD   11 *
*********************************
*                               *
*  MINIMUM VALUE        79.6762 *
*                               *
*  MAXIMUM VALUE       116.2799 *
*                               *
*  MEAN VALUE           98.6489 *
*                               *
*  STANDARD DEVIATION    8.4082 *
*                               *
*  MODE VALUE          103.4857 *
*                               *
*  NO. OF ITERATIONS        100 *
*********************************
```

HISTOGRAM INTERPRETATION FOR - TOTAL REVENUES

CLASS	FREQ.	LOWER LIMIT	UPPER LIMIT	PERCENT CHANCE OF OCCURRENCE: WITHIN THE CLASS	OUTSIDE THE CLASS: TO LEFT	OUTSIDE THE CLASS: TO RIGHT
A	5	79.68	83.34	5.00	0.00	95.00
B	4	83.34	87.00	4.00	5.00	91.00
C	9	87.00	90.66	9.00	9.00	82.00
D	18	90.66	94.32	18.00	18.00	64.00
E	7	94.32	97.98	7.00	36.00	57.00
F	15	97.98	101.64	15.00	43.00	42.00
G	20	101.64	105.30	20.00	58.00	22.00
H	12	105.30	108.96	12.00	78.00	10.00
I	6	108.96	112.62	6.00	90.00	4.00
J	4	112.62	116.28	4.00	96.00	.00

** H I S T O G R A M **



CASE ** ALL CANADA SUPERSTATION

```
*********************************
*  TOTAL REVENUES               *
*  ----------------------------  *
*  ITEM   248        PERIOD    16  *
*********************************
*                                 *
*  MINIMUM VALUE          91.7115  *
*                                 *
*  MAXIMUM VALUE         138.0514  *
*                                 *
*  MEAN VALUE            114.9876  *
*                                 *
*  STANDARD DEVIATION     10.7709  *
*                                 *
*  MODE VALUE            117.3661  *
*                                 *
*  NO. OF ITERATIONS          100  *
*********************************
```

HISTOGRAM INTERPRETATION FOR - TOTAL REVENUES

CLASS	FREQ.	LOWER LIMIT	UPPER LIMIT	PERCENT CHANCE OF OCCURRENCE: WITHIN THE CLASS	OUTSIDE THE CLASS: TO LEFT	OUTSIDE THE CLASS: TO RIGHT
A	5	91.71	96.35	5.00	0.00	95.00
B	4	96.35	100.98	4.00	5.00	91.00
C	14	100.98	105.61	14.00	9.00	77.00
D	13	105.61	110.25	13.00	23.00	64.00
E	14	110.25	114.88	14.00	36.00	50.00
F	16	114.88	119.52	16.00	50.00	34.00
G	11	119.52	124.15	11.00	66.00	23.00
H	10	124.15	128.78	10.00	77.00	13.00
I	10	128.78	133.42	10.00	87.00	3.00
J	3	133.42	138.05	3.00	97.00	.00

** H I S T O G R A M **

```
FREQUENCY
     15 I                                 XXXXX
        I                                 XXXXX
        I                 XXXXX       XXXXX XXXXX
        I                 XXXXX       XXXXX XXXXX
        I                 XXXXX XXXXX XXXXX XXXXX
     12 I                 XXXXX XXXXX XXXXX XXXXX
        I                 XXXXX XXXXX XXXXX XXXXX
        I                 XXXXX XXXXX XXXXX XXXXX XXXXX
        I                 XXXXX XXXXX XXXXX XXXXX XXXXX
        I                 XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      9 I                 XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I                 XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I                 XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I                 XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I                 XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      6 I                 XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I                 XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I XXXXX           XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I XXXXX           XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I XXXXX XXXXX     XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      3 I XXXXX XXXXX     XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I XXXXX XXXXX     XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I XXXXX XXXXX     XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I XXXXX XXXXX     XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I XXXXX XXXXX     XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I------I-----I-----I-----I-----I-----I-----I-----I-----I-----I
           A     B     C     D     E     F     G     H     I     J
```

CASE ** ALL CANADA SUPERSTATION

```
*********************************
*  TOTAL REVENUES               *
*  ---------------------------  *
*  ITEM   248        PERIOD  21 *
*********************************
*                               *
*  MINIMUM VALUE        104.5739 *
*                               *
*  MAXIMUM VALUE        148.1093 *
*                               *
*  MEAN VALUE           124.8644 *
*                               *
*  STANDARD DEVIATION    11.0375 *
*                               *
*  MODE VALUE           119.4514 *
*                               *
*  NO. OF ITERATIONS        100 *
*********************************
```

HISTOGRAM INTERPRETATION FOR - TOTAL REVENUES

CLASS	FREQ.	LOWER LIMIT	UPPER LIMIT	PERCENT CHANCE OF OCCURRENCE: WITHIN THE CLASS	OUTSIDE THE CLASS: TO LEFT	OUTSIDE THE CLASS: TO RIGHT
A	5	104.57	108.93	5.00	0.00	95.00
B	10	108.93	113.28	10.00	5.00	85.00
C	15	113.28	117.63	15.00	15.00	70.00
D	16	117.63	121.99	16.00	30.00	54.00
E	12	121.99	126.34	12.00	46.00	42.00
F	12	126.34	130.70	12.00	58.00	30.00
G	9	130.70	135.05	9.00	70.00	21.00
H	9	135.05	139.40	9.00	79.00	12.00
I	5	139.40	143.76	5.00	88.00	7.00
J	7	143.76	148.11	7.00	93.00	.00

** H I S T O G R A M **

```
FREQUENCY
     15 I             XXXXX XXXXX
        I             XXXXX XXXXX
        I             XXXXX XXXXX
        I             XXXXX XXXXX
        I             XXXXX XXXXX
     12 I             XXXXX XXXXX XXXXX XXXXX
        I             XXXXX XXXXX XXXXX XXXXX
        I             XXXXX XXXXX XXXXX XXXXX
        I             XXXXX XXXXX XXXXX XXXXX
        I       XXXXX XXXXX XXXXX XXXXX XXXXX
      9 I       XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I       XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I       XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I       XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I       XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX       XXXXX
      6 I       XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX       XXXXX
        I       XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX       XXXXX
        I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      3 I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I------I-----I-----I-----I-----I-----I-----I-----I-----I-----I
            A     B     C     D     E     F     G     H     I     J
```

CASE ** ALL CANADA SUPERSTATION

APPENDIX L

An Atlantic Superstation: Revenue Projection

ATLANTIC SUPERSTATION 81/05/06

ADVERTISER SUPPORTED SERVICES

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
DBS POPULATION (000)											
QUEBEC	0	0	0	0	0	0	0	0	0	0	0
ATLANTIC PROVINCES	721	758	796	859	923	1000	1077	1170	1257	1355	1465
ONTARIO	0	0	0	0	0	0	0	0	0	0	0
MAN.,SASK.	0	0	0	0	0	0	0	0	0	0	0
ALBERTA	0	0	0	0	0	0	0	0	0	0	0
B.C.,NWT.,YUKON	0	0	0	0	0	0	0	0	0	0	0
CANADA	721	758	796	859	923	1000	1077	1170	1257	1355	1465
TOTAL AUDIENCE (000)											
QUEBEC	0	0	0	0	0	0	0	0	0	0	0
ATLANTIC PROVINCES	0	0	0	146	157	170	183	199	214	230	249
ONTARIO	0	0	0	0	0	0	0	0	0	0	0
MAN.,SASK.	0	0	0	0	0	0	0	0	0	0	0
ALBERTA	0	0	0	0	0	0	0	0	0	0	0
B.C.,NWT.,YUKON	0	0	0	0	0	0	0	0	0	0	0
CANADA	0	0	0	146	157	170	183	199	214	230	249
STATION AUDIENCE (000)											
QUEBEC	0	0	0	0	0	0	0	0	0	0	0
ATLANTIC PROVINCES	0	0	0	26	28	31	33	36	38	41	45
ONTARIO	0	0	0	0	0	0	0	0	0	0	0
MAN.,SASK.	0	0	0	0	0	0	0	0	0	0	0
ALBERTA	0	0	0	0	0	0	0	0	0	0	0
B.C.,NWT.,YUKON	0	0	0	0	0	0	0	0	0	0	0
CANADA	0	0	0	26	28	31	33	36	38	41	45
STATION ADVERTISING RATE ($)											
QUEBEC	0	0	0	0	0	0	0	0	0	0	0
ATLANTIC PROVINCES	0	0	0	75	80	87	94	102	110	118	128
ONTARIO	0	0	0	0	0	0	0	0	0	0	0
MAN.,SASK.	0	0	0	0	0	0	0	0	0	0	0
ALBERTA	0	0	0	0	0	0	0	0	0	0	0
B.C.,NWT.,YUKON	0	0	0	0	0	0	0	0	0	0	0
CANADA	0	0	0	75	80	87	94	102	110	118	128

ADVERTISER SUPPORTED SERVICES

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
POTENTIAL ADVERT.REVENUES ($MILLION)											
QUEBEC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ATLANTIC PROVINCES	0.0	0.0	0.0	11.8	12.7	13.7	14.8	16.1	17.3	18.6	20.1
ONTARIO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MAN.,SASK.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ALBERTA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
B.C.,NWT.,YUKON	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CANADA	0.0	0.0	0.0	11.8	12.7	13.7	14.8	16.1	17.3	18.6	20.1
ANNUAL ADVERTISING REVENUES ($MILLION)											
QUEBEC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ATLANTIC PROVINCES	0.0	0.0	0.0	4.7	6.3	8.2	10.4	12.9	13.8	14.9	16.1
ONTARIO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MAN.,SASK.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ALBERTA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
B.C.,NWT.,YUKON	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CANADA	0.0	0.0	0.0	4.7	6.3	8.2	10.4	12.9	13.8	14.9	16.1
ADVERTISING REVENUES/BEAM ($MILLION)											
EAST	0.0	0.0	0.0	4.7	6.3	8.2	10.4	12.9	13.8	14.9	16.1
EAST CENTRAL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WEST CENTRAL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WEST	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

ADVERTISER SUPPORTED SERVICES

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
NUMBER OF SUBSCRIBERS (000)											
QUEBEC	0	0	0	0	0	0	0	0	0	0	0
ATLANTIC PROVINCES	0	0	0	286	309	337	366	400	432	469	511
ONTARIO	0	0	0	0	0	0	0	0	0	0	0
MAN.,SASK.	0	0	0	0	0	0	0	0	0	0	0
ALBERTA	0	0	0	0	0	0	0	0	0	0	0
B.C.,NWT.,YUKON	0	0	0	0	0	0	0	0	0	0	0
CANADA	0	0	0	286	309	337	366	400	432	469	511
REVENUES FROM SUBSCRIBERS ($MILLION)											
QUEBEC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ATLANTIC PROVINCES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ONTARIO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MAN.,SASK.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ALBERTA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
B.C.,NWT,YUKON	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CANADA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
REVENUES FROM SUBSCRIBERS/BEAM ($MILLION)											
EAST	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
EAST CENTRAL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WEST CENTRAL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WEST	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL REVENUES ($MILLION)											
QUEBEC,	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ATLANTIC PROVINCES	0.0	0.0	0.0	4.7	6.3	8.2	10.4	12.9	13.8	14.9	16.1
ONTARIO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MAN.,SASK.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ALBERTA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
B.C.,NWT,YUKON	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CANADA	0.0	0.0	0.0	4.7	6.3	8.2	10.4	12.9	13.8	14.9	16.1
NPV TOTAL REVENUES ($MILLION)											
CANADA	0.0	0.0	0.0	4.7	10.4	17.0	24.3	32.5	40.4	47.9	55.2
TOTAL REVENUES/BEAM ($MILLION)											
EAST	0.0	0.0	0.0	4.7	6.3	8.2	10.4	12.9	13.8	14.9	16.1
EAST CENTRAL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WEST CENTRAL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WEST	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

ATLANTIC SUPERSTATION 81/05/06

ADVERTISER SUPPORTED SERVICES

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
DBS POPULATION (000)										
QUEBEC	0	0	0	0	0	0	0	0	0	0
ATLANTIC PROVINCES	1549	1620	1684	1730	1773	1810	1839	1862	1881	1897
ONTARIO	0	0	0	0	0	0	0	0	0	0
MAN.,SASK.	0	0	0	0	0	0	0	0	0	0
ALBERTA	0	0	0	0	0	0	0	0	0	0
B.C.,NWT.,YUKON	0	0	0	0	0	0	0	0	0	0
CANADA	1549	1620	1684	1730	1773	1810	1839	1862	1881	1897
TOTAL AUDIENCE (000)										
QUEBEC	0	0	0	0	0	0	0	0	0	0
ATLANTIC PROVINCES	263	275	286	294	301	308	313	317	320	323
ONTARIO	0	0	0	0	0	0	0	0	0	0
MAN.,SASK.	0	0	0	0	0	0	0	0	0	0
ALBERTA	0	0	0	0	0	0	0	0	0	0
B.C.,NWT.,YUKON	0	0	0	0	0	0	0	0	0	0
CANADA	263	275	286	294	301	308	313	317	320	323
STATION AUDIENCE (000)										
QUEBEC	0	0	0	0	0	0	0	0	0	0
ATLANTIC PROVINCES	47	50	52	53	54	55	56	57	58	58
ONTARIO	0	0	0	0	0	0	0	0	0	0
MAN.,SASK.	0	0	0	0	0	0	0	0	0	0
ALBERTA	0	0	0	0	0	0	0	0	0	0
B.C.,NWT.,YUKON	0	0	0	0	0	0	0	0	0	0
CANADA	47	50	52	53	54	55	56	57	58	58
STATION ADVERTISING RATE ($)										
QUEBEC	0	0	0	0	0	0	0	0	0	0
ATLANTIC PROVINCES	135	141	147	151	155	158	160	162	164	165
ONTARIO	0	0	0	0	0	0	0	0	0	0
MAN.,SASK.	0	0	0	0	0	0	0	0	0	0
ALBERTA	0	0	0	0	0	0	0	0	0	0
B.C.,NWT.,YUKON	0	0	0	0	0	0	0	0	0	0
CANADA	135	141	147	151	155	158	160	162	164	165

ADVERTISER SUPPORTED SERVICES

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
POTENTIAL ADVERT.REVENUES ($MILLION)										
QUEBEC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ATLANTIC PROVINCES	21.3	22.3	23.2	23.8	24.4	24.9	25.3	25.6	25.9	26.1
ONTARIO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MAN.,SASK.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ALBERTA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
B.C.,NWT.,YUKON	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CANADA	21.3	22.3	23.2	23.8	24.4	24.9	25.3	25.6	25.9	26.1
ANNUAL ADVERTISING REVENUES ($MILLION)										
QUEBEC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ATLANTIC PROVINCES	17.0	17.8	18.5	19.0	19.5	19.9	20.2	20.5	20.7	20.9
ONTARIO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MAN.,SASK.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ALBERTA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
B.C.,NWT.,YUKON	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CANADA	17.0	17.8	18.5	19.0	19.5	19.9	20.2	20.5	20.7	20.9
ADVERTISING REVENUES/BEAM ($MILLION)										
EAST	17.0	17.8	18.5	19.0	19.5	19.9	20.2	20.5	20.7	20.9
EAST CENTRAL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WEST CENTRAL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WEST	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

ATLANTIC SUPERSTATION 81/05/06

ADVERTISER SUPPORTED SERVICES

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
NUMBER OF SUBSCRIBERS (000)										
QUEBEC	0	0	0	0	0	0	0	0	0	0
ATLANTIC PROVINCES	543	572	599	619	639	657	672	685	697	708
ONTARIO	0	0	0	0	0	0	0	0	0	0
MAN.,SASK.	0	0	0	0	0	0	0	0	0	0
ALBERTA	0	0	0	0	0	0	0	0	0	0
B.C.,NWT.,YUKON	0	0	0	0	0	0	0	0	0	0
CANADA	543	572	599	619	639	657	672	685	697	708
REVENUES FROM SUBSCRIBERS ($MILLION)										
QUEBEC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ATLANTIC PROVINCES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ONTARIO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MAN.,SASK.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ALBERTA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
B.C.,NWT,YUKON	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CANADA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
REVENUES FROM SUBSCRIBERS/BEAM ($MILLION)										
EAST	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
EAST CENTRAL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WEST CENTRAL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WEST	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL REVENUES ($MILLION)										
QUEBEC,	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ATLANTIC PROVINCES	17.0	17.8	18.5	19.0	19.5	19.9	20.2	20.5	20.7	20.9
ONTARIO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MAN.,SASK.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ALBERTA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
B.C.,NWT_YUKON	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CANADA	17.0	17.8	18.5	19.0	19.5	19.9	20.2	20.5	20.7	20.9
NPV TOTAL REVENUES ($MILLION)										
CANADA	62.1	68.5	74.5	80.0	85.0	89.5	93.7	97.4	100.8	103.8
TOTAL REVENUES/BEAM ($MILLION)										
EAST	17.0	17.8	18.5	19.0	19.5	19.9	20.2	20.5	20.7	20.9
EAST CENTRAL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WEST CENTRAL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WEST	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

APPENDIX M

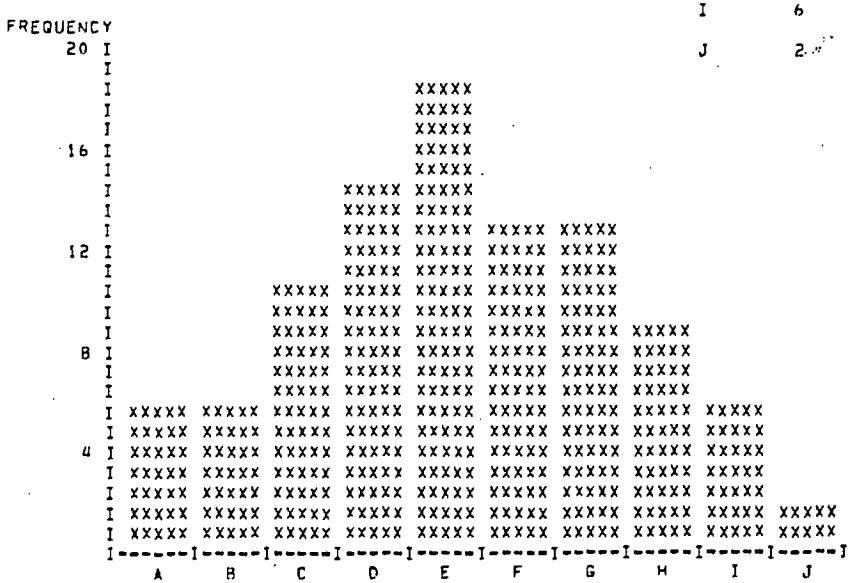
Risk Analysis: Results for an Atlantic Superstation Revenues

