POTENTIAL IMPACT OF U.S. DBS SERVICES ON CANADA

Vérifié

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November 16, 1982

Mr. Norm O'Doherty
Department of Communications
Space Program Planning Branch
Journal Tower South
300 Slater Street
Ottawa, Ontario

Dear Norm,

Re: Draft Final Report

Attached is a copy of the draft final report of the study of the U.S. DBS impact on Canadian broadcasting/telecommunications environment. There is some inconsistency in the presentation, particularly in the exhibits, which will be cleaned up in the final version. Also, it still needs a concluding section on overall considerations, which we have not yet prepared because we want to review this draft with Kalba Bowen, our sub-contractor.

We look forward to receiving the comments of the project review committee so that they can be incorporated in the final report.

Yours very truly,

per Laurie Edwards

Laurie Edwards,
Principal.

BLE:bf

c.c. Berge Ayvazian

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Kalba Bowen Associates

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TABLE OF CONTENTS

TABLE OF CONTENTS cont'd

TABLE OF CONTENTS cont'd

1.0 INTRODUCTION: ISSUES AND APPROACH

1.1 Issues

The purpose of this study is to examine the potential impact of American direct broadcast satellite (DBS) services on the Canadian broadcasting and telecommunications environment. The study is one of a series sponsored by the Department of Communications (DOC) regarding the potential introduction of a Canadian DBS system.

The merits of a Canadian DBS system are being examined by the Federal Government from two perspectives: first, if and how a Canadian DBS system should be developed; second, how the potential impact of spillover of American DBS services should influence development of a Canadian DBS system. This study focuses on the latter question. It identifies key factors that require the Canadian Government to develop a policy response, considers how that response should be developed and suggests what the response should be.

1.2 Approach

Our analysis commences with development of parallel scenarios:

- project the Canadian television services profile to the late 1980s;
- project likely American DBS scenarios in the near and middle term (mid and late 1980s).

On the basis of these scenarios, the potential economic impact of U.S. DBS on the Canadian broadcasting/telecommunications environment is assessed, relative to prospects for Canadian broadcaster/television service providers, cable television systems and common carriers, and program suppliers.

Specific factors are then examined:

- Canadian DBS design objectives;
- national broadcasting goals and potential regulatory changes;
- potential Canadian DBS services spillover to the U.S.;
- American DBS markets for Canadian program producers, advertisers, and manufacturers.

The analysis concludes with an overall assessment of the implications for Canada of the most likely American DBS impact and with identification of key elements of strategies that might be developed to deal with programming, regulatory, and international issues.

2.0 PROFILE OF TELEVISION SERVICES IN CANADA: THE LAST DECADE

In this section, we profile the Canadian broadcasting industry as it has developed over the last decade. The purpose of this historical analysis is to trace through the impact of fragmentation as a result of the introduction of new Canadian services and the spread of U.S. network broadcasting via border stations. The impact on and response by the Canadian broadcasting system to these newly available broadcasting services provides a basis for assessing the potential impact of new services in future years, including that of U.S. DBS.

The key broadcasting industry trends reviewed are as follows:

- viewing shifts in national and local markets, as a result of
  - cable penetration,
  - new Canadian services authorization;
- shifts in television advertising revenues and expenditures, relative to
  - media,
  - advertisers;
- viability of commercial broadcasting, in terms of
  - revenues and profits,
  - industry structure;
- Canadian programming, in terms of
  - market for Canadian suppliers,
  - cross-subsidization of Canadian programming by foreign programming.

The results of this analysis should answer how much of a shock the broadcasting industry can stand, in terms of new services, and how adjustments have been made to accommodate the changes resulting from fragmentation.