```
*********************************
*  TOTAL REVENUES               *
*  ---------------------------  *
*  ITEM   248        PERIOD   4 *
*********************************
*                               *
*  MINIMUM VALUE        4.1693  *
*                               *
*  MAXIMUM VALUE        5.3182  *
*                               *
*  MEAN VALUE           4.7144  *
*                               *
*  STANDARD DEVIATION    .2611  *
*                               *
*  MODE VALUE           4.6964  *
*                               *
*  NO. OF ITERATIONS       100  *
*********************************
```

HISTOGRAM INTERPRETATION FOR - TOTAL REVENUES

CLASS	FREQ.	LOWER LIMIT	UPPER LIMIT	PERCENT CHANCE OF OCCURRENCE: WITHIN THE CLASS	OUTSIDE THE CLASS: TO LEFT	OUTSIDE THE CLASS: TO RIGHT
A	6	4.17	4.28	6.00	0.00	94.00
B	6	4.28	4.40	6.00	6.00	88.00
C	11	4.40	4.51	11.00	12.00	77.00
D	15	4.51	4.63	15.00	23.00	62.00
E	19	4.63	4.74	19.00	38.00	43.00
F	13	4.74	4.86	13.00	57.00	30.00
G	13	4.86	4.97	13.00	70.00	17.00
H	9	4.97	5.09	9.00	83.00	8.00
I	6	5.09	5.20	6.00	92.00	2.00
J	2	5.20	5.32	2.00	98.00	.00

** H I S T O G R A M **



CASE ** ATLANTIC SUPERSTATION

```
*********************************
*  TOTAL REVENUES               *
*  ----------------------------  *
*  ITEM   248        PERIOD    6  *
*********************************
*                               *
*  MINIMUM VALUE          7.5158  *
*                               *
*  MAXIMUM VALUE          9.1359  *
*                               *
*  MEAN VALUE             8.1788  *
*                               *
*  STANDARD DEVIATION      .4175  *
*                               *
*  MODE VALUE             8.1457  *
*                               *
*  NO. OF ITERATIONS         100  *
*********************************
```

HISTOGRAM INTERPRETATION FOR - TOTAL REVENUES

CLASS	FREQ.	LOWER LIMIT	UPPER LIMIT	PERCENT CHANCE OF OCCURRENCE: WITHIN THE CLASS	OUTSIDE THE CLASS: TO LEFT	OUTSIDE THE CLASS: TO RIGHT
A	4	7.32	7.50	4.00	0.00	96.00
B	9	7.50	7.68	9.00	4.00	87.00
C	12	7.68	7.86	12.00	13.00	75.00
D	13	7.86	8.04	13.00	25.00	62.00
E	21	8.04	8.23	21.00	38.00	41.00
F	12	8.23	8.41	12.00	59.00	29.00
G	13	8.41	8.59	13.00	71.00	16.00
H	6	8.59	8.77	6.00	84.00	10.00
I	4	8.77	8.95	4.00	90.00	6.00
J	6	8.95	9.14	6.00	94.00	.00

** H I S T O G R A M **

```
FREQUENCY
     20 I                         XXXXX
        I                         XXXXX
        I                         XXXXX
        I                         XXXXX
        I                         XXXXX
     16 I                         XXXXX
        I                         XXXXX
        I                         XXXXX
        I                         XXXXX
        I                   XXXXX XXXXX       XXXXX
     12 I                   XXXXX XXXXX       XXXXX
        I             XXXXX XXXXX XXXXX XXXXX XXXXX
        I             XXXXX XXXXX XXXXX XXXXX XXXXX
        I             XXXXX XXXXX XXXXX XXXXX XXXXX
        I       XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      8 I       XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I       XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I       XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I       XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX       XXXXX
        I       XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX       XXXXX
      4 I       XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX       XXXXX
        I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I------I-----I-----I-----I-----I-----I-----I-----I-----I-----I
            A     B     C     D     E     F     G     H     I     J
```

CASE ** ATLANTIC SUPERSTATION

```
*********************************
*  TOTAL REVENUES               *
*  ---------------------------  *
*  ITEM   248        PERIOD  11 *
*********************************
*                               *
*  MINIMUM VALUE        14,1899 *
*                               *
*  MAXIMUM VALUE        18,0175 *
*                               *
*  MEAN VALUE           15,9773 *
*                               *
*  STANDARD DEVIATION     ,8793 *
*                               *
*  MODE VALUE           15,5880 *
*                               *
*  NO. OF ITERATIONS        100 *
*********************************
```

HISTOGRAM INTERPRETATION FOR - TOTAL REVENUES

CLASS	FREQ.	LOWER LIMIT	UPPER LIMIT	PERCENT CHANCE OF OCCURRENCE: WITHIN THE CLASS	OUTSIDE THE CLASS: TO LEFT	OUTSIDE THE CLASS: TO RIGHT
A	5	14,19	14,57	5,00	0,00	95,00
B	9	14,57	14,96	9,00	5,00	86,00
C	12	14,96	15,34	12,00	14,00	74,00
D	16	15,34	15,72	16,00	26,00	58,00
E	16	15,72	16,10	16,00	42,00	42,00
F	12	16,10	16,49	12,00	58,00	30,00
G	12	16,49	16,87	12,00	70,00	18,00
H	9	16,87	17,25	9,00	82,00	9,00
I	7	17,25	17,63	7,00	91,00	2,00
J	2	17,63	18,02	2,00	98,00	,00

** H I S T O G R A M **

```
FREQUENCY
     15 I                    XXXXX XXXXX
        I                    XXXXX XXXXX
        I                    XXXXX XXXXX
        I                    XXXXX XXXXX
        I                    XXXXX XXXXX
     12 I              XXXXX XXXXX XXXXX XXXXX XXXXX
        I              XXXXX XXXXX XXXXX XXXXX XXXXX
        I              XXXXX XXXXX XXXXX XXXXX XXXXX
        I              XXXXX XXXXX XXXXX XXXXX XXXXX
        I              XXXXX XXXXX XXXXX XXXXX XXXXX
      9 I        XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I        XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I        XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I        XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I        XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      6 I        XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I        XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I XXXXX  XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I XXXXX  XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I XXXXX  XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      3 I XXXXX  XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I XXXXX  XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I XXXXX  XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I XXXXX  XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I XXXXX  XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I------I-----I-----I-----I-----I-----I-----I-----I-----I-----I
           A     B     C     D     E     F     G     H     I     J
```

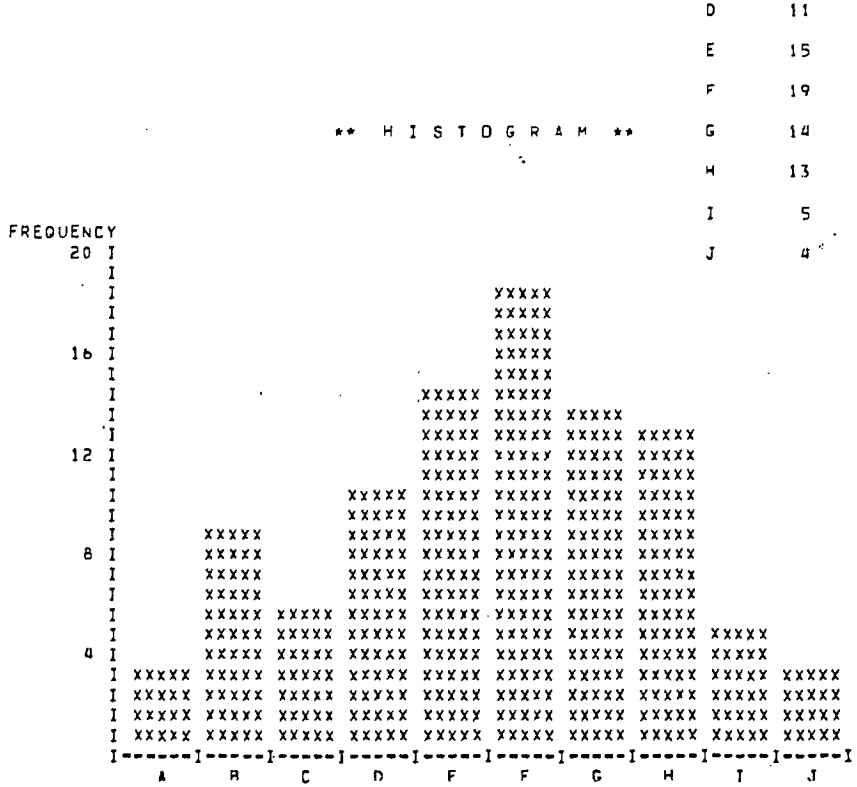
CASE ** ATLANTIC SUPERSTATION