2.1 Viewing Shifts

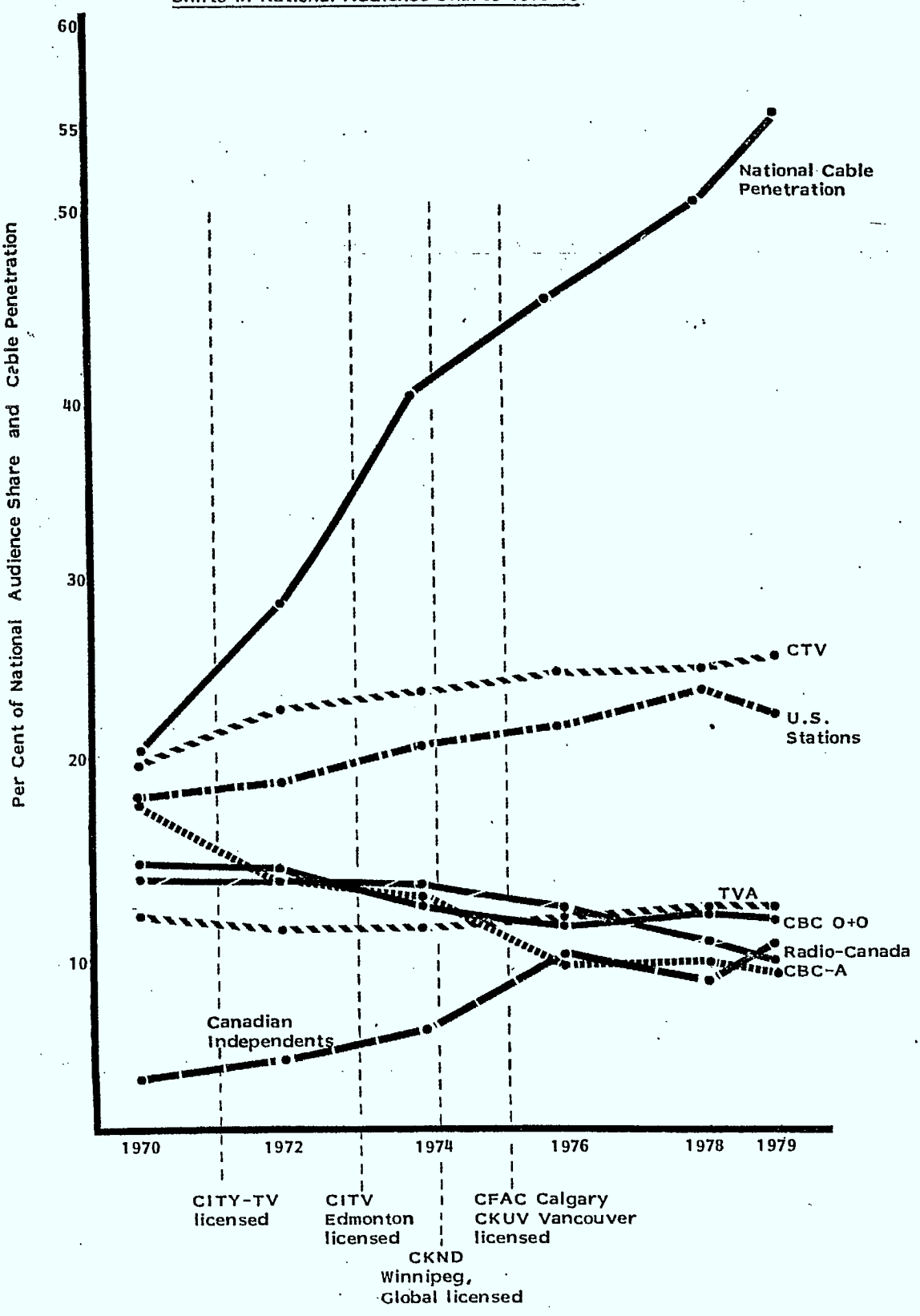
In the 1970s, broadcasting markets in Canada underwent increasing fragmentation. Exhibit 2-1 illustrates the national pattern for audience shifts from 1968 to 1978, correlated with the introduction of new independent stations (and regional networks) and with the growth of cable. In general, the exhibited shifts can be interpreted as follows:

- CBC's substantial losses in viewing share, particularly by its affiliates, reflect increased competition from new and commercial stations and the extension of coverage by CTV and the U.S. border stations;
- CTV's continued growth, in spite of new independent stations and the extension of U.S. services availability, is the result in part of increased competitiveness, but also because of CRTC cable substitution policies and the extension of CTV's own coverage area;
- the rapid growth of Canadian independents' viewing shares is a function of new station authorization and cable growth;
- U.S. stations' market share has increased with cable penetration and expansion, but the continued exhibition of most of the best U.S. network programming by Canadian stations (and cable substitution) has restrained growth in viewer shares by U.S. border stations.

These interpretations have been corroborated by broadcasting industry spokesmen. The important interpretation, in terms of this study, is the apparent capability of the Canadian broadcasters to remain competitive with U.S. border stations, although there has been a relative decline in CBC's audience share as new broadcasting services become available in CBC's markets.

Exhibit 2-1

Shifts in National Audience Shares 1970-79



Sources: BBM TV Surveys for fall of year indicated for the full broadcasting day.

CRTC, Special Report on Broadcasting, 1968-78.

CRTC, Facts Digest, January, 1982.

While national viewing shifts provide an overall context for our analysis, market patterns for each class of television service exhibit quite different characteristics on a regional or local level. Exhibit 2-2 shows the impact of the introduction of cable in two markets--Sudbury/Timmins/North Bay and Calgary/Lethbridge--where off-air reception of U.S. border stations is not possible. The effect is fairly dramatic, a combined market share for the U.S. stations of about 40 per cent in cable-subscriber homes, or about 20 per cent of all television households. This result corresponds to the overall figure for English language areas in Canada.*

Fragmentation has also occurred in markets where new Canadian independent stations have been licensed. For example, Exhibit 2-3 shows the audience fragmentation pattern in the Toronto-Hamilton designated market area (DMA), where TVO was licensed in 1970, CITY-TV in 1972, and Global in 1974.

Programming originating at Global and CITY clearly contributed to declining viewing shares for CFTO (CTV), CBLT (CBC), and the independent CHCH. This pattern, reinforced by growing shares for U.S. stations that were increasingly accessed via cable television, continued until 1976. In that year the combined share of CFTO, CBLT and CHCH in the Toronto-Hamilton area had fallen to 45 per cent, compared with 61 per cent five years previously. By 1981, however, relatively strong performances by CFTO and CITY were chipping away at

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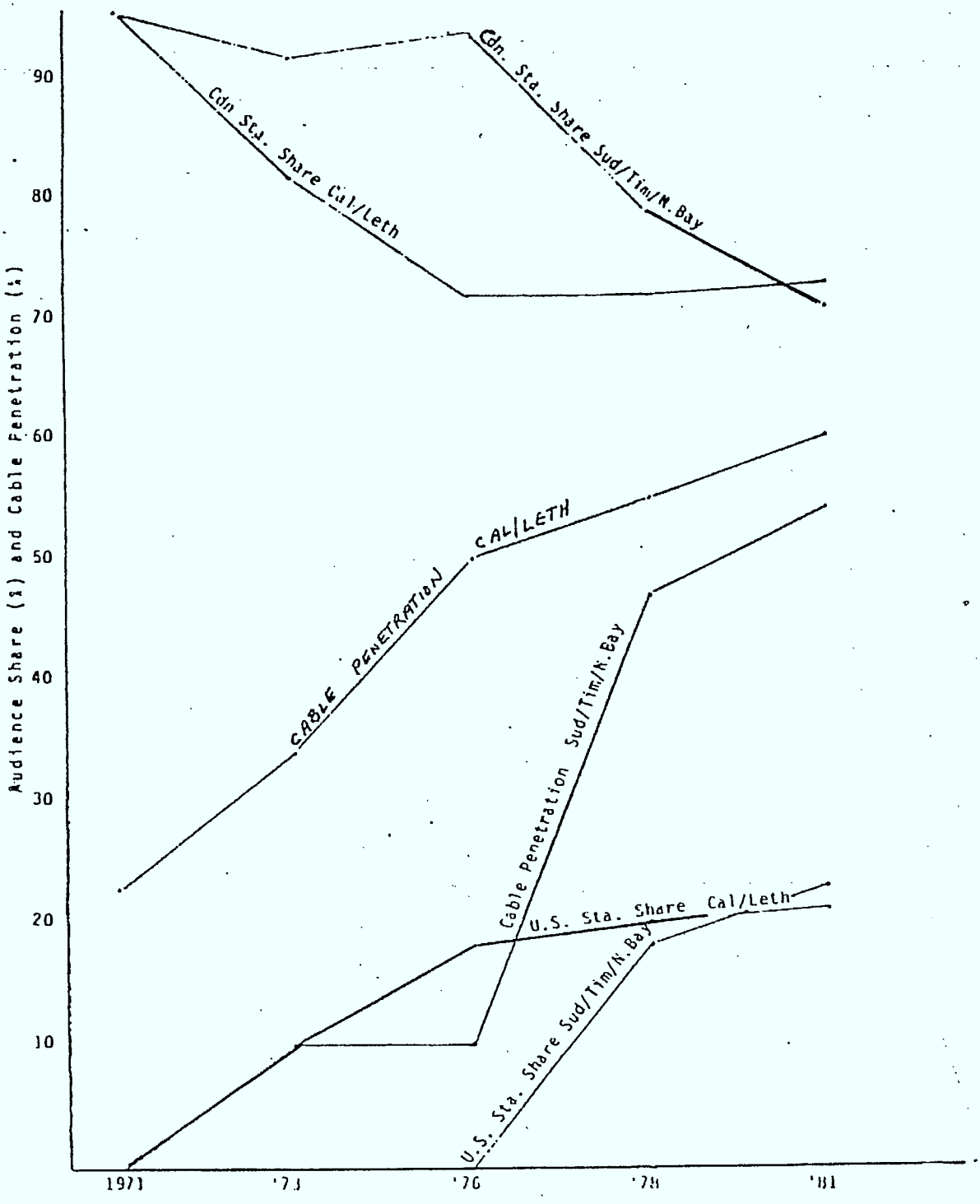
* The CRTC's Special Report on Broadcasting stated that in 1977 the U.S. station share in English television rose to approximately 30 per cent from roughly 24 per cent in 1967. On average, the audience share of U.S. stations among cable subscribers was 40 per cent.