```
*********************************
*  TOTAL REVENUES               *
*  ----------------------------*
*  ITEM   248        PERIOD   16 *
*********************************
*                               *
*  MINIMUM VALUE        17.4885 *
*                               *
*  MAXIMUM VALUE        21.4464 *
*                               *
*  MEAN VALUE           19.5049 *
*                               *
*  STANDARD DEVIATION     .8863 *
*                               *
*  MODE VALUE           19.6567 *
*                               *
*  NO. OF ITERATIONS       100  *
*********************************
```

HISTOGRAM INTERPRETATION FOR - TOTAL REVENUES

CLASS	FREQ.	LOWER LIMIT	UPPER LIMIT	PERCENT CHANCE OF OCCURRENCE: WITHIN THE CLASS	OUTSIDE THE CLASS: TO LEFT	OUTSIDE THE CLASS: TO RIGHT
A	4	17.49	17.88	4.00	0.00	96.00
B	9	17.88	18.28	9.00	4.00	87.00
C	6	18.28	18.68	6.00	13.00	81.00
D	11	18.68	19.07	11.00	19.00	70.00
E	15	19.07	19.47	15.00	30.00	55.00
F	19	19.47	19.86	19.00	45.00	36.00
G	14	19.86	20.26	14.00	64.00	22.00
H	13	20.26	20.65	13.00	78.00	9.00
I	5	20.65	21.05	5.00	91.00	4.00
J	4	21.05	21.45	4.00	96.00	.00

** H I S T O G R A M **



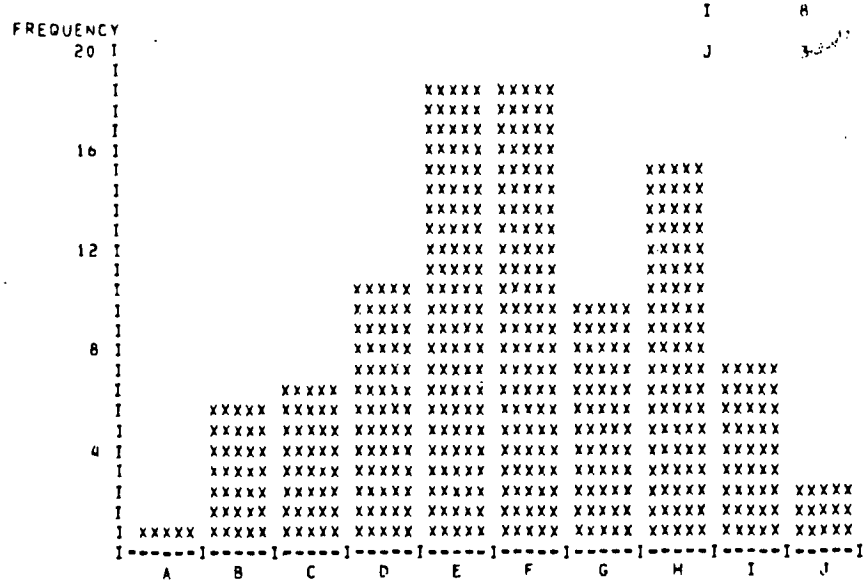
CASE ** ATLANTIC SUPERSTATION

TOTAL REVENUES	
ITEM 248	PERIOD 21
MINIMUM VALUE	18.1076
MAXIMUM VALUE	23.3070
MEAN VALUE	20.9013
STANDARD DEVIATION	1.0982
MODE VALUE	20.3742
NO. OF ITERATIONS	100

HISTOGRAM INTERPRETATION FOR - TOTAL REVENUES

CLASS	FREQ.	LOWER LIMIT	UPPER LIMIT	PERCENT CHANCE OF OCCURRENCE: WITHIN THE CLASS	OUTSIDE THE CLASS: TO LEFT	OUTSIDE THE CLASS: TO RIGHT
A	1	18.11	18.63	1.00	0.00	99.00
B	6	18.63	19.15	6.00	1.00	93.00
C	7	19.15	19.67	7.00	7.00	86.00
D	11	19.67	20.19	11.00	14.00	75.00
E	19	20.19	20.71	19.00	25.00	56.00
F	19	20.71	21.23	19.00	44.00	37.00
G	10	21.23	21.75	10.00	63.00	27.00
H	16	21.75	22.27	16.00	73.00	11.00
I	8	22.27	22.79	8.00	89.00	3.00
J	3	22.79	23.31	3.00	97.00	.00

** H I S T O G R A M **



CASE ** ATLANTIC SUPERSTATION

APPENDIX N

Specialized Programming (18 hrs/day): Subscribers and Revenue Projections

SPEC PROGRAMMING(18 HRS/DAY) 81/05/05

ADVERTISER SUPPORTED SERVICES

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
DBS POPULATION (000)											
QUEBEC	718	922	1140	1425	1727	2063	2415	2805	3202	3616	4065
ATLANTIC PROVINCES	216	280	350	449	555	679	809	960	1111	1279	1465
ONTARIO	1687	2147	2633	3217	3834	4504	5206	5970	6758	7576	8456
MAN.,_SASK.	256	325	398	495	595	709	825	955	1082	1218	1366
ALBERTA	325	416	513	633	760	900	1048	1209	1376	1550	1739
B.C.,NWT.,_YUKON	699	886	1083	1307	1542	1791	2051	2322	2603	2885	3183
CANADA	3900	4976	6118	7525	9013	10647	12354	14221	16131	18124	20273
TOTAL AUDIENCE (000)											
QUEBEC	0	0	0	6	15	26	41	60	68	77	86
ATLANTIC PROVINCES	0	0	0	8	19	35	55	82	94	109	125
ONTARIO	0	0	0	55	130	230	354	507	574	644	719
MAN.,_SASK.	0	0	0	8	20	36	56	81	92	104	116
ALBERTA	0	0	0	11	26	46	71	103	117	132	148
B.C.,NWT.,_YUKON	0	0	0	22	52	91	139	197	221	245	271
CANADA	0	0	0	110	262	464	717	1030	1167	1310	1464
STATION AUDIENCE (000)											
QUEBEC	0	0	0	0	1	1	2	2	3	3	3
ATLANTIC PROVINCES	0	0	0	0	1	1	2	3	4	4	5
ONTARIO	0	0	0	2	5	9	14	20	23	26	29
MAN.,_SASK.	0	0	0	0	1	1	2	3	4	4	5
ALBERTA	0	0	0	0	1	2	3	4	5	5	6
B.C.,NWT.,_YUKON	0	0	0	1	2	4	6	8	9	10	11
CANADA	0	0	0	4	10	19	29	41	47	52	59
STATION ADVERTISING RATE ($)											
QUEBEC	0	0	0	1	2	4	6	9	10	12	13
ATLANTIC PROVINCES	0	0	0	1	3	5	8	12	14	16	19
ONTARIO	0	0	0	8	20	34	53	76	86	97	108
MAN.,_SASK.	0	0	0	1	3	5	8	12	14	16	17
ALBERTA	0	0	0	2	4	7	11	15	18	20	22
B.C.,NWT.,_YUKON	0	0	0	3	8	14	21	30	33	37	41
CANADA	0	0	0	16	39	70	108	154	175	197	220

SPEC PROGRAMMING(18 HRS/DAY) 81/05/05

ADVERTISER SUPPORTED SERVICES

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
POTENTIAL ADVERT.REVENUES ($MILLION)											
QUEBEC	0.0	0.0	0.0	.1	.3	.5	.7	1.1	1.2	1.4	1.5
ATLANTIC PROVINCES	0.0	0.0	0.0	.1	.3	.6	1.0	1.4	1.7	1.9	2.2
ONTARIO	0.0	0.0	0.0	1.0	2.3	4.1	6.3	9.0	10.2	11.4	12.8
MAN.-SASK.	0.0	0.0	0.0	.1	.4	.6	1.0	1.4	1.6	1.8	2.1
ALBERTA	0.0	0.0	0.0	.2	.5	.8	1.3	1.8	2.1	2.3	2.6
B.C.,NWT.-YUKON	0.0	0.0	0.0	.4	.9	1.6	2.5	3.5	3.9	4.4	4.8
CANADA	0.0	0.0	0.0	1.9	4.7	8.2	12.7	18.3	20.7	23.2	26.0
ANNUAL ADVERTISING REVENUES ($MILLION)											
QUEBEC	0.0	0.0	0.0	.0	.1	.3	.5	.8	1.0	1.1	1.2
ATLANTIC PROVINCES	0.0	0.0	0.0	.1	.2	.4	.7	1.2	1.3	1.5	1.8
ONTARIO	0.0	0.0	0.0	.4	1.2	2.4	4.4	7.2	8.2	9.1	10.2
MAN.-SASK.	0.0	0.0	0.0	.1	.2	.4	.7	1.2	1.3	1.5	1.6
ALBERTA	0.0	0.0	0.0	.1	.2	.5	.9	1.5	1.7	1.9	2.1
B.C.,NWT.-YUKON	0.0	0.0	0.0	.2	.5	1.0	1.7	2.8	3.1	3.5	3.8
CANADA	0.0	0.0	0.0	.8	2.3	4.9	8.9	14.6	16.6	18.6	20.8
ADVERTISING REVENUES/BEAM ($MILLION)											
EAST	0.0	0.0	0.0	.1	.3	.6	1.2	2.0	2.3	2.6	3.0
EAST CENTRAL	0.0	0.0	0.0	.4	1.2	2.4	4.4	7.2	8.2	9.1	10.2
WEST CENTRAL	0.0	0.0	0.0	.1	.2	.4	.7	1.2	1.3	1.5	1.6
WEST	0.0	0.0	0.0	.2	.7	1.5	2.6	4.3	4.8	5.4	5.9

SPEC PROGRAMMING(18 HRS/DAY) 81/05/05

ADVERTISER SUPPORTED SERVICES

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
NUMBER OF SUBSCRIBERS (000)											
QUEBEC	0	0	0	24	58	104	164	240	275	313	354
ATLANTIC PROVINCES	0	0	0	15	37	69	110	164	191	221	255
ONTARIO	0	0	0	107	257	456	707	1020	1162	1311	1473
MAN.,_SASK.	0	0	0	16	40	72	112	163	186	211	238
ALBERTA	0	0	0	21	51	91	142	207	237	268	303
B.C.,NWT.,_YUKON	0	0	0	44	103	181	278	397	448	499	554
CANADA	0	0	0	227	546	973	1513	2190	2498	2824	3178
REVENUES FROM SUBSCRIBERS ($MILLION)											
QUEBEC	0.0	0.0	0.0	.1	.2	.3	.5	.7	.8	.9	1.1
ATLANTIC PROVINCES	0.0	0.0	0.0	.0	.1	.2	.3	.5	.6	.7	.8
ONTARIO	0.0	0.0	0.0	.3	.8	1.4	2.1	3.1	3.5	3.9	4.4
MAN.,_SASK.	0.0	0.0	0.0	.0	.1	.2	.3	.5	.6	.6	.7
ALBERTA	0.0	0.0	0.0	.1	.2	.3	.4	.6	.7	.8	.9
B.C.,NWT,YUKON	0.0	0.0	0.0	.1	.3	.5	.8	1.2	1.3	1.5	1.7
CANADA	0.0	0.0	0.0	.7	1.6	2.9	4.5	6.6	7.5	8.5	9.5
REVENUES FROM SUBSCRIBERS/BEAM ($MILLION)											
EAST	0.0	0.0	0.0	.1	.3	.5	.8	1.2	1.4	1.6	1.8
EAST CENTRAL	0.0	0.0	0.0	.3	.8	1.4	2.1	3.1	3.5	3.9	4.4
WEST CENTRAL	0.0	0.0	0.0	.0	.1	.2	.3	.5	.6	.6	.7
WEST	0.0	0.0	0.0	.2	.5	.8	1.3	1.8	2.1	2.3	2.6
TOTAL REVENUES ($MILLION)											
QUEBEC,	0.0	0.0	0.0	.1	.3	.6	1.0	1.6	1.8	2.0	2.3
ATLANTIC PROVINCES	0.0	0.0	0.0	.1	.3	.6	1.0	1.7	1.9	2.2	2.5
ONTARIO	0.0	0.0	0.0	.7	1.9	3.8	6.5	10.3	11.6	13.1	14.6
MAN.,_SASK.	0.0	0.0	0.0	.1	.3	.6	1.0	1.6	1.9	2.1	2.4
ALBERTA	0.0	0.0	0.0	.1	.4	.8	1.3	2.1	2.4	2.7	3.0
B.C.,NWT_YUKON	0.0	0.0	0.0	.3	.8	1.5	2.6	4.0	4.5	5.0	5.5
CANADA	0.0	0.0	0.0	1.5	4.0	7.9	13.4	21.2	24.1	27.1	30.3
NPV TOTAL REVENUES ($MILLION)											
CANADA	0.0	0.0	0.0	1.5	5.0	11.3	20.8	34.3	47.9	61.7	75.4
TOTAL REVENUES/BEAM ($MILLION)											
EAST	0.0	0.0	0.0	.2	.6	1.2	2.0	3.2	3.7	4.2	4.8
EAST CENTRAL	0.0	0.0	0.0	.7	1.9	3.8	6.5	10.3	11.6	13.1	14.6
WEST CENTRAL	0.0	0.0	0.0	.1	.3	.6	1.0	1.6	1.9	2.1	2.4
WEST	0.0	0.0	0.0	.4	1.2	2.3	3.9	6.1	6.9	7.7	8.5

SPEC PROGRAMMING(18 HRS/DAY) 81/05/05

ADVERTISER SUPPORTED SERVICES

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
DBS POPULATION (000)										
QUEBEC	4239	4395	4543	4665	4783	4890	4984	5069	5148	5224
ATLANTIC PROVINCES	1549	1620	1684	1730	1773	1810	1839	1862	1881	1897
ONTARIO	8768	9062	9352	9611	9870	10112	10338	10554	10763	10969
MAN.,_SASK.	1416	1454	1486	1503	1517	1526	1527	1522	1514	1503
ALBERTA	1811	1878	1945	2004	2063	2119	2171	2221	2269	2317
B.C.,NWT.,_YUKON	3266	3348	3431	3510	3592	3667	3740	3813	3885	3956
CANADA	21049	21756	22440	23024	23599	24124	24598	25041	25459	25867
TOTAL AUDIENCE (000)										
QUEBEC	90	93	97	99	102	104	106	108	109	111
ATLANTIC PROVINCES	132	138	143	147	151	154	156	158	160	161
ONTARIO	745	770	795	817	839	860	879	897	915	932
MAN.,_SASK.	120	124	126	128	129	130	130	129	129	128
ALBERTA	154	160	165	170	175	180	185	189	193	197
B.C.,NWT.,_YUKON	278	285	292	298	305	312	318	324	330	336
CANADA	1519	1569	1618	1660	1701	1739	1773	1805	1836	1866
STATION AUDIENCE (000)										
QUEBEC	4	4	4	4	4	4	4	4	4	4
ATLANTIC PROVINCES	5	6	6	6	6	6	6	6	6	6
ONTARIO	30	31	32	33	34	34	35	36	37	37
MAN.,_SASK.	5	5	5	5	5	5	5	5	5	5
ALBERTA	6	6	7	7	7	7	7	8	8	8
B.C.,NWT.,_YUKON	11	11	12	12	12	12	13	13	13	13
CANADA	61	63	65	66	68	70	71	72	73	75
STATION ADVERTISING RATE ($)										
QUEBEC	14	14	14	15	15	16	16	16	16	17
ATLANTIC PROVINCES	20	21	21	22	23	23	23	24	24	24
ONTARIO	112	116	119	123	126	129	132	135	137	140
MAN.,_SASK.	18	19	19	19	19	19	19	19	19	19
ALBERTA	23	24	25	26	26	27	28	28	29	30
B.C.,NWT.,_YUKON	42	43	44	45	46	47	48	49	50	50
CANADA	228	235	243	249	255	261	266	271	275	280

SPEC PROGRAMMING(18 HRS/DAY)

81/05/05

ADVERTISER SUPPORTED SERVICES

POTENTIAL ADVERT.REVENUES ($MILLION)	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
QUEBEC	1.6	1.7	1.7	1.8	1.8	1.8	1.9	1.9	1.9	2.0
ATLANTIC PROVINCES	2.3	2.4	2.5	2.6	2.7	2.7	2.8	2.8	2.8	2.9
ONTARIO	13.2	13.7	14.1	14.5	14.9	15.2	15.6	15.9	16.2	16.5
MAN.-SASK.	2.1	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3
ALBERTA	2.7	2.8	2.9	3.0	3.1	3.2	3.3	3.3	3.4	3.5
B.C.,NWT.-YUKON	4.9	5.0	5.2	5.3	5.4	5.5	5.6	5.7	5.9	6.0
CANADA	26.9	27.8	28.7	29.4	30.2	30.8	31.5	32.0	32.6	33.1

ANNUAL ADVERTISING REVENUES ($MILLION)										
QUEBEC	1.3	1.3	1.4	1.4	1.4	1.5	1.5	1.5	1.6	1.6
ATLANTIC PROVINCES	1.9	2.0	2.0	2.1	2.1	2.2	2.2	2.2	2.3	2.3
ONTARIO	10.6	10.9	11.3	11.6	11.9	12.2	12.5	12.7	13.0	13.2
MAN.-SASK.	1.7	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
ALBERTA	2.2	2.3	2.3	2.4	2.5	2.6	2.6	2.7	2.7	2.8
B.C.,NWT.-YUKON	3.9	4.0	4.1	4.2	4.3	4.4	4.5	4.6	4.7	4.8
CANADA	21.6	22.3	23.0	23.6	24.1	24.7	25.2	25.6	26.1	26.5

ADVERTISING REVENUES/BEAM ($MILLION)										
EAST	3.1	3.3	3.4	3.5	3.6	3.7	3.7	3.8	3.8	3.9
EAST CENTRAL	10.6	10.9	11.3	11.6	11.9	12.2	12.5	12.7	13.0	13.2
WEST CENTRAL	1.7	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
WEST	6.1	6.3	6.5	6.7	6.8	7.0	7.1	7.3	7.4	7.6

SPEC PROGRAMMING(18 HRS/DAY) 81/05/05

ADVERTISER SUPPORTED SERVICES

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
NUMBER OF SUBSCRIBERS (000)										
QUEBEC	372	388	404	417	431	444	455	466	477	487
ATLANTIC PROVINCES	272	286	299	310	319	328	336	343	348	354
ONTARIO	1538	1600	1662	1720	1778	1835	1888	1942	1994	2047
MAN.-SASK.	248	257	264	269	273	277	279	280	280	280
ALBERTA	318	332	346	359	372	384	397	409	420	432
B.C.,NWT.-YUKON	573	591	610	628	647	665	683	701	720	738
CANADA	3320	3453	3585	3703	3821	3933	4038	4140	4240	4339
REVENUES FROM SUBSCRIBERS ($MILLION)										
QUEBEC	1.1	1.2	1.2	1.3	1.3	1.3	1.4	1.4	1.4	1.5
ATLANTIC PROVINCES	.8	.9	.9	.9	1.0	1.0	1.0	1.0	1.0	1.1
ONTARIO	4.6	4.8	5.0	5.2	5.3	5.5	5.7	5.8	6.0	6.1
MAN.-SASK.	.7	.8	.8	.8	.8	.8	.8	.8	.8	.8
ALBERTA	1.0	1.0	1.0	1.1	1.1	1.2	1.2	1.2	1.3	1.3
B.C.,NWT,YUKON	1.7	1.8	1.8	1.9	1.9	2.0	2.0	2.1	2.2	2.2
CANADA	10.0	10.4	10.8	11.1	11.5	11.8	12.1	12.4	12.7	13.0
REVENUES FROM SUBSCRIBERS/BEAM ($MILLION)										
EAST	1.9	2.0	2.1	2.2	2.3	2.3	2.4	2.4	2.5	2.5
EAST CENTRAL	4.6	4.8	5.0	5.2	5.3	5.5	5.7	5.8	6.0	6.1
WEST CENTRAL	.7	.8	.8	.8	.8	.8	.8	.8	.8	.8
WEST	2.7	2.8	2.9	3.0	3.1	3.1	3.2	3.3	3.4	3.5
TOTAL REVENUES ($MILLION)										
QUEBEC	2.4	2.5	2.6	2.7	2.7	2.8	2.9	2.9	3.0	3.0
ATLANTIC PROVINCES	2.7	2.8	2.9	3.0	3.1	3.2	3.2	3.3	3.3	3.4
ONTARIO	15.2	15.7	16.3	16.8	17.2	17.7	18.1	18.6	19.0	19.4
MAN.-SASK.	2.5	2.5	2.6	2.6	2.7	2.7	2.7	2.7	2.7	2.7
ALBERTA	3.1	3.3	3.4	3.5	3.6	3.7	3.8	3.9	4.0	4.1
B.C.,NWT-YUKON	5.7	5.8	6.0	6.1	6.3	6.4	6.6	6.7	6.8	7.0
CANADA	31.5	32.6	33.7	34.7	35.6	36.5	37.3	38.0	38.8	39.5
NPV TOTAL REVENUES ($MILLION)										
CANADA	88.1	99.9	110.7	120.7	129.8	138.2	145.8	152.8	159.1	164.8
TOTAL REVENUES/BEAM ($MILLION)										
EAST	5.1	5.3	5.5	5.7	5.8	6.0	6.1	6.2	6.3	6.4
EAST CENTRAL	15.2	15.7	16.3	16.8	17.2	17.7	18.1	18.6	19.0	19.4
WEST CENTRAL	2.5	2.5	2.6	2.6	2.7	2.7	2.7	2.7	2.7	2.7
WEST	8.8	9.1	9.4	9.6	9.9	10.1	10.4	10.6	10.8	11.1

APPENDIX O

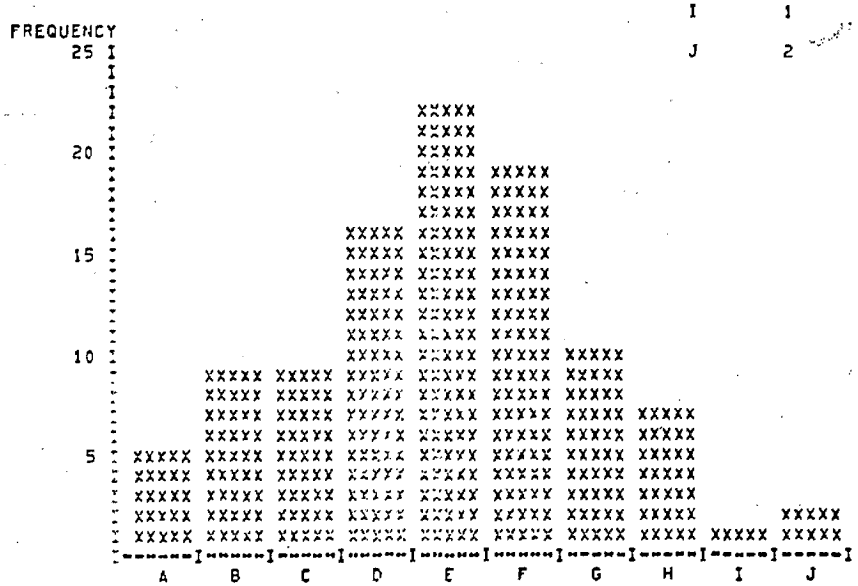
Risk Analysis: Results for Specialized Programming (18 hrs/day) Revenues

```
*********************************
*  TOTAL REVENUES               *
*  ---------------------------  *
*  ITEM   248        PERIOD   4 *
*********************************
*                               *
*  MINIMUM VALUE        1.1568  *
*                               *
*  MAXIMUM VALUE        1.8127  *
*                               *
*  MEAN VALUE           1.4455  *
*                               *
*  STANDARD DEVIATION    .1308  *
*                               *
*  MODE VALUE           1.4529  *
*                               *
*  NO. OF ITERATIONS      100   *
*********************************
```

HISTOGRAM INTERPRETATION FOR - TOTAL REVENUES

CLASS	FREQ.	LOWER LIMIT	UPPER LIMIT	PERCENT CHANCE OF OCCURRENCE: WITHIN THE CLASS	OUTSIDE THE CLASS: TO LEFT	OUTSIDE THE CLASS: TO RIGHT
A	5	1.16	1.22	5.00	0.00	95.00
B	9	1.22	1.29	9.00	5.00	86.00
C	9	1.29	1.35	9.00	14.00	77.00
D	16	1.35	1.42	16.00	23.00	61.00
E	22	1.42	1.48	22.00	39.00	39.00
F	19	1.48	1.55	19.00	61.00	20.00
G	10	1.55	1.62	10.00	80.00	10.00
H	7	1.62	1.68	7.00	90.00	3.00
I	1	1.68	1.75	1.00	97.00	2.00
J	2	1.75	1.81	2.00	98.00	.00

** H I S T O G R A M **



CASE ** SPEC PROGRAMMING(18 HRS/DAY)

```
*************************************
*  TOTAL REVENUES                   *
*  ---------------------------------*
*  ITEM   208        PERIOD     6   *
*************************************
*                                   *
*  MINIMUM VALUE            5.7952  *
*                                   *
*  MAXIMUM VALUE            9.9646  *
*                                   *
*  MEAN VALUE               7.8132  *
*                                   *
*  STANDARD DEVIATION        .8184  *
*                                   *
*  MODE VALUE               7.6486  *
*                                   *
*  NO. OF ITERATIONS           100  *
*************************************
```

HISTOGRAM INTERPRETATION FOR - TOTAL REVENUES

CLASS	FREQ.	LOWER LIMIT	UPPER LIMIT	PERCENT CHANCE OF OCCURRENCE: WITHIN THE CLASS	OUTSIDE THE CLASS: TO LEFT	OUTSIDE THE CLASS: TO RIGHT
A	2	5.80	6.21	2.00	0.00	98.00
B	4	6.21	6.63	4.00	2.00	94.00
C	13	6.63	7.05	13.00	6.00	81.00
D	13	7.05	7.46	13.00	19.00	68.00
E	21	7.46	7.88	21.00	32.00	47.00
F	21	7.88	8.30	21.00	53.00	26.00
G	10	8.30	8.71	10.00	74.00	16.00
H	9	8.71	9.13	9.00	84.00	7.00
I	5	9.13	9.55	5.00	93.00	2.00
J	2	9.55	9.96	2.00	98.00	.00

** H I S T O G R A M **

```
FREQUENCY
   20 I                        XXXXX XXXXX
      I                        XXXXX XXXXX
      I                        XXXXX XXXXX
      I                        XXXXX XXXXX
      I                        XXXXX XXXXX
   16 I                        XXXXX XXXXX
      I                        XXXXX XXXXX
      I                        XXXXX XXXXX
      I                        XXXXX XXXXX
      I             XXXXX XXXXX XXXXX XXXXX
   12 I             XXXXX XXXXX XXXXX XXXXX
      I             XXXXX XXXXX XXXXX XXXXX
      I             XXXXX XXXXX XXXXX XXXXX
      I             XXXXX XXXXX XXXXX XXXXX XXXXX
      I             XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
    8 I             XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I             XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I             XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I             XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I             XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
    4 I             XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I       XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I       XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I------I-----I-----I-----I-----I-----I-----I-----I-----I-----I
          A     B     C     D     E     F     G     H     I     J
```

CASE ** SPEC PROGRAMMING(18 HRS/DAY)

```
************************************
*  TOTAL REVENUES                  *
*  ------------------------------  *
*  ITEM   248        PERIOD    11  *
************************************
*                                  *
*  MINIMUM VALUE          23,6344  *
*                                  *
*  MAXIMUM VALUE          38,8384  *
*                                  *
*  MEAN VALUE             30,0687  *
*                                  *
*  STANDARD DEVIATION      3,3989  *
*                                  *
*  MODE VALUE             27,5231  *
*                                  *
*  NO. OF ITERATIONS          100  *
************************************
```

HISTOGRAM INTERPRETATION FOR - TOTAL REVENUES

CLASS	FREQ.	LOWER LIMIT	UPPER LIMIT	PERCENT CHANCE OF OCCURRENCE: WITHIN THE CLASS	OUTSIDE THE CLASS: TO LEFT	OUTSIDE THE CLASS: TO RIGHT
A	7	23,63	25,15	7,00	0,00	93,00
B	5	25,15	26,68	5,00	7,00	88,00
C	23	26,68	28,20	23,00	12,00	65,00
D	18	28,20	29,72	18,00	35,00	47,00
E	13	29,72	31,24	13,00	53,00	34,00
F	10	31,24	32,76	10,00	66,00	24,00
G	12	32,76	34,28	12,00	76,00	12,00
H	6	34,28	35,80	6,00	88,00	6,00
I	4	35,80	37,32	4,00	94,00	2,00
J	2	37,32	38,84	2,00	98,00	,00

** H I S T O G R A M **

```
FREQUENCY
     25 I
        I
        I             XXXXX
        I             XXXXX
        I             XXXXX
     20 I             XXXXX
        I             XXXXX
        I             XXXXX XXXXX
        I             XXXXX XXXXX
        I             XXXXX XXXXX
     15 I             XXXXX XXXXX
        I             XXXXX XXXXX
        I             XXXXX XXXXX XXXXX
        I             XXXXX XXXXX XXXXX       XXXXX
        I             XXXXX XXXXX XXXXX       XXXXX
     10 I             XXXXX XXXXX XXXXX XXXXX XXXXX
        I             XXXXX XXXXX XXXXX XXXXX XXXXX
        I             XXXXX XXXXX XXXXX XXXXX XXXXX
        I XXXXX       XXXXX XXXXX XXXXX XXXXX XXXXX
        I XXXXX       XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      5 I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I------I-----I-----I-----I-----I-----I-----I-----I-----I
            A     B     C     D     E     F     G     H     I     J
```

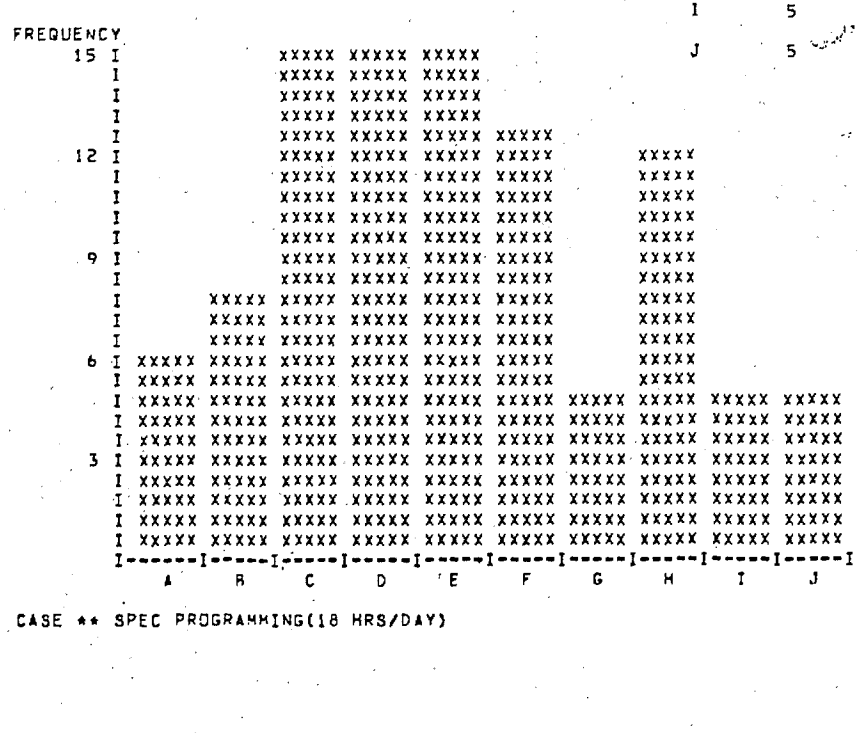
CASE ** SPEC PROGRAMMING(18 HRS/DAY)

```
**********************************
*  TOTAL REVENUES                *
*  ----------------------------  *
*  ITEM   248        PERIOD   16 *
**********************************
*                                *
*  MINIMUM VALUE        28,1277  *
*                                *
*  MAXIMUM VALUE        43,8570  *
*                                *
*  MEAN VALUE           35,3496  *
*                                *
*  STANDARD DEVIATION    3,7845  *
*                                *
*  MODE VALUE           35,1245  *
*                                *
*  NO. OF ITERATIONS        100  *
**********************************
```

HISTOGRAM INTERPRETATION FOR - TOTAL REVENUES

CLASS	FREQ.	LOWER LIMIT	UPPER LIMIT	PERCENT CHANCE OF OCCURRENCE: WITHIN THE CLASS	OUTSIDE THE CLASS: TO LEFT	OUTSIDE THE CLASS: TO RIGHT
A	6	28,13	29,70	6,00	0,00	94,00
B	8	29,70	31,27	8,00	6,00	86,00
C	15	31,27	32,85	15,00	14,00	71,00
D	15	32,85	34,42	15,00	29,00	56,00
E	16	34,42	35,99	16,00	44,00	40,00
F	13	35,99	37,57	13,00	60,00	27,00
G	5	37,57	39,14	5,00	73,00	22,00
H	12	39,14	40,71	12,00	78,00	10,00
I	5	40,71	42,28	5,00	90,00	5,00
J	5	42,28	43,86	5,00	95,00	,00

** H I S T O G R A M **



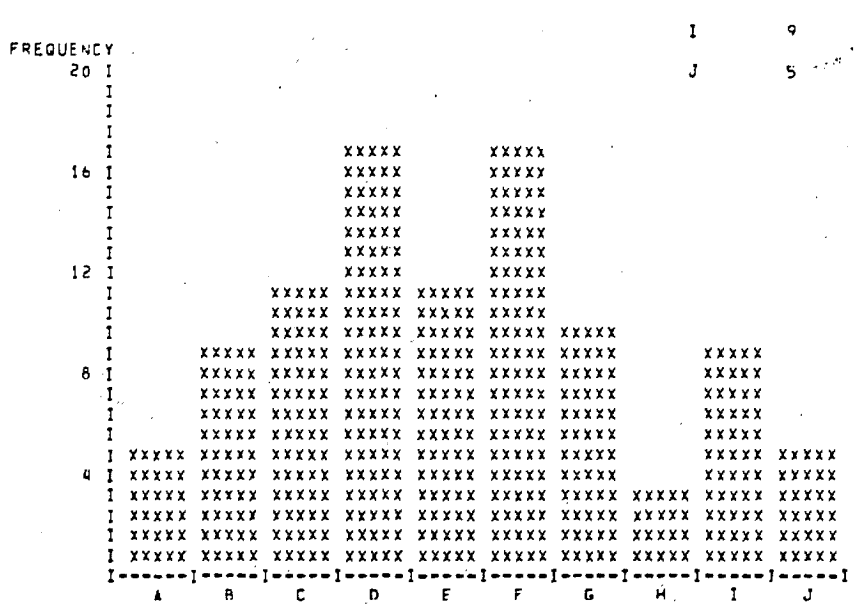
CASE ** SPEC PROGRAMMING(18 HRS/DAY)