Exhibit 2-2

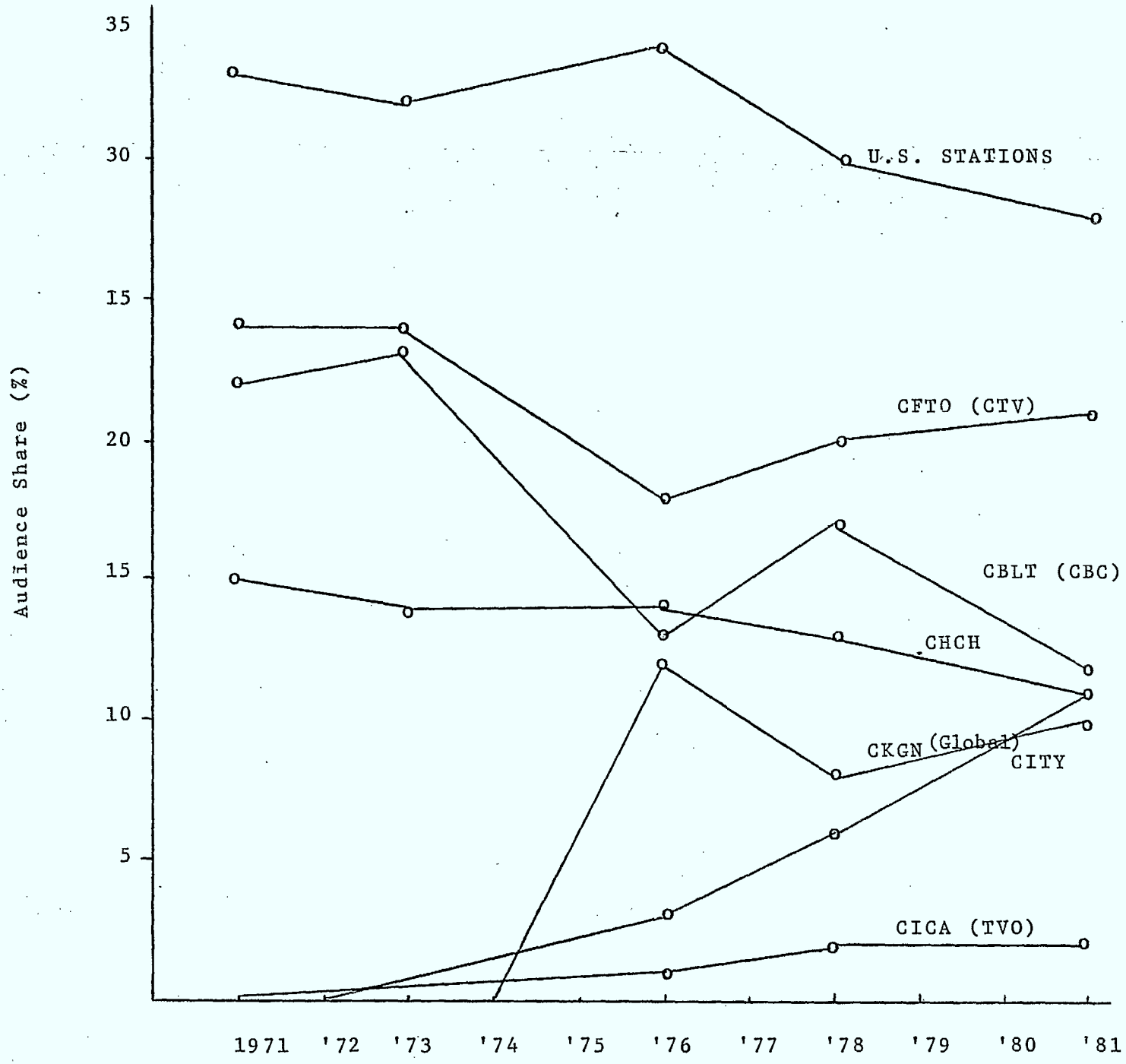
Shift in Audience Shares in Selected
Newly Cabled Markets



Source: A.C. Nielsen, Broadcast Index

Exhibit 2-3

Shifts in Audience Share
from the Licensing of New Canadian
Independent Stations - Toronto/Hamilton



Source: A.C. Nielsen, Nielsen Broadcast Index for November of year indicated.

the shares of U.S. stations; the share of Canadian stations together had climbed to over 69 per cent, and CFTO--again, in part due to cable substitution--had regained most of the audiences it had lost to cable-delivered U.S. stations and Global post-1973.