```
*********************************
*  TOTAL REVENUES               *
*  ---------------------------  *
*  ITEM   24A        PERIOD  21 *
*********************************
*                               *
*  MINIMUM VALUE        31,0628 *
*                               *
*  MAXIMUM VALUE        48,6197 *
*                               *
*  MEAN VALUE           39,3816 *
*                               *
*  STANDARD DEVIATION    4,1421 *
*                               *
*  MODE VALUE           37,2049 *
*                               *
*  NO. OF ITERATIONS        100 *
*********************************
```

HISTOGRAM INTERPRETATION FOR - TOTAL REVENUES

CLASS	FREQ.	LOWER LIMIT	UPPER LIMIT	PERCENT CHANCE OF OCCURRENCE: WITHIN THE CLASS	OUTSIDE THE CLASS: TO LEFT	OUTSIDE THE CLASS: TO RIGHT
A	5	31,06	32,82	5,00	0,00	95,00
B	9	32,82	34,57	9,00	5,00	86,00
C	12	34,57	36,33	12,00	14,00	74,00
D	17	36,33	38,09	17,00	26,00	57,00
E	12	38,09	39,84	12,00	43,00	45,00
F	17	39,84	41,60	17,00	55,00	28,00
G	10	41,60	43,35	10,00	72,00	18,00
H	4	43,35	45,11	4,00	82,00	14,00
I	9	45,11	46,86	9,00	86,00	5,00
J	5	46,86	48,62	5,00	95,00	,00

** H I S T O G R A M **



CASE ** SPEC PROGRAMMING(18 HRS/DAY)

APPENDIX P

Specialized Programming (6 hrs/day): Subscribers and Revenue Projections

SPEC PROGRAMMING(6 HRS/DAY) 81/05/05

ADVERTISER SUPPORTED SERVICES

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
DBS POPULATION (000)											
QUEBEC	718	922	1140	1425	1727	2063	2415	2805	3202	3616	4065
ATLANTIC PROVINCES	216	280	350	449	555	679	809	960	1111	1279	1465
ONTARIO	1687	2147	2633	3217	3834	4504	5206	5970	6758	7576	8456
MAN.,SASK.	256	325	398	495	595	709	825	955	1082	1218	1366
ALBERTA	325	416	513	633	760	900	1048	1209	1376	1550	1739
B.C.,NWT.,YUKON	699	886	1083	1307	1542	1791	2051	2322	2603	2885	3183
CANADA	3900	4976	6118	7525	9013	10647	12354	14221	16131	18124	20273
TOTAL AUDIENCE (000)											
QUEBEC	0	0	0	14	33	59	92	133	152	172	193
ATLANTIC PROVINCES	0	0	0	17	42	77	123	182	211	243	278
ONTARIO	0	0	0	122	291	513	791	1134	1284	1439	1607
MAN.,SASK.	0	0	0	19	45	81	125	181	206	231	259
ALBERTA	0	0	0	24	58	103	159	230	261	295	330
B.C.,NWT.,YUKON	0	0	0	50	117	204	312	441	495	548	605
CANADA	0	0	0	245	587	1037	1602	2302	2609	2928	3273
STATION AUDIENCE (000)											
QUEBEC	0	0	0	1	1	2	4	5	6	7	8
ATLANTIC PROVINCES	0	0	0	1	2	3	5	7	8	10	11
ONTARIO	0	0	0	5	12	21	32	45	51	58	64
MAN.,SASK.	0	0	0	1	2	3	5	7	8	9	10
ALBERTA	0	0	0	1	2	4	6	9	10	12	13
B.C.,NWT.,YUKON	0	0	0	2	5	8	12	18	20	22	24
CANADA	0	0	0	10	23	41	64	92	104	117	131
STATION ADVERTISING RATE ($)											
QUEBEC	0	0	0	2	5	9	14	20	23	26	29
ATLANTIC PROVINCES	0	0	0	3	6	12	18	27	32	36	42
ONTARIO	0	0	0	18	44	77	119	170	193	216	241
MAN.,SASK.	0	0	0	3	7	12	19	27	31	35	39
ALBERTA	0	0	0	4	9	15	24	34	39	44	50
B.C.,NWT.,YUKON	0	0	0	7	18	31	47	66	74	82	91
CANADA	0	0	0	37	88	156	240	345	391	439	491

SPEC PROGRAMMING(6 HRS/DAY) R1/05/05

ADVERTISER SUPPORTED SERVICES

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
POTENTIAL ADVERT.REVENUES ($MILLION)											
QUEBEC	0.0	0.0	0.0	.1	.2	.3	.5	.8	.9	1.0	1.1
ATLANTIC PROVINCES	0.0	0.0	0.0	.1	.2	.5	.7	1.1	1.2	1.4	1.6
ONTARIO	0.0	0.0	0.0	.7	1.7	3.0	4.7	6.7	7.6	8.5	9.5
MAN.-SASK.	0.0	0.0	0.0	.1	.3	.5	.7	1.1	1.2	1.4	1.5
ALBERTA	0.0	0.0	0.0	.1	.3	.6	.9	1.4	1.5	1.7	2.0
B.C.,NWT.-YUKON	0.0	0.0	0.0	.3	.7	1.2	1.8	2.6	2.9	3.2	3.6
CANADA	0.0	0.0	0.0	1.5	3.5	6.1	9.5	13.6	15.4	17.3	19.4
ANNUAL ADVERTISING REVENUES ($MILLION)											
QUEBEC	0.0	0.0	0.0	.0	.1	.2	.4	.6	.7	.8	.9
ATLANTIC PROVINCES	0.0	0.0	0.0	.0	.1	.3	.5	.9	1.0	1.1	1.3
ONTARIO	0.0	0.0	0.0	.3	.9	1.8	3.3	5.4	6.1	6.8	7.6
MAN.-SASK.	0.0	0.0	0.0	.0	.1	.3	.5	.9	1.0	1.1	1.2
ALBERTA	0.0	0.0	0.0	.1	.2	.4	.7	1.1	1.2	1.4	1.6
B.C.,NWT.-YUKON	0.0	0.0	0.0	.1	.3	.7	1.3	2.1	2.3	2.6	2.9
CANADA	0.0	0.0	0.0	.6	1.7	3.7	6.6	10.9	12.3	13.9	15.5
ADVERTISING REVENUES/BEAM ($MILLION)											
EAST	0.0	0.0	0.0	.1	.2	.5	.9	1.5	1.7	2.0	2.2
EAST CENTRAL	0.0	0.0	0.0	.3	.9	1.8	3.3	5.4	6.1	6.8	7.6
WEST CENTRAL	0.0	0.0	0.0	.0	.1	.3	.5	.9	1.0	1.1	1.2
WEST	0.0	0.0	0.0	.2	.5	1.1	1.9	3.2	3.6	4.0	4.4

SPEC PROGRAMMING(6 HRS/DAY) 81/05/05

ADVERTISER SUPPORTED SERVICES

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
NUMBER OF SUBSCRIBERS (000)											
QUEBEC	0	0	0	24	58	104	164	240	275	313	354
ATLANTIC PROVINCES	0	0	0	15	37	69	110	164	191	221	255
ONTARIO	0	0	0	107	257	456	707	1020	1162	1311	1473
MAN.-SASK.	0	0	0	16	40	72	112	163	186	211	238
ALBERTA	0	0	0	21	51	91	142	207	237	268	303
B.C.,NWT.-YUKON	0	0	0	44	103	181	278	397	448	499	554
CANADA	0	0	0	227	546	973	1513	2190	2498	2824	3178
REVENUES FROM SUBSCRIBERS ($MILLION)											
QUEBEC	0.0	0.0	0.0	.1	.2	.3	.5	.7	.8	.9	1.1
ATLANTIC PROVINCES	0.0	0.0	0.0	.0	.1	.2	.3	.5	.6	.7	.8
ONTARIO	0.0	0.0	0.0	.3	.8	1.4	2.1	3.1	3.5	3.9	4.4
MAN.-SASK.	0.0	0.0	0.0	.0	.1	.2	.3	.5	.6	.6	.7
ALBERTA	0.0	0.0	0.0	.1	.2	.3	.4	.6	.7	.8	.9
B.C.,NWT,YUKON	0.0	0.0	0.0	.1	.3	.5	.8	1.2	1.3	1.5	1.7
CANADA	0.0	0.0	0.0	.7	1.6	2.9	4.5	6.6	7.5	8.5	9.5
REVENUES FROM SUBSCRIBERS/BEAM ($MILLION)											
EAST	0.0	0.0	0.0	.1	.3	.5	.8	1.2	1.4	1.6	1.8
EAST CENTRAL	0.0	0.0	0.0	.3	.8	1.4	2.1	3.1	3.5	3.9	4.4
WEST CENTRAL	0.0	0.0	0.0	.0	.1	.2	.3	.5	.6	.6	.7
WEST	0.0	0.0	0.0	.2	.5	.8	1.3	1.8	2.1	2.3	2.6
TOTAL REVENUES ($MILLION)											
QUEBEC.	0.0	0.0	0.0	.1	.3	.5	.9	1.3	1.5	1.8	2.0
ATLANTIC PROVINCES	0.0	0.0	0.0	.1	.2	.5	.8	1.4	1.6	1.8	2.1
ONTARIO	0.0	0.0	0.0	.6	1.6	3.2	5.4	8.4	9.6	10.7	12.0
MAN.-SASK.	0.0	0.0	0.0	.1	.3	.5	.9	1.3	1.5	1.7	1.9
ALBERTA	0.0	0.0	0.0	.1	.3	.6	1.1	1.7	1.9	2.2	2.5
B.C.,NWT-YUKON	0.0	0.0	0.0	.2	.7	1.3	2.1	3.3	3.7	4.1	4.5
CANADA	0.0	0.0	0.0	1.3	3.4	6.6	11.2	17.5	19.8	22.3	25.0
NPV TOTAL REVENUES ($MILLION)											
CANADA	0.0	0.0	0.0	1.3	4.3	9.5	17.5	28.6	39.8	51.1	62.5
TOTAL REVENUES/BEAM ($MILLION)											
EAST	0.0	0.0	0.0	.2	.5	1.0	1.7	2.7	3.1	3.6	4.1
EAST CENTRAL	0.0	0.0	0.0	.6	1.6	3.2	5.4	8.4	9.6	10.7	12.0
WEST CENTRAL	0.0	0.0	0.0	.1	.3	.5	.9	1.3	1.5	1.7	1.9
WEST	0.0	0.0	0.0	.4	1.0	1.9	3.2	5.0	5.6	6.3	7.0

SPEC PROGRAMMING(6 HRS/DAY) 81/05/05

ADVERTISER SUPPORTED SERVICES

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
DBS POPULATION (000)										
QUEBEC	4239	4395	4543	4665	4783	4890	4984	5069	5148	5224
ATLANTIC PROVINCES	1549	1620	1684	1730	1773	1810	1839	1862	1881	1897
ONTARIO	8768	9062	9352	9611	9870	10112	10338	10554	10763	10969
MAN.-SASK.	1416	1454	1486	1503	1517	1526	1527	1522	1514	1503
ALBERTA	1811	1878	1945	2004	2063	2119	2171	2221	2269	2317
B.C.,NWT.-YUKON	3266	3348	3431	3510	3592	3667	3740	3813	3885	3956
CANADA	21049	21756	22440	23024	23599	24124	24598	25041	25459	25867
TOTAL AUDIENCE (000)										
QUEBEC	201	209	216	222	227	232	237	241	245	248
ATLANTIC PROVINCES	294	308	320	329	337	344	349	354	357	361
ONTARIO	1666	1722	1777	1826	1875	1921	1964	2005	2045	2084
MAN.-SASK.	269	276	282	286	288	290	290	289	288	286
ALBERTA	344	357	370	381	392	403	412	422	431	440
B.C.,NWT.-YUKON	620	636	652	667	682	697	711	724	738	752
CANADA	3395	3507	3616	3710	3802	3887	3963	4036	4104	4170
STATION AUDIENCE (000)										
QUEBEC	8	8	9	9	9	9	9	10	10	10
ATLANTIC PROVINCES	12	12	13	13	13	14	14	14	14	14
ONTARIO	67	69	71	73	75	77	79	80	82	83
MAN.-SASK.	11	11	11	11	12	12	12	12	12	11
ALBERTA	14	14	15	15	16	16	16	17	17	18
B.C.,NWT.-YUKON	25	25	26	27	27	28	28	29	30	30
CANADA	136	140	145	148	152	155	159	161	164	167
STATION ADVERTISING RATE ($)										
QUEBEC	30	31	32	33	34	35	36	36	37	37
ATLANTIC PROVINCES	44	46	48	49	51	52	52	53	54	54
ONTARIO	250	258	267	274	281	288	295	301	307	313
MAN.-SASK.	40	41	42	43	43	43	44	43	43	43
ALBERTA	52	54	55	57	59	60	62	63	65	66
B.C.,NWT.-YUKON	93	95	98	100	102	105	107	109	111	113
CANADA	509	526	542	556	570	583	595	605	616	626

SPEC PROGRAMMING(6 HRS/DAY) 81/05/05

ADVERTISER SUPPORTED SERVICES

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
POTENTIAL ADVERT.REVENUES ($MILLION)										
QUEBEC	1.2	1.2	1.3	1.3	1.3	1.4	1.4	1.4	1.4	1.5
ATLANTIC PROVINCES	1.7	1.8	1.9	1.9	2.0	2.0	2.1	2.1	2.1	2.1
ONTARIO	9.9	10.2	10.5	10.8	11.1	11.4	11.6	11.9	12.1	12.3
MAN.-SASK.	1.6	1.6	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
ALBERTA	2.0	2.1	2.2	2.3	2.3	2.4	2.4	2.5	2.5	2.6
B.C.,NWT.-YUKON	3.7	3.8	3.9	3.9	4.0	4.1	4.2	4.3	4.4	4.4
CANADA	20.1	20.7	21.4	21.9	22.5	23.0	23.4	23.9	24.3	24.7
ANNUAL ADVERTISING REVENUES ($MILLION)										
QUEBEC	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.2	1.2
ATLANTIC PROVINCES	1.4	1.5	1.5	1.6	1.6	1.6	1.7	1.7	1.7	1.7
ONTARIO	7.9	8.1	8.4	8.6	8.9	9.1	9.3	9.5	9.7	9.9
MAN.-SASK.	1.3	1.3	1.3	1.4	1.4	1.4	1.4	1.4	1.4	1.4
ALBERTA	1.6	1.7	1.7	1.8	1.9	1.9	2.0	2.0	2.0	2.1
B.C.,NWT.-YUKON	2.9	3.0	3.1	3.2	3.2	3.3	3.4	3.4	3.5	3.6
CANADA	16.1	16.6	17.1	17.5	18.0	18.4	18.7	19.1	19.4	19.7
ADVERTISING REVENUES/BEAM ($MILLION)										
EAST	2.3	2.4	2.5	2.6	2.7	2.7	2.8	2.8	2.8	2.9
EAST CENTRAL	7.9	8.1	8.4	8.6	8.9	9.1	9.3	9.5	9.7	9.9
WEST CENTRAL	1.3	1.3	1.3	1.4	1.4	1.4	1.4	1.4	1.4	1.4
WEST	4.6	4.7	4.8	5.0	5.1	5.2	5.3	5.4	5.5	5.6

SPEC PROGRAMMING(6 HRS/DAY) 81/05/05

ADVERTISER SUPPORTED SERVICES

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
NUMBER OF SUBSCRIBERS (000)										
QUEBEC	372	388	404	417	431	444	455	466	477	487
ATLANTIC PROVINCES	272	286	299	310	319	328	336	343	348	354
ONTARIO	1538	1600	1662	1720	1778	1835	1888	1942	1994	2047
MAN.-SASK.	248	257	264	269	273	277	279	280	280	280
ALBERTA	318	332	346	359	372	384	397	409	420	432
B.C.,NWT.-YUKON	573	591	610	628	647	665	683	701	720	738
CANADA	3320	3453	3585	3703	3821	3933	4038	4140	4240	4339
REVENUES FROM SUBSCRIBERS ($MILLION)										
QUEBEC	1.1	1.2	1.2	1.3	1.3	1.3	1.4	1.4	1.4	1.5
ATLANTIC PROVINCES	.8	.9	.9	.9	1.0	1.0	1.0	1.0	1.0	1.1
ONTARIO	4.6	4.8	5.0	5.2	5.3	5.5	5.7	5.8	6.0	6.1
MAN.-SASK.	.7	.8	.8	.8	.8	.8	.8	.8	.8	.8
ALBERTA	1.0	1.0	1.0	1.1	1.1	1.2	1.2	1.2	1.3	1.3
B.C.,NWT,YUKON	1.7	1.8	1.8	1.9	1.9	2.0	2.0	2.1	2.2	2.2
CANADA	10.0	10.4	10.8	11.1	11.5	11.8	12.1	12.4	12.7	13.0
REVENUES FROM SUBSCRIBERS/BEAM ($MILLION)										
EAST	1.9	2.0	2.1	2.2	2.3	2.3	2.4	2.4	2.5	2.5
EAST CENTRAL	4.6	4.8	5.0	5.2	5.3	5.5	5.7	5.8	6.0	6.1
WEST CENTRAL	.7	.8	.8	.8	.8	.8	.8	.8	.8	.8
WEST	2.7	2.8	2.9	3.0	3.1	3.1	3.2	3.3	3.4	3.5
TOTAL REVENUES ($MILLION)										
QUEBEC	2.1	2.2	2.2	2.3	2.4	2.4	2.5	2.5	2.6	2.6
ATLANTIC PROVINCES	2.2	2.3	2.4	2.5	2.6	2.6	2.7	2.7	2.7	2.8
ONTARIO	12.5	12.9	13.4	13.8	14.2	14.6	15.0	15.3	15.7	16.0
MAN.-SASK.	2.0	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2
ALBERTA	2.6	2.7	2.8	2.9	3.0	3.1	3.1	3.2	3.3	3.4
B.C.,NWT-YUKON	4.7	4.8	4.9	5.0	5.2	5.3	5.4	5.5	5.7	5.8
CANADA	26.0	27.0	27.9	28.7	29.4	30.2	30.9	31.5	32.1	32.7
NPV TOTAL REVENUES ($MILLION)										
CANADA	73.0	82.7	91.7	99.9	107.5	114.4	120.7	126.4	131.7	136.5
TOTAL REVENUES/BEAM ($MILLION)										
EAST	4.3	4.5	4.6	4.8	4.9	5.0	5.1	5.2	5.3	5.4
EAST CENTRAL	12.5	12.9	13.4	13.8	14.2	14.6	15.0	15.3	15.7	16.0
WEST CENTRAL	2.0	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2
WEST	7.2	7.5	7.7	7.9	8.1	8.3	8.6	8.8	9.0	9.1

APPENDIX Q

Risk Analysis: Results for Specialized Programming (6 hrs/day) Revenues

```
**********************************
*  TOTAL REVENUES                *
*  ----------------------------  *
*  ITEM   248        PERIOD    4 *
**********************************
*                                *
*  MINIMUM VALUE          1.0054 *
*                                *
*  MAXIMUM VALUE          1.5047 *
*                                *
*  MEAN VALUE             1.2387 *
*                                *
*  STANDARD DEVIATION      .1084 *
*                                *
*  MODE VALUE             1.2317 *
*                                *
*  NO. OF ITERATIONS         100 *
**********************************
```

HISTOGRAM INTERPRETATION FOR - TOTAL REVENUES

CLASS	FREQ.	LOWER LIMIT	UPPER LIMIT	PERCENT CHANCE OF OCCURRENCE: WITHIN THE CLASS	OUTSIDE THE CLASS: TO LEFT	OUTSIDE THE CLASS: TO RIGHT
A	7	1.01	1.06	7.00	0.00	93.00
B	5	1.06	1.11	5.00	7.00	88.00
C	11	1.11	1.16	11.00	12.00	77.00
D	10	1.16	1.21	10.00	23.00	67.00
E	22	1.21	1.26	22.00	33.00	45.00
F	19	1.26	1.30	19.00	55.00	26.00
G	13	1.30	1.35	13.00	74.00	13.00
H	6	1.35	1.40	6.00	87.00	7.00
I	5	1.40	1.45	5.00	93.00	2.00
J	2	1.45	1.50	2.00	98.00	.00

** H I S T O G R A M **

```
FREQUENCY
   25 I
      I
      I
      I                         XXXXX
      I                         XXXXX
   20 I                         XXXXX
      I                         XXXXX XXXXX
      I                         XXXXX XXXXX
      I                         XXXXX XXXXX
      I                         XXXXX XXXXX
   15 I                         XXXXX XXXXX
      I                         XXXXX XXXXX
      I                         XXXXX XXXXX XXXXX
      I                         XXXXX XXXXX XXXXX
      I             XXXXX       XXXXX XXXXX XXXXX
   10 I             XXXXX XXXXX XXXXX XXXXX XXXXX
      I             XXXXX XXXXX XXXXX XXXXX XXXXX
      I             XXXXX XXXXX XXXXX XXXXX XXXXX
      I XXXXX       XXXXX XXXXX XXXXX XXXXX XXXXX
      I XXXXX       XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
    5 I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I------I-----I-----I-----I-----I-----I-----I-----I-----I
         A     B     C     D     E     F     G     H     I     J
```

CASE ** SPEC PROGRAMMING(6 HRS/DAY)

```
**********************************
*  TOTAL REVENUES                *
*  ----------------------------  *
*  ITEM   248        PERIOD    6 *
**********************************
*                                *
*  MINIMUM VALUE          5,2846 *
*                                *
*  MAXIMUM VALUE          8,3297 *
*                                *
*  MEAN VALUE             6,5870 *
*                                *
*  STANDARD DEVIATION      ,6323 *
*                                *
*  MODE VALUE             6,6273 *
*                                *
*  NO, OF ITERATIONS         100 *
**********************************
```

HISTOGRAM INTERPRETATION FOR - TOTAL REVENUES

CLASS	FREQ.	LOWER LIMIT	UPPER LIMIT	PERCENT CHANCE OF OCCURRENCE: WITHIN THE CLASS	OUTSIDE THE CLASS: TO LEFT	OUTSIDE THE CLASS: TO RIGHT
A	6	5,28	5,59	6,00	0,00	94,00
B	8	5,59	5,89	8,00	6,00	86,00
C	15	5,89	6,20	15,00	14,00	71,00
D	15	6,20	6,50	15,00	29,00	56,00
E	19	6,50	6,81	19,00	44,00	37,00
F	13	6,81	7,11	13,00	63,00	24,00
G	15	7,11	7,42	15,00	76,00	9,00
H	4	7,42	7,72	4,00	91,00	5,00
I	3	7,72	8,03	3,00	95,00	2,00
J	2	8,03	8,33	2,00	98,00	,00

** H I S T O G R A M **