This Toronto example is not typical of all markets where new Canadian services have been introduced, but it is illustrative of markets where U.S. stations have always been available off-air.* However, it indicates the ability of Canadian commercial broadcasters to respond to border station competition in terms of audience share. The CBC, again, does not fare as well, presumably in part because its prime time schedule is not designed with a view to pre-emption of the program offerings of U.S. border stations, as is the case with Canadian commercial stations.

French language markets have different viewing patterns, in consequence of the lower audience appeal of English language U.S. border stations in this market, as well as the lack of French language

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* In Vancouver, between 1968-72, for example, independent CKVU captured an audience share of 11 per cent primarily at the expense of CHAN (CTV) and CBUT (CBC). In 1976, its share had dropped to five per cent and CHAN had regained much of the audience it had lost, but CBUT continued to lose audience share. Between 1976-81 SKVU restored its audience share to 10 per cent, CHAN increased its overall audience share to 22 per cent (from 18 per cent in 1972) and CBUT continued to lose audience share dropping from 19 to 17 per cent. During this period U.S. stations experienced the most significant audience share losses dropping from 46 to 38 per cent.

independent stations.* In French language markets, French viewing options have increased only through cable delivery of distant affiliates of TVA or the CBC, as well as the satellite to cable LASETTE package of programming from France.

2.2 Shifts in Advertising Revenue

Shifts in viewing share obviously affect advertising revenues, since the advertiser bases expenditure decisions on the "cost per thousand" (CPM) people reached. The advertiser's "television inventory" options are also important in Canada, because the buying of airtime on U.S. border stations is not always cost effective (i.e., it involves 'purchase' of U.S. viewers, who may not be able to purchase the product(s) being advertised). The Toronto and Vancouver markets are important exceptions to this rule, since Buffalo and Bellingham (Washington) border stations were extensively patronized by Canadian advertisers until the Federal Government began to disallow advertising on U.S. border stations as an operating expense for income tax purposes in 1976, following the amendment of the Income Tax Act (Bill C-58). Thus, the growth in market share for U.S. border stations was not as threatening to the commercial interests of Canadian broadcasters as it could have been if such stations had been able to sustain their once significant sale of commercial time to Canadian advertisers.

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* In Quebec City, for example, in the 10 year period between 1971-81 CBVT (CBC) lost only three per cent of its audience, dropping from 32 to 29 per cent, and CFCM (TVA) lost only five per cent of its audience falling from 54 to 49 per cent. Over the same period of time CHLT (TVA, Sherbrooke) and CIVQ (Radio Quebec) were able to increase their shares from less than one per cent to three and five per cent, respectively. CKTN (CBC, Trois Rivieres) and CFCF (CTV, Montreal) also lost three and two per cent, respectively. U.S. stations, on the other hand, achieved no measurable audience share.