```
FREQUENCY
   20 I
      I
      I                        XXXXX
      I                        XXXXX
      I                        XXXXX
   16 I                        XXXXX
      I                        XXXXX
      I             XXXXX XXXXX XXXXX       XXXXX
      I             XXXXX XXXXX XXXXX       XXXXX
      I             XXXXX XXXXX XXXXX XXXXX XXXXX
   12 I             XXXXX XXXXX XXXXX XXXXX XXXXX
      I             XXXXX XXXXX XXXXX XXXXX XXXXX
      I             XXXXX XXXXX XXXXX XXXXX XXXXX
      I             XXXXX XXXXX XXXXX XXXXX XXXXX
      I             XXXXX XXXXX XXXXX XXXXX XXXXX
    8 I             XXXXX XXXXX XXXXX XXXXX XXXXX
      I       XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I       XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
    4 I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I------I-----I-----I-----I-----I-----I-----I-----I-----I-----I
          A     B     C     D     E     F     G     H     I     J
```

CASE ** SPEC PROGRAMMING(6 HRS/DAY)

```
*********************************
*  TOTAL REVENUES               *
*  ----------------------------*
*  ITEM   248        PERIOD   11 *
*********************************
*                               *
*  MINIMUM VALUE        19,8169 *
*                               *
*  MAXIMUM VALUE        32,3500 *
*                               *
*  MEAN VALUE           25,1033 *
*                               *
*  STANDARD DEVIATION    2,6154 *
*                               *
*  MODE VALUE           25,4296 *
*                               *
*  NO, OF ITERATIONS       100  *
*********************************
```

HISTOGRAM INTERPRETATION FOR * TOTAL REVENUES

CLASS	FREQ,	LOWER LIMIT	UPPER LIMIT	PERCENT CHANCE OF OCCURRENCE: WITHIN THE CLASS	OUTSIDE THE CLASS: TO LEFT	OUTSIDE THE CLASS: TO RIGHT
A	5	19,82	21,07	5,00	0,00	95,00
B	12	21,07	22,32	12,00	5,00	83,00
C	15	22,32	23,58	15,00	17,00	68,00
D	11	23,58	24,83	11,00	32,00	57,00
E	25	24,83	26,08	25,00	43,00	32,00
F	15	26,08	27,34	15,00	68,00	17,00
G	6	27,34	28,59	6,00	83,00	11,00
H	5	28,59	29,84	5,00	89,00	6,00
I	3	29,84	31,10	3,00	94,00	3,00
J	3	31,10	32,35	3,00	97,00	,00

** H I S T O G R A M **

```
FREQUENCY
   25 I                        XXXXX
      I                        XXXXX
      I                        XXXXX
      I                        XXXXX
      I                        XXXXX
   20 I                        XXXXX
      I                        XXXXX
      I                        XXXXX
      I                        XXXXX
      I                        XXXXX
   15 I             XXXXX       XXXXX XXXXX
      I             XXXXX       XXXXX XXXXX
      I             XXXXX       XXXXX XXXXX
      I       XXXXX XXXXX       XXXXX XXXXX
      I       XXXXX XXXXX XXXXX XXXXX XXXXX
   10 I       XXXXX XXXXX XXXXX XXXXX XXXXX
      I       XXXXX XXXXX XXXXX XXXXX XXXXX
      I       XXXXX XXXXX XXXXX XXXXX XXXXX
      I       XXXXX XXXXX XXXXX XXXXX XXXXX
      I       XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
    5 I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I------I-----I-----I-----I-----I-----I-----I-----I-----I-----I
          A     B     C     D     E     F     G     H     I     J
```

CASE ** SPEC PROGRAMMING(6 HRS/DAY)

```
***********************************
*  TOTAL REVENUES                 *
*  ------------------------------ *
*  ITEM   248        PERIOD    16 *
***********************************
*                                 *
*  MINIMUM VALUE          23,1988 *
*                                 *
*  MAXIMUM VALUE          39,4773 *
*                                 *
*  MEAN VALUE             29,7845 *
*                                 *
*  STANDARD DEVIATION      3,3953 *
*                                 *
*  MODE VALUE             28,8249 *
*                                 *
*  NO. OF ITERATIONS          100 *
***********************************
```

HISTOGRAM INTERPRETATION FOR - TOTAL REVENUES

CLASS	FREQ.	LOWER LIMIT	UPPER LIMIT	PERCENT CHANCE OF OCCURRENCE: WITHIN THE CLASS	OUTSIDE THE CLASS: TO LEFT	OUTSIDE THE CLASS: TO RIGHT
A	9	23,20	24,83	9,00	0,00	91,00
B	6	24,83	26,45	6,00	9,00	85,00
C	15	26,45	28,08	15,00	15,00	70,00
D	24	28,08	29,71	24,00	30,00	46,00
E	15	29,71	31,34	15,00	54,00	31,00
F	11	31,34	32,97	11,00	69,00	20,00
G	9	32,97	34,59	9,00	80,00	11,00
H	7	34,59	36,22	7,00	89,00	4,00
I	3	36,22	37,85	3,00	96,00	1,00
J	1	37,85	39,48	1,00	99,00	,00

** H I S T O G R A M **

```
FREQUENCY
   25 I                    XXXXX
      I                    XXXXX
      I                    XXXXX
      I                    XXXXX
   20 I                    XXXXX
      I                    XXXXX
      I                    XXXXX
      I                    XXXXX
      I                    XXXXX
   15 I              XXXXX XXXXX XXXXX
      I              XXXXX XXXXX XXXXX
      I              XXXXX XXXXX XXXXX
      I              XXXXX XXXXX XXXXX
      I              XXXXX XXXXX XXXXX XXXXX
   10 I              XXXXX XXXXX XXXXX XXXXX
      I XXXXX        XXXXX XXXXX XXXXX XXXXX XXXXX
      I XXXXX        XXXXX XXXXX XXXXX XXXXX XXXXX
      I XXXXX        XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I XXXXX XXXXX  XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
    5 I XXXXX XXXXX  XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I XXXXX XXXXX  XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I XXXXX XXXXX  XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I XXXXX XXXXX  XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I XXXXX XXXXX  XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I------I-----I-----I-----I-----I-----I-----I-----I-----I-----I
         A     B     C     D     E     F     G     H     I     J
```

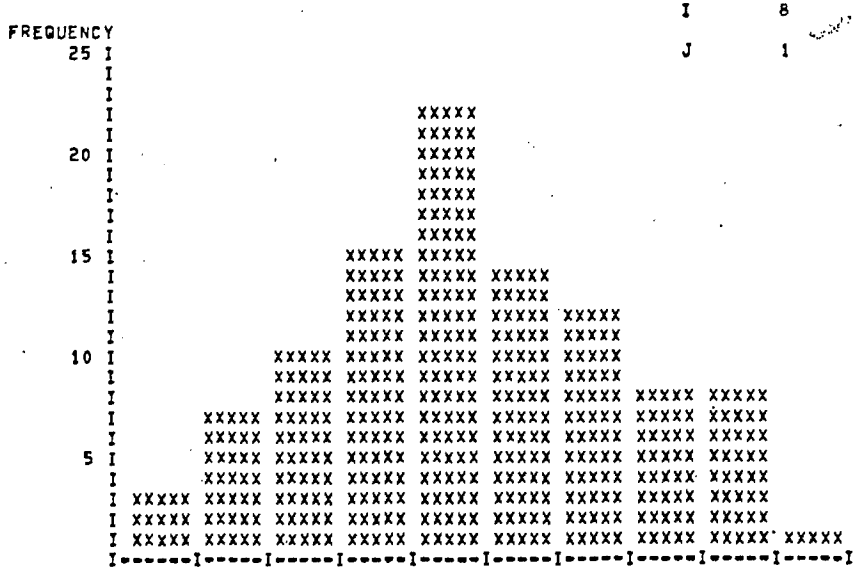
CASE ** SPEC PROGRAMMING(6 HRS/DAY)

```
***********************************
*  TOTAL REVENUES                 *
*  ------------------------------ *
*  ITEM   248        PERIOD    21 *
***********************************
*                                 *
*  MINIMUM VALUE          25.3771 *
*                                 *
*  MAXIMUM VALUE          41.5618 *
*                                 *
*  MEAN VALUE             33.1148 *
*                                 *
*  STANDARD DEVIATION      3.3293 *
*                                 *
*  MODE VALUE             32.6748 *
*                                 *
*  NO. OF ITERATIONS          100 *
***********************************
```

HISTOGRAM INTERPRETATION FOR * TOTAL REVENUES

CLASS	FREQ.	LOWER LIMIT	UPPER LIMIT	PERCENT CHANCE OF OCCURRENCE: WITHIN THE CLASS	OUTSIDE THE CLASS: TO LEFT	OUTSIDE THE CLASS: TO RIGHT
A	3	25.38	27.00	3.00	0.00	97.00
B	7	27.00	28.61	7.00	3.00	90.00
C	10	28.61	30.23	10.00	10.00	80.00
D	15	30.23	31.85	15.00	20.00	65.00
E	22	31.85	33.47	22.00	35.00	43.00
F	14	33.47	35.09	14.00	57.00	29.00
G	12	35.09	36.71	12.00	71.00	17.00
H	8	36.71	38.32	8.00	83.00	9.00
I	8	38.32	39.94	8.00	91.00	1.00
J	1	39.94	41.56	1.00	99.00	.00

** H I S T O G R A M **



CASE ** SPEC PROGRAMMING(6 HRS/DAY)

APPENDIX R

French Language Superstation: Revenue Projections

FRENCH SPEAKING SUPERSTATION 81/05/06

ADVERTISER SUPPORTED SERVICES

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
DBS POPULATION (000)											
QUEBEC	2392	2491	2591	2745	2903	3080	3258	3460	3654	3850	4065
ATLANTIC PROVINCES	721	758	796	859	923	1000	1077	1170	1257	1355	1465
ONTARIO	5624	5802	5985	6242	6507	6802	7099	7432	7762	8092	8456
MAN.,_SASK.	854	879	904	950	996	1052	1106	1170	1229	1293	1366
ALBERTA	1082	1124	1166	1226	1288	1356	1425	1502	1578	1655	1739
B.C.,NWT.,_YUKON	2329	2394	2461	2546	2633	2725	2818	2911	3005	3091	3183
CANADA	13001	13447	13904	14567	15249	16015	16783	17646	18485	19336	20273
TOTAL AUDIENCE (000)											
QUEBEC	0	0	0	494	522	554	586	623	658	693	732
ATLANTIC PROVINCES	0	0	0	0	0	0	0	0	0	0	0
ONTARIO	0	0	0	0	0	0	0	0	0	0	0
MAN.,_SASK.	0	0	0	0	0	0	0	0	0	0	0
ALBERTA	0	0	0	0	0	0	0	0	0	0	0
B.C.,NWT.,_YUKON	0	0	0	0	0	0	0	0	0	0	0
CANADA	0	0	0	494	522	554	586	623	658	693	732
STATION AUDIENCE (000)											
QUEBEC	0	0	0	99	104	111	117	125	132	139	146
ATLANTIC PROVINCES	0	0	0	0	0	0	0	0	0	0	0
ONTARIO	0	0	0	0	0	0	0	0	0	0	0
MAN.,_SASK.	0	0	0	0	0	0	0	0	0	0	0
ALBERTA	0	0	0	0	0	0	0	0	0	0	0
B.C.,NWT.,_YUKON	0	0	0	0	0	0	0	0	0	0	0
CANADA	0	0	0	99	104	111	117	125	132	139	146
STATION ADVERTISING RATE ($)											
QUEBEC	0	0	0	282	298	316	334	355	375	395	417
ATLANTIC PROVINCES	0	0	0	0	0	0	0	0	0	0	0
ONTARIO	0	0	0	0	0	0	0	0	0	0	0
MAN.,_SASK.	0	0	0	0	0	0	0	0	0	0	0
ALBERTA	0	0	0	0	0	0	0	0	0	0	0
B.C.,NWT.,_YUKON	0	0	0	0	0	0	0	0	0	0	0
CANADA	0	0	0	282	298	316	334	355	375	395	417

ADVERTISER SUPPORTED SERVICES

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
POTENTIAL ADVERT.REVENUES ($MILLION)											
QUEBEC	0.0	0.0	0.0	44.4	47.0	49.8	52.7	56.0	59.1	62.3	65.8
ATLANTIC PROVINCES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ONTARIO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MAN.,SASK.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ALBERTA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
B.C.,NWT.,YUKON	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CANADA	0.0	0.0	0.0	44.4	47.0	49.8	52.7	56.0	59.1	62.3	65.8
ANNUAL ADVERTISING REVENUES ($MILLION)											
QUEBEC	0.0	0.0	0.0	17.8	23.5	29.9	36.9	44.8	47.3	49.8	52.6
ATLANTIC PROVINCES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ONTARIO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MAN.,SASK.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ALBERTA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
B.C.,NWT.,YUKON	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CANADA	0.0	0.0	0.0	17.8	23.5	29.9	36.9	44.8	47.3	49.8	52.6
ADVERTISING REVENUES/BEAM ($MILLION)											
EAST	0.0	0.0	0.0	17.8	23.5	29.9	36.9	44.8	47.3	49.8	52.6
EAST CENTRAL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WEST CENTRAL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WEST	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

FRENCH SPEAKING SUPERSTATION 81/05/06

ADVERTISER SUPPORTED SERVICES

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
NUMBER OF SUBSCRIBERS (000)											
QUEBEC	0	0	0	914	973	1039	1106	1182	1256	1333	1416
ATLANTIC PROVINCES	0	0	0	0	0	0	0	0	0	0	0
ONTARIO	0	0	0	0	0	0	0	0	0	0	0
MAN.,SASK.	0	0	0	0	0	0	0	0	0	0	0
ALBERTA	0	0	0	0	0	0	0	0	0	0	0
B.C.,NWT.,YUKON	0	0	0	0	0	0	0	0	0	0	0
CANADA	0	0	0	914	973	1039	1106	1182	1256	1333	1416
REVENUES FROM SUBSCRIBERS ($MILLION)											
QUEBEC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ATLANTIC PROVINCES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ONTARIO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MAN.,SASK.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ALBERTA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
B.C.,NWT,YUKON	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CANADA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
REVENUES FROM SUBSCRIBERS/BEAM ($MILLION)											
EAST	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
EAST CENTRAL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WEST CENTRAL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WEST	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL REVENUES ($MILLION)											
QUEBEC,	0.0	0.0	0.0	17.8	23.5	29.9	36.9	44.8	47.3	49.8	52.6
ATLANTIC PROVINCES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ONTARIO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MAN.,SASK.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ALBERTA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
B.C.,NWT_YUKON	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CANADA	0.0	0.0	0.0	17.8	23.5	29.9	36.9	44.8	47.3	49.8	52.6
NPV TOTAL REVENUES ($MILLION)											
CANADA	0.0	0.0	0.0	17.8	38.7	62.6	88.8	117.3	144.1	169.4	193.2
TOTAL REVENUES/BEAM ($MILLION)											
EAST	0.0	0.0	0.0	17.8	23.5	29.9	36.9	44.8	47.3	49.8	52.6
EAST CENTRAL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WEST CENTRAL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WEST	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

FRENCH SPEAKING SUPERSTATION 81/05/06

ADVERTISER SUPPORTED SERVICES

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
DBS POPULATION (000)										
QUEBEC	4239	4395	4543	4665	4783	4890	4984	5069	5148	5224
ATLANTIC PROVINCES	1549	1620	1684	1730	1773	1810	1839	1862	1881	1897
ONTARIO	8768	9062	9352	9611	9870	10112	10338	10554	10763	10969
MAN.,SASK.	1416	1454	1486	1503	1517	1526	1527	1522	1514	1503
ALBERTA	1811	1878	1945	2004	2063	2119	2171	2221	2269	2317
B.C.,NWT.,YUKON	3266	3348	3431	3510	3592	3667	3740	3813	3885	3956
CANADA	21049	21756	22440	23024	23599	24124	24598	25041	25459	25867
TOTAL AUDIENCE (000)										
QUEBEC	763	791	818	840	861	880	897	912	927	940
ATLANTIC PROVINCES	0	0	0	0	0	0	0	0	0	0
ONTARIO	0	0	0	0	0	0	0	0	0	0
MAN.,SASK.	0	0	0	0	0	0	0	0	0	0
ALBERTA	0	0	0	0	0	0	0	0	0	0
B.C.,NWT.,YUKON	0	0	0	0	0	0	0	0	0	0
CANADA	763	791	818	840	861	880	897	912	927	940
STATION AUDIENCE (000)										
QUEBEC	153	158	164	168	172	176	179	182	185	188
ATLANTIC PROVINCES	0	0	0	0	0	0	0	0	0	0
ONTARIO	0	0	0	0	0	0	0	0	0	0
MAN.,SASK.	0	0	0	0	0	0	0	0	0	0
ALBERTA	0	0	0	0	0	0	0	0	0	0
B.C.,NWT.,YUKON	0	0	0	0	0	0	0	0	0	0
CANADA	153	158	164	168	172	176	179	182	185	188
STATION ADVERTISING RATE ($)										
QUEBEC	435	451	466	479	491	502	511	520	528	536
ATLANTIC PROVINCES	0	0	0	0	0	0	0	0	0	0
ONTARIO	0	0	0	0	0	0	0	0	0	0
MAN.,SASK.	0	0	0	0	0	0	0	0	0	0
ALBERTA	0	0	0	0	0	0	0	0	0	0
B.C.,NWT.,YUKON	0	0	0	0	0	0	0	0	0	0
CANADA	435	451	466	479	491	502	511	520	528	536

FRENCH SPEAKING SUPERSTATION 81/05/06

ADVERTISER SUPPORTED SERVICES

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
POTENTIAL ADVERT.REVENUES ($MILLION)										
QUEBEC	68.6	71.1	73.5	75.5	77.4	79.1	80.6	82.0	83.3	84.5
ATLANTIC PROVINCES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ONTARIO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MAN.,_SASK.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ALBERTA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
B.C.,NWT.,_YUKON	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CANADA	68.6	71.1	73.5	75.5	77.4	79.1	80.6	82.0	83.3	84.5
ANNUAL ADVERTISING REVENUES ($MILLION)										
QUEBEC	54.9	56.9	58.8	60.4	61.9	63.3	64.5	65.6	66.6	67.6
ATLANTIC PROVINCES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ONTARIO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MAN.,_SASK.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ALBERTA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
B.C.,NWT.,_YUKON	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CANADA	54.9	56.9	58.8	60.4	61.9	63.3	64.5	65.6	66.6	67.6
ADVERTISING REVENUES/BEAM ($MILLION)										
EAST	54.9	56.9	58.8	60.4	61.9	63.3	64.5	65.6	66.6	67.6
EAST CENTRAL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WEST CENTRAL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WEST	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

FRENCH SPEAKING SUPERSTATION 81/05/06

ADVERTISER SUPPORTED SERVICES

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
NUMBER OF SUBSCRIBERS (000)										
QUEBEC	1487	1552	1615	1670	1724	1774	1821	1865	1907	1949
ATLANTIC PROVINCES	0	0	0	0	0	0	0	0	0	0
ONTARIO	0	0	0	0	0	0	0	0	0	0
MAN.,SASK.	0	0	0	0	0	0	0	0	0	0
ALBERTA	0	0	0	0	0	0	0	0	0	0
B.C.,NWT.,YUKON	0	0	0	0	0	0	0	0	0	0
CANADA	1487	1552	1615	1670	1724	1774	1821	1865	1907	1949
REVENUES FROM SUBSCRIBERS ($MILLION)										
QUEBEC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ATLANTIC PROVINCES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ONTARIO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MAN.,SASK.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ALBERTA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
B.C.,NWT,YUKON	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CANADA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
REVENUES FROM SUBSCRIBERS/BEAM ($MILLION)										
EAST	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
EAST CENTRAL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WEST CENTRAL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WEST	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL REVENUES ($MILLION)										
QUEBEC,	54.9	56.9	58.8	60.4	61.9	63.3	64.5	65.6	66.6	67.6
ATLANTIC PROVINCES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ONTARIO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MAN.,SASK.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ALBERTA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
B.C.,NWT_YUKON	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CANADA	54.9	56.9	58.8	60.4	61.9	63.3	64.5	65.6	66.6	67.6
NPV TOTAL REVENUES ($MILLION)										
CANADA	215.3	235.8	254.8	272.1	288.0	302.5	315.7	327.7	338.6	348.4
TOTAL REVENUES/BEAM ($MILLION)										
EAST	54.9	56.9	58.8	60.4	61.9	63.3	64.5	65.6	66.6	67.6
EAST CENTRAL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WEST CENTRAL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WEST	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

APPENDIX S

Risk Analysis: Results for a French Language Superstation Revenues