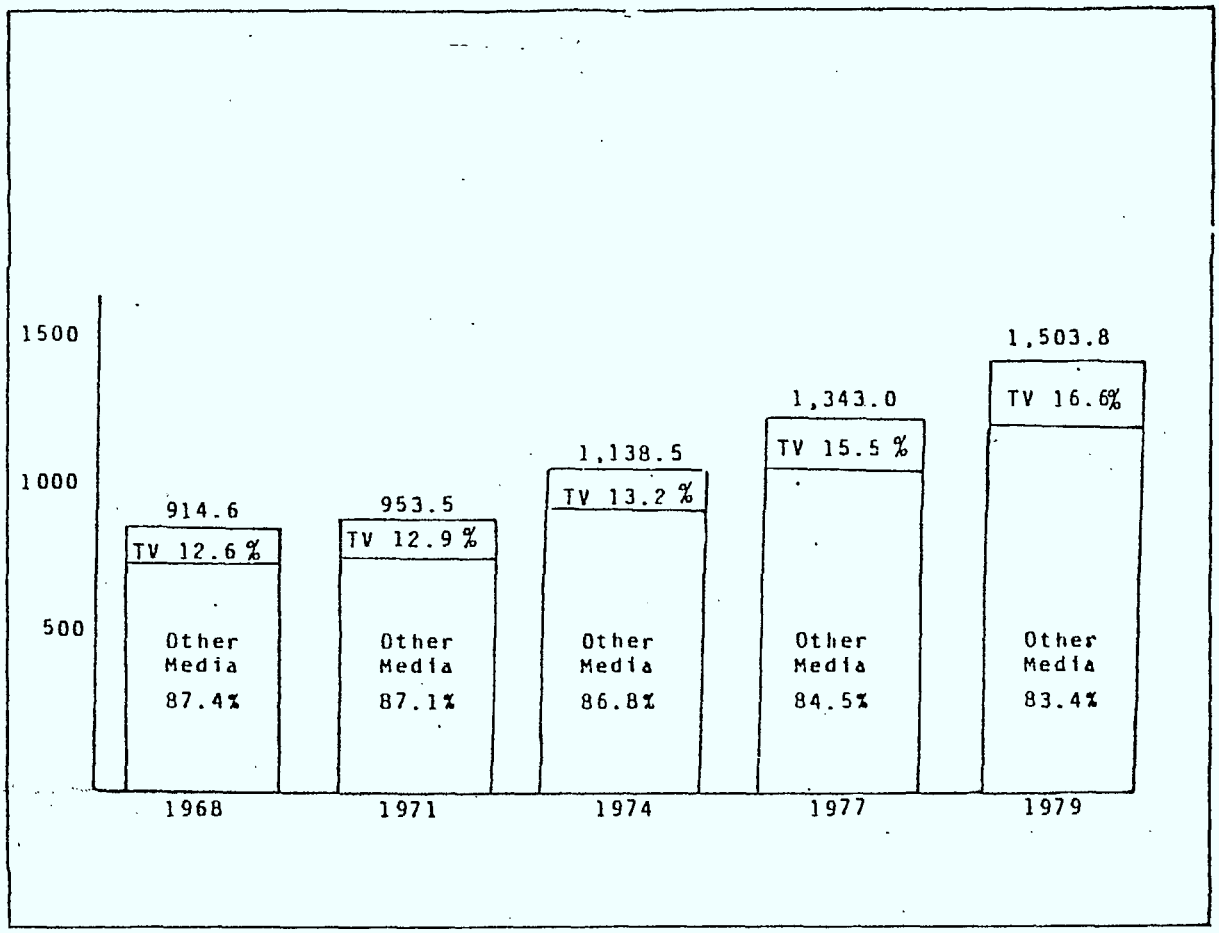
Commercial broadcasters have been more affected by the entry into the market of direct competition from new Canadian commercial broadcasters. In larger markets, the CRTC has licensed new Canadian independent stations in an effort to stimulate Canadian programming. This has expanded the inventory for commercial time on Canadian television, and has intensified competition among commercial broadcasters in those markets.

The financial impact on commercial broadcasters has not been as great as might have been expected, because television is such a desirable advertising medium. Broadcasters have simply raised their advertising rates. Although media buyers have faced decreased efficiencies for advertising, the television medium consistently increased its share of the national advertising dollar in the 1970s. Exhibit 2-4 shows how television's share of national advertising expenditures increased from 12.6 per cent to 16.6 per cent between 1968 and 1979. This is because, while advertising costs per capita have been rising at a rate of 9 per cent per year since 1968 in all other media, they have been growing at a rate of 15 per cent per year in television.

How long can broadcasters ensure allegiance to television as an advertising medium? Advertisers maintain that the strong demand for commercial time on television in the 1970s was because new advertisers were just discovering the medium, especially the retail industry and

Exhibit 2-4

Net Revenues In
All Media in Constant 1968 Dollars
(millions)



Source: MacLean Hunter Research Bureau, A Report on Advertising Revenues in Canada, 1980

governments. This observation is substantiated by evidence of the changing composition of national advertisers (see Exhibit 2-5). Governments and Canadian companies together raised their percentage share of national advertising and expenditures from 9 per cent to 32 per cent between 1970 and 1979.

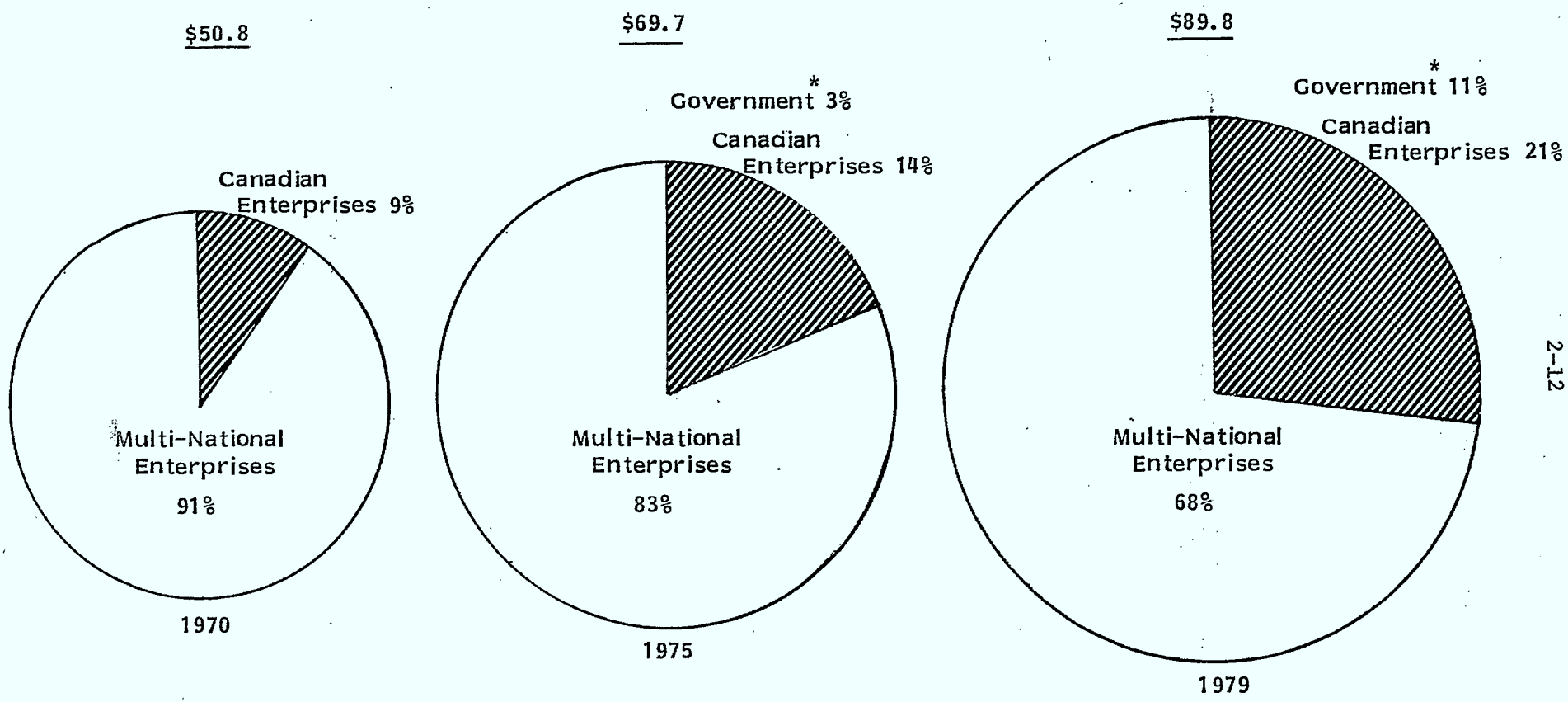
Another factor, which so far has not been analysed statistically, is the greater concentration of advertising expenditures made by multinational corporations on a limited number of products. As well, these corporations have tended to advertise their products in fewer and fewer television markets. The next step could well be a greater shift toward "global product strategies", where international marketing efforts for a small number of products is reinforced through several media, media which cross international boundaries. While the extent of reliance on spillover advertising by foreign multinationals operating in Canada has never been quantified, it is clear that these companies are, in proportional terms, gradually placing less and less reliance on Canadian television advertising (Exhibit 2-5). Rising CPMs and continuing viewing fragmentation could accelerate this trend.

2.3 The Viability of Canadian Commercial Broadcasting

The sustained strength of television as an advertising medium and competitive programming and scheduling have enabled commercial broadcasters to maintain a positive economic performance. Although profit margins have declined slightly, the commercial broadcasting sector overall experienced considerable absolute growth in

Exhibit 2-5

Relative Contribution of Top 20 National Television Advertisers
(millions of constant 1970 dollars)



* National advertising expenditures of federal and provincial governments.

Sources: Television Bureau, TV Basics for year indicated.

revenues and profits in the 1970s. Exhibit 2-6 shows a doubling of profits for the sector in this decade, a performance due in part to the increasing numbers of individual television stations.