```
*********************************
*  TOTAL REVENUES               *
*  ---------------------------  *
*  ITEM   248        PERIOD   4 *
*********************************
*                               *
*  MINIMUM VALUE        15.3996 *
*                               *
*  MAXIMUM VALUE        19.5592 *
*                               *
*  MEAN VALUE           17.6458 *
*                               *
*  STANDARD DEVIATION     .9765 *
*                               *
*  MODE VALUE           17.2371 *
*                               *
*  NO. OF ITERATIONS        100 *
*********************************
```

HISTOGRAM INTERPRETATION FOR - TOTAL REVENUES

CLASS	FREQ.	LOWER LIMIT	UPPER LIMIT	PERCENT CHANCE OF OCCURRENCE: WITHIN THE CLASS	OUTSIDE THE CLASS: TO LEFT	OUTSIDE THE CLASS: TO RIGHT
A	3	15.40	15.82	3.00	0.00	97.00
B	3	15.82	16.23	3.00	3.00	94.00
C	11	16.23	16.65	11.00	6.00	83.00
D	12	16.65	17.06	12.00	17.00	71.00
E	18	17.06	17.48	18.00	29.00	53.00
F	12	17.48	17.90	12.00	47.00	41.00
G	13	17.90	18.31	13.00	59.00	28.00
H	12	18.31	18.73	12.00	72.00	16.00
I	11	18.73	19.14	11.00	84.00	5.00
J	5	19.14	19.56	5.00	95.00	.00

** H I S T O G R A M **

```
FREQUENCY
    20 I
       I
       I
       I                      XXXXX
       I                      XXXXX
    16 I                      XXXXX
       I                      XXXXX
       I                      XXXXX
       I                      XXXXX
       I                      XXXXX       XXXXX
    12 I                      XXXXX       XXXXX
       I                XXXXX XXXXX XXXXX XXXXX
       I          XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
       I          XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
       I          XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
     8 I          XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
       I          XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
       I          XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
       I          XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
       I          XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
     4 I          XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
       I          XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
       I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
       I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
       I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
       I------I-----I-----I-----I-----I-----I-----I-----I-----I-----I
           A     B     C     D     E     F     G     H     I     J
```

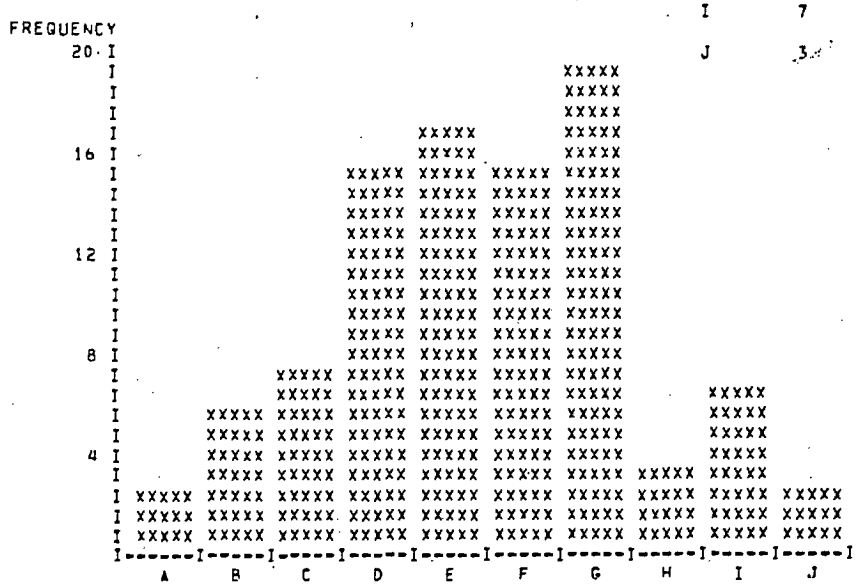
CASE ** FRENCH SPEAKING SUPERSTATION

```
**********************************
*  TOTAL REVENUES                *
*  ----------------------------  *
*  ITEM   248        PERIOD    6 *
**********************************
*                                *
*  MINIMUM VALUE         26.2630 *
*                                *
*  MAXIMUM VALUE         33.3536 *
*                                *
*  MEAN VALUE            29.8251 *
*                                *
*  STANDARD DEVIATION     1.4644 *
*                                *
*  MODE VALUE            30.9045 *
*                                *
*  NO. OF ITERATIONS         100 *
**********************************
```

HISTOGRAM INTERPRETATION FOR - TOTAL REVENUES

CLASS	FREQ.	LOWER LIMIT	UPPER LIMIT	PERCENT CHANCE OF OCCURRENCE: WITHIN THE CLASS	OUTSIDE THE CLASS: TO LEFT	OUTSIDE THE CLASS: TO RIGHT
A	3	26.26	26.97	3.00	0.00	97.00
B	6	26.97	27.68	6.00	3.00	91.00
C	8	27.68	28.39	8.00	9.00	83.00
D	16	28.39	29.10	16.00	17.00	67.00
E	17	29.10	29.81	17.00	33.00	50.00
F	16	29.81	30.52	16.00	50.00	34.00
G	20	30.52	31.23	20.00	66.00	14.00
H	4	31.23	31.94	4.00	86.00	10.00
I	7	31.94	32.64	7.00	90.00	3.00
J	3	32.64	33.35	3.00	97.00	.00

** H I S T O G R A M **



CASE ** FRENCH SPEAKING SUPERSTATION

```
*********************************
*  TOTAL REVENUES               *
*  ----------------------------  *
*  ITEM   24A        PERIOD   11  *
*********************************
*                               *
*  MINIMUM VALUE        45.9227  *
*                               *
*  MAXIMUM VALUE        59.9603  *
*                               *
*  MEAN VALUE           52.5630  *
*                               *
*  STANDARD DEVIATION    2.5626  *
*                               *
*  MODE VALUE           52.2593  *
*                               *
*  NO. OF ITERATIONS       100   *
*********************************
```

HISTOGRAM INTERPRETATION FOR - TOTAL REVENUES

CLASS	FREQ.	LOWER LIMIT	UPPER LIMIT	PERCENT CHANCE OF OCCURRENCE: WITHIN THE CLASS	OUTSIDE THE CLASS: TO LEFT	OUTSIDE THE CLASS: TO RIGHT
A	2	45.92	47.33	2.00	0.00	98.00
B	6	47.33	48.73	6.00	2.00	92.00
C	8	48.73	50.13	8.00	8.00	84.00
D	16	50.13	51.54	16.00	16.00	68.00
E	29	51.54	52.94	29.00	32.00	39.00
F	16	52.94	54.35	16.00	61.00	23.00
G	10	54.35	55.75	10.00	77.00	13.00
H	10	55.75	57.15	10.00	87.00	3.00
I	0	57.15	58.56	0.00	97.00	3.00
J	3	58.56	59.96	3.00	97.00	.00

** H I S T O G R A M **

```
FREQUENCY
    30 I
       I                    XXXXX
       I                    XXXXX
       I                    XXXXX
       I                    XXXXX
    24 I                    XXXXX
       I                    XXXXX
       I                    XXXXX
       I                    XXXXX
       I                    XXXXX
    18 I                    XXXXX
       I                    XXXXX
       I              XXXXX XXXXX XXXXX
       I              XXXXX XXXXX XXXXX
       I              XXXXX XXXXX XXXXX
    12 I              XXXXX XXXXX XXXXX
       I              XXXXX XXXXX XXXXX
       I              XXXXX XXXXX XXXXX XXXXX XXXXX
       I              XXXXX XXXXX XXXXX XXXXX XXXXX
       I        XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
     6 I        XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
       I        XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
       I        XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
       I        XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX       XXXXX
       I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX       XXXXX
       I------I-----I-----I-----I-----I-----I-----I-----I-----I-----I
           A     B     C     D     E     F     G     H     I     J
```

CASE ** FRENCH SPEAKING SUPERSTATION

```
*********************************
*  TOTAL REVENUES               *
*  ----------------------------*
*  ITEM   248        PERIOD   16 *
*********************************
*                               *
*  MINIMUM VALUE        54,6514 *
*                               *
*  MAXIMUM VALUE        69,7788 *
*                               *
*  MEAN VALUE           62,0027 *
*                               *
*  STANDARD DEVIATION    3,3793 *
*                               *
*  MODE VALUE           64,4676 *
*                               *
*  NO. OF ITERATIONS        100 *
*********************************
```

HISTOGRAM INTERPRETATION FOR - TOTAL REVENUES

CLASS	FREQ.	LOWER LIMIT	UPPER LIMIT	PERCENT CHANCE OF OCCURRENCE: WITHIN THE CLASS	OUTSIDE THE CLASS: TO LEFT	OUTSIDE THE CLASS: TO RIGHT
A	5	54,65	56,16	5,00	0,00	95,00
B	6	56,16	57,68	6,00	5,00	89,00
C	11	57,68	59,19	11,00	11,00	78,00
D	14	59,19	60,70	14,00	22,00	64,00
E	14	60,70	62,22	14,00	36,00	50,00
F	16	62,22	63,73	16,00	50,00	34,00
G	22	63,73	65,24	22,00	66,00	12,00
H	5	65,24	66,75	5,00	88,00	7,00
I	1	66,75	68,27	1,00	93,00	6,00
J	6	68,27	69,78	6,00	94,00	,00

** H I S T O G R A M **

```
FREQUENCY
     25 I
        I
        I
        I                                 XXXXX
        I                                 XXXXX
     20 I                                 XXXXX
        I                                 XXXXX
        I                                 XXXXX
        I                                 XXXXX
        I                           XXXXX XXXXX
     15 I                           XXXXX XXXXX
        I                     XXXXX XXXXX XXXXX XXXXX
        I                     XXXXX XXXXX XXXXX XXXXX
        I                     XXXXX XXXXX XXXXX XXXXX
        I               XXXXX XXXXX XXXXX XXXXX XXXXX
     10 I               XXXXX XXXXX XXXXX XXXXX XXXXX
        I               XXXXX XXXXX XXXXX XXXXX XXXXX
        I               XXXXX XXXXX XXXXX XXXXX XXXXX
        I               XXXXX XXXXX XXXXX XXXXX XXXXX
        I         XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX             XXXXX
      5 I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX         XXXXX
        I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX         XXXXX
        I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX         XXXXX
        I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX         XXXXX
        I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX   XXXXX
        I------I-----I-----I-----I-----I-----I-----I-----I-----I-----I
            A     B     C     D     E     F     G     H     I     J
```

CASE ** FRENCH SPEAKING SUPERSTATION

```
*********************************
*  TOTAL REVENUES               *
*  ----------------------------*
*  ITEM   24A        PERIOD   21 *
*********************************
*                               *
*  MINIMUM VALUE        60.8086 *
*                               *
*  MAXIMUM VALUE        77.7062 *
*                               *
*  MEAN VALUE           67.5743 *
*                               *
*  STANDARD DEVIATION    3.4507 *
*                               *
*  MODE VALUE           66.8100 *
*                               *
*  NO. OF ITERATIONS       100 *
*********************************
```

HISTOGRAM INTERPRETATION FOR - TOTAL REVENUES

CLASS	FREQ.	LOWER LIMIT	UPPER LIMIT	PERCENT CHANCE OF OCCURRENCE: WITHIN THE CLASS	OUTSIDE THE CLASS: TO LEFT	OUTSIDE THE CLASS: TO RIGHT
A	9	60.81	62.50	9.00	0.00	91.00
B	8	62.50	64.19	8.00	9.00	83.00
C	16	64.19	65.88	16.00	17.00	67.00
D	19	65.88	67.57	19.00	33.00	48.00
E	17	67.57	69.26	17.00	52.00	31.00
F	15	69.26	70.95	15.00	69.00	16.00
G	10	70.95	72.64	10.00	84.00	6.00
H	4	72.64	74.33	4.00	94.00	2.00
I	0	74.33	76.02	0.00	98.00	2.00
J	2	76.02	77.71	2.00	98.00	.00

** H I S T O G R A M **

```
FREQUENCY
     20 I
        I
        I                   XXXXX
        I                   XXXXX
        I                   XXXXX XXXXX
     16 I                   XXXXX XXXXX
        I             XXXXX XXXXX XXXXX
        I             XXXXX XXXXX XXXXX XXXXX
        I             XXXXX XXXXX XXXXX XXXXX
        I             XXXXX XXXXX XXXXX XXXXX
     12 I             XXXXX XXXXX XXXXX XXXXX
        I             XXXXX XXXXX XXXXX XXXXX
        I             XXXXX XXXXX XXXXX XXXXX
        I             XXXXX XXXXX XXXXX XXXXX XXXXX
        I XXXXX       XXXXX XXXXX XXXXX XXXXX XXXXX
      8 I XXXXX       XXXXX XXXXX XXXXX XXXXX XXXXX
        I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      4 I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX       XXXXX
        I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX       XXXXX
        I------I-----I-----I-----I-----I-----I-----I-----I-----I
            A     B     C     D     E     F     G     H     I     J
```

CASE ** FRENCH SPEAKING SUPERSTATION

APPENDIX T

French Language Pay-TV: Subscribers and Revenue Projections

FRENCH SPEAKING PAY-TV 81/05/05

SUBSCRIBER FINANCED SERVICES

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
PAY-TV SUBSCRIBERS (000)											
QUEBEC	0	0	0	14	34	72	184	240	275	313	354
ATLANTIC PROVINCES	0	0	0	0	0	0	0	0	0	0	0
ONTARIO	0	0	0	0	0	0	0	0	0	0	0
MAN., SASK.	0	0	0	0	0	0	0	0	0	0	0
ALBERTA	0	0	0	0	0	0	0	0	0	0	0
B.C., NWT., YUKON	0	0	0	0	0	0	0	0	0	0	0
CANADA	0	0	0	14	34	72	184	240	275	313	354
PAY-TV REVENUES ($000)											
QUEBEC	0	0	0	751	1813	3870	9959	12936	14863	16896	19121
ATLANTIC PROVINCES	0	0	0	0	0	0	0	0	0	0	0
ONTARIO	0	0	0	0	0	0	0	0	0	0	0
MAN., SASK.	0	0	0	0	0	0	0	0	0	0	0
ALBERTA	0	0	0	0	0	0	0	0	0	0	0
B.C., NWT., YUKON	0	0	0	0	0	0	0	0	0	0	0
CANADA	0	0	0	751	1813	3870	9959	12936	14863	16896	19121
NPV PAY-TV REVENUES ($000)											
CANADA	0	0	0	751	2369	5455	12543	20764	29197	37758	46407
PAY-TV REVENUES/BEAM ($000)											
EAST	0	0	0	751	1813	3870	9959	12936	14863	16896	19121
EAST CENTRAL	0	0	0	0	0	0	0	0	0	0	0
WEST CENTRAL	0	0	0	0	0	0	0	0	0	0	0
WEST	0	0	0	0	0	0	0	0	0	0	0

FRENCH SPEAKING PAY-TV 81/05/05

SUBSCRIBER FINANCED SERVICES

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
PAY-TV SUBSCRIBERS (000)										
QUEBEC	372	388	404	417	431	444	455	466	477	487
ATLANTIC PROVINCES	0	0	0	0	0	0	0	0	0	0
ONTARIO	0	0	0	0	0	0	0	0	0	0
MAN.,SASK.	0	0	0	0	0	0	0	0	0	0
ALBERTA	0	0	0	0	0	0	0	0	0	0
B.C.,NWT.,YUKON	0	0	0	0	0	0	0	0	0	0
CANADA	372	388	404	417	431	444	455	466	477	487
PAY-TV REVENUES ($000)										
QUEBEC	20074	20951	21802	22539	23270	23953	24581	25178	25749	26315
ATLANTIC PROVINCES	0	0	0	0	0	0	0	0	0	0
ONTARIO	0	0	0	0	0	0	0	0	0	0
MAN.,SASK.	0	0	0	0	0	0	0	0	0	0
ALBERTA	0	0	0	0	0	0	0	0	0	0
B.C.,NWT.,YUKON	0	0	0	0	0	0	0	0	0	0
CANADA	20074	20951	21802	22539	23270	23953	24581	25178	25749	26315
NPV PAY-TV REVENUES ($000)										
CANADA	54514	62069	69089	75568	81541	87031	92060	96660	100860	104693
PAY-TV REVENUES/BEAM ($000)										
EAST	20074	20951	21802	22539	23270	23953	24581	25178	25749	26315
EAST CENTRAL	0	0	0	0	0	0	0	0	0	0
WEST CENTRAL	0	0	0	0	0	0	0	0	0	0
WEST	0	0	0	0	0	0	0	0	0	0

APPENDIX U

Risk Analysis: Results for French Language Pay-TV Revenues

```
*********************************
*  PAY-TV REVENUES              *
*  ----------------------------  *
*  ITEM   112        PERIOD    4  *
*********************************
*                               *
*  MINIMUM VALUE        648.6141  *
*                               *
*  MAXIMUM VALUE        947.4524  *
*                               *
*  MEAN VALUE           771.4873  *
*                               *
*  STANDARD DEVIATION    62.4268  *
*                               *
*  MODE VALUE           728.4490  *
*                               *
*  NO. OF ITERATIONS         100  *
*********************************
```

HISTOGRAM INTERPRETATION FOR - PAY-TV REVENUES

CLASS	FREQ.	LOWER LIMIT	UPPER LIMIT	PERCENT CHANCE OF OCCURRENCE: WITHIN THE CLASS	OUTSIDE THE CLASS: TO LEFT	OUTSIDE THE CLASS: TO RIGHT
A	8	648.61	678.50	8.00	0.00	92.00
B	7	678.50	708.38	7.00	8.00	85.00
C	19	708.38	738.27	19.00	15.00	66.00
D	18	738.27	768.15	18.00	34.00	48.00
E	19	768.15	798.03	19.00	52.00	29.00
F	9	798.03	827.92	9.00	71.00	20.00
G	10	827.92	857.80	10.00	80.00	10.00
H	7	857.80	887.68	7.00	90.00	3.00
I	1	887.68	917.57	1.00	97.00	2.00
J	2	917.57	947.45	2.00	98.00	.00

** H I S T O G R A M **

```
FREQUENCY
   20 I
      I
      I            XXXXX       XXXXX
      I            XXXXX XXXXX XXXXX
      I            XXXXX XXXXX XXXXX
   16 I            XXXXX XXXXX XXXXX
      I            XXXXX XXXXX XXXXX
      I            XXXXX XXXXX XXXXX
      I            XXXXX XXXXX XXXXX
      I            XXXXX XXXXX XXXXX
   12 I            XXXXX XXXXX XXXXX
      I            XXXXX XXXXX XXXXX
      I            XXXXX XXXXX XXXXX
      I            XXXXX XXXXX XXXXX       XXXXX
      I            XXXXX XXXXX XXXXX XXXXX XXXXX
    8 I            XXXXX XXXXX XXXXX XXXXX XXXXX
      I XXXXX      XXXXX XXXXX XXXXX XXXXX XXXXX
      I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
    4 I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX       XXXXX
      I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      I------I-----I-----I-----I-----I-----I-----I-----I-----I-----I
          A     B     C     D     E     F     G     H     I     J
```

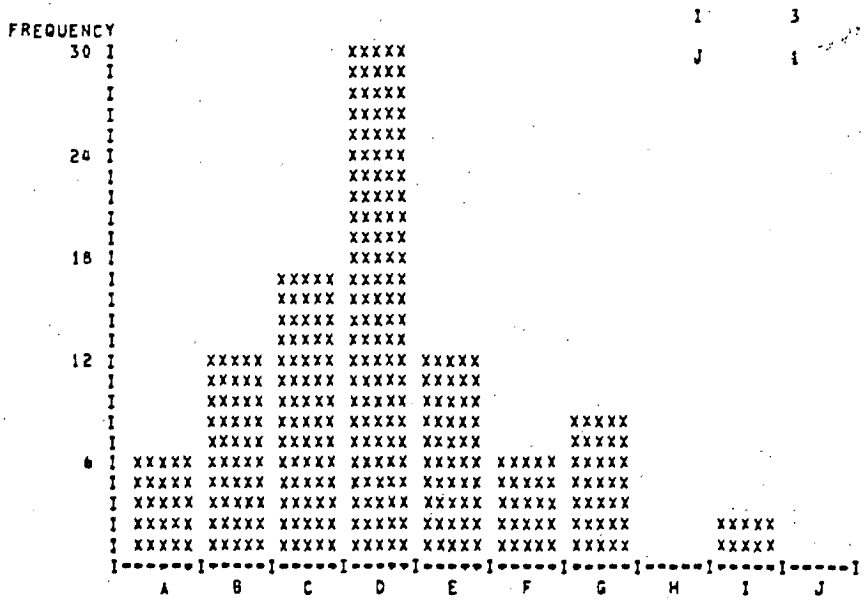
CASE ** FRENCH SPEAKING PAY-TV

```
*********************************
*  PAY-TV REVENUES              *
*  ----------------------------*
*  ITEM   112        PERIOD    6 *
*********************************
*                               *
*  MINIMUM VALUE       3465,0013 *
*                               *
*  MAXIMUM VALUE       4957,6186 *
*                               *
*  MEAN VALUE          4012,4874 *
*                               *
*  STANDARD DEVIATION   290,5366 *
*                               *
*  MODE VALUE          3995,2700 *
*                               *
*  NO, OF ITERATIONS        100 *
*********************************
```

HISTOGRAM INTERPRETATION FOR - PAY-TV REVENUES

CLASS	FREQ.	LOWER LIMIT	UPPER LIMIT	PERCENT CHANCE OF OCCURRENCE: WITHIN THE CLASS	OUTSIDE THE CLASS: TO LEFT	OUTSIDE THE CLASS: TO RIGHT
A	7	3465,00	3614,26	7,00	0,00	93,00
B	12	3614,26	3763,52	12,00	7,00	81,00
C	17	3763,52	3912,79	17,00	19,00	64,00
D	31	3912,79	4062,05	31,00	36,00	33,00
E	13	4062,05	4211,31	13,00	67,00	20,00
F	7	4211,31	4360,57	7,00	80,00	13,00
G	9	4360,57	4509,83	9,00	87,00	4,00
H	0	4509,83	4659,10	0,00	96,00	4,00
I	3	4659,10	4808,36	3,00	96,00	1,00
J	1	4808,36	4957,62	1,00	99,00	,00

** H I S T O G R A M **



CASE ** FRENCH SPEAKING PAY-TV

```
**********************************
*  PAY-TV REVENUES               *
*  ----------------------------  *
*  ITEM   112        PERIOD    11 *
**********************************
*                                *
*  MINIMUM VALUE       16947,7452 *
*                                *
*  MAXIMUM VALUE       23456,5286 *
*                                *
*  MEAN VALUE          19750,4816 *
*                                *
*  STANDARD DEVIATION   1289,2124 *
*                                *
*  MODE VALUE          19275,7931 *
*                                *
*  NO. OF ITERATIONS          100 *
**********************************
```

HISTOGRAM INTERPRETATION FOR - PAY-TV REVENUES

CLASS	FREQ.	LOWER LIMIT	UPPER LIMIT	PERCENT CHANCE OF OCCURRENCE: WITHIN THE CLASS	OUTSIDE THE CLASS: TO LEFT	OUTSIDE THE CLASS: TO RIGHT
A	2	16947,75	17598,62	2,00	0,00	98,00
B	12	17598,62	18249,50	12,00	2,00	86,00
C	15	18249,50	18900,38	15,00	14,00	71,00
D	21	18900,38	19551,26	21,00	29,00	50,00
E	12	19551,26	20202,14	12,00	50,00	38,00
F	15	20202,14	20853,02	15,00	62,00	23,00
G	15	20853,02	21503,89	15,00	77,00	8,00
H	5	21503,89	22154,77	5,00	92,00	3,00
I	2	22154,77	22805,65	2,00	97,00	1,00
J	1	22805,65	23456,53	1,00	99,00	,00

** H I S T O G R A M **

```
FREQUENCY
    20 I                  XXXXX
       I                  XXXXX
       I                  XXXXX
       I                  XXXXX
       I                  XXXXX
    16 I                  XXXXX
       I                  XXXXX
       I             XXXXX XXXXX       XXXXX XXXXX
       I             XXXXX XXXXX       XXXXX XXXXX
       I             XXXXX XXXXX       XXXXX XXXXX
    12 I             XXXXX XXXXX       XXXXX XXXXX
       I       XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
       I       XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
       I       XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
       I       XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
     8 I       XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
       I       XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
       I       XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
       I       XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
       I       XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
     4 I       XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
       I       XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
       I       XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
       I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
       I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
       I-----I-----I-----I-----I-----I-----I-----I-----I-----I
          A     B     C     D     E     F     G     H     I     J
```

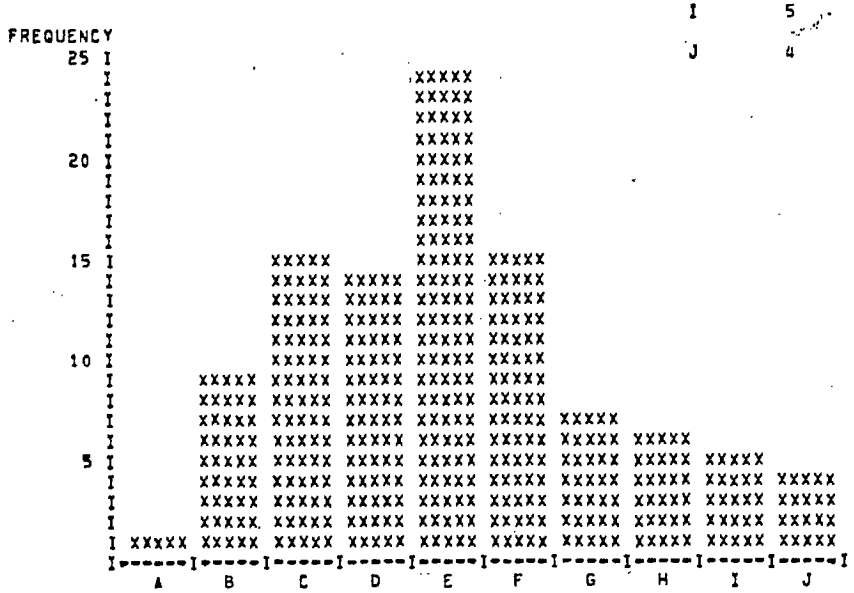
CASE ** FRENCH SPEAKING PAY-TV

```
*********************************
*  PAY-TV REVENUES              *
*  ----------------------------*
*  ITEM   112        PERIOD   16 *
*********************************
*                               *
*  MINIMUM VALUE       20001.9583 *
*                               *
*  MAXIMUM VALUE       29173.6390 *
*                               *
*  MEAN VALUE          24204.1442 *
*                               *
*  STANDARD DEVIATION   1938.8524 *
*                               *
*  MODE VALUE          24115.0526 *
*                               *
*  NO. OF ITERATIONS          100 *
*********************************
```

HISTOGRAM INTERPRETATION FOR - PAY-TV REVENUES

CLASS	FREQ.	LOWER LIMIT	UPPER LIMIT	PERCENT CHANCE OF OCCURRENCE: WITHIN THE CLASS	OUTSIDE THE CLASS: TO LEFT	OUTSIDE THE CLASS: TO RIGHT
A	1	20001.96	20919.13	1.00	0.00	99.00
B	9	20919.13	21836.29	9.00	1.00	90.00
C	15	21836.29	22753.46	15.00	10.00	75.00
D	14	22753.46	23670.63	14.00	25.00	61.00
E	24	23670.63	24587.80	24.00	39.00	37.00
F	15	24587.80	25504.97	15.00	63.00	22.00
G	7	25504.97	26422.13	7.00	78.00	15.00
H	6	26422.13	27339.30	6.00	85.00	9.00
I	5	27339.30	28256.47	5.00	91.00	4.00
J	4	28256.47	29173.64	4.00	96.00	.00

** H I S T O G R A M **



CASE ** FRENCH SPEAKING PAY-TV

```
**********************************
*  PAY-TV REVENUES                *
*  ----------------------------   *
*  ITEM   112        PERIOD    21 *
**********************************
*                                 *
*  MINIMUM VALUE       23236,4882 *
*                                 *
*  MAXIMUM VALUE       34671,7917 *
*                                 *
*  MEAN VALUE          27415,2208 *
*                                 *
*  STANDARD DEVIATION   2378,9148 *
*                                 *
*  MODE VALUE          26219,7784 *
*                                 *
*  NO, OF ITERATIONS         100  *
**********************************
```

HISTOGRAM INTERPRETATION FOR - PAY-TV REVENUES

CLASS	FREQ,	LOWER LIMIT	UPPER LIMIT	PERCENT CHANCE OF OCCURRENCE: WITHIN THE CLASS	OUTSIDE THE CLASS: TO LEFT	OUTSIDE THE CLASS: TO RIGHT
A	10	23236,49	24380,02	10,00	0,00	90,00
B	13	24380,02	25523,55	13,00	10,00	77,00
C	19	25523,55	26667,08	19,00	23,00	58,00
D	19	26667,08	27810,61	19,00	42,00	39,00
E	13	27810,61	28954,14	13,00	61,00	26,00
F	12	28954,14	30097,67	12,00	74,00	14,00
G	10	30097,67	31241,20	10,00	86,00	4,00
H	1	31241,20	32384,73	1,00	96,00	3,00
I	1	32384,73	33528,26	1,00	97,00	2,00
J	2	33528,26	34671,79	2,00	98,00	,00

** H I S T O G R A M **

```
FREQUENCY
     20 I
        I
        I             XXXXX XXXXX
        I             XXXXX XXXXX
        I             XXXXX XXXXX
     16 I             XXXXX XXXXX
        I             XXXXX XXXXX
        I             XXXXX XXXXX
        I             XXXXX XXXXX
        I       XXXXX XXXXX XXXXX XXXXX
     12 I       XXXXX XXXXX XXXXX XXXXX
        I       XXXXX XXXXX XXXXX XXXXX XXXXX
        I       XXXXX XXXXX XXXXX XXXXX XXXXX
        I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      8 I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
      4 I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX             XXXXX
        I XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
        I------I-----I-----I-----I-----I-----I-----I-----I-----I-----I
           A     B     C     D     E     F     G     H     I     J
```

CASE ** FRENCH SPEAKING PAY-TV

A FEASIBILITY STUDY FOR A CANADIAN DBS PROGRAM PACKAGE