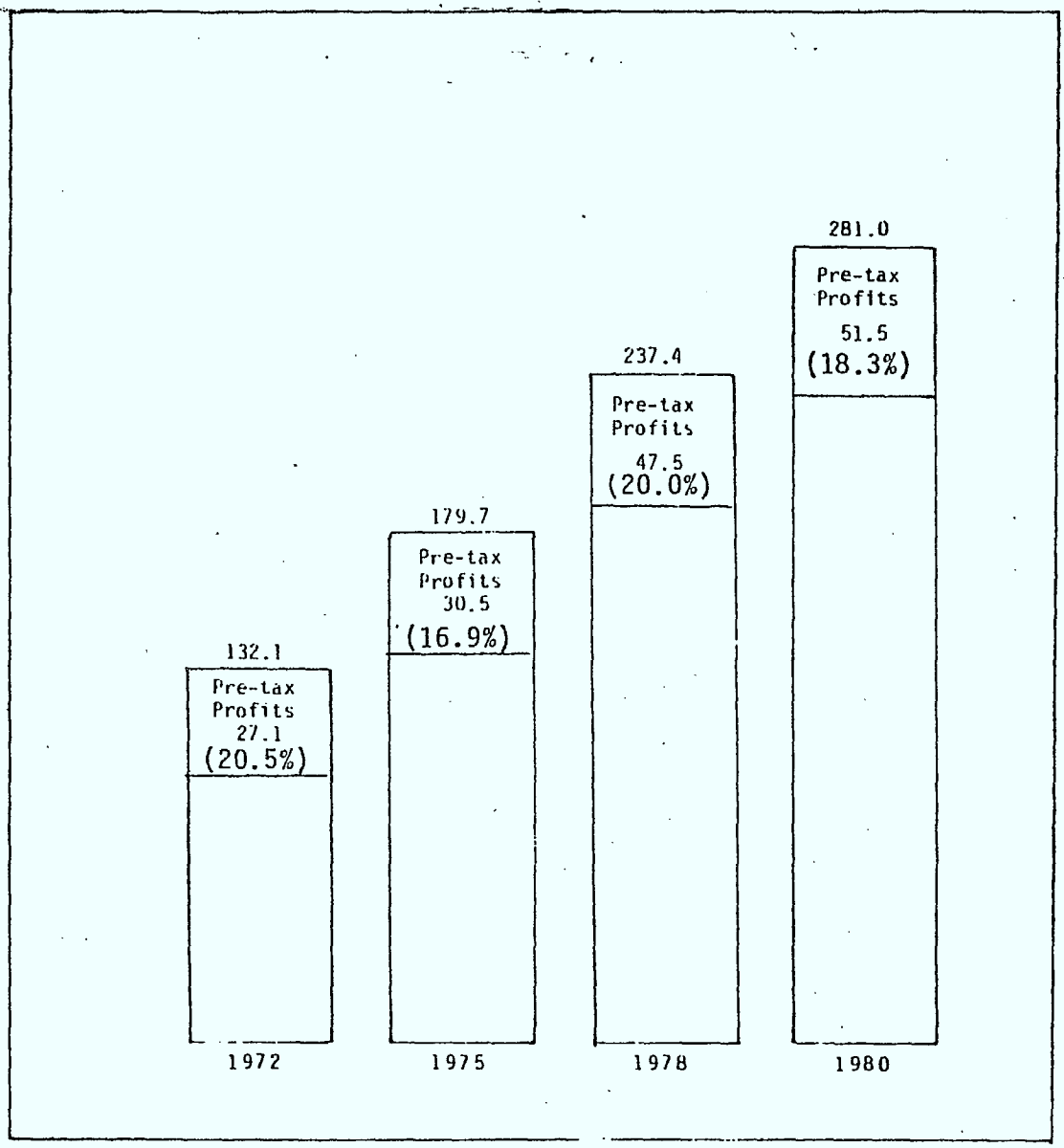
Despite overall growth of revenues in the commercial broadcasting sector, however, fragmentation of viewing has contributed to structural distortions. Profitability became increasingly concentrated among fewer stations--namely, those serving the very large DMAs. A 1979 study* observed, for instance, that CTV affiliates CFTO Toronto, CHAN Vancouver, CFCF Montreal, CJOH Ottawa and CFRN Edmonton accounted for 65 per cent of total CTV network revenues and an estimated 67 per cent of net profits. Stations operating in smaller markets were much less profitable, clearly, and more at risk relative to both the growing tendency for advertisers to buy time in fewer and fewer large markets and the unpredictable response of local advertisers to fluctuating economic conditions.

The smaller stations are vulnerable, then, because of rising costs and relatively flat commercial revenue prospects. While the full effects of this financial squeeze have not yet been translated into the closing of smaller stations, some areas have already suffered decreased service. For example, Timmins and Sudbury formerly operated

* R.E. Babe, Canadian Television Broadcasting Structure Performance and Regulation, 1979. A 1977 CRTC study entitled "The Impact of Satellite Distribution of American Television Stations on the Canadian Broadcasting System" even identified specific stations (in markets with high cable penetration) as vulnerable to further revenue losses.

Exhibit 2-6

Total Revenues of Private Canadian
Television Stations in Constant 1972 Dollars
(millions)



Source: Canadian Association of Broadcasters,
Private Canadian Television Stations,
Selected Financial Data, November 1981.

independent CBC affiliates, which have now been collapsed into one operation with transmitters in both cities. An important institutional consequence is the CRTC approval for the sale of these operations to the licensed cable operator for the area, thus resulting in a more vertically integrated broadcasting operation.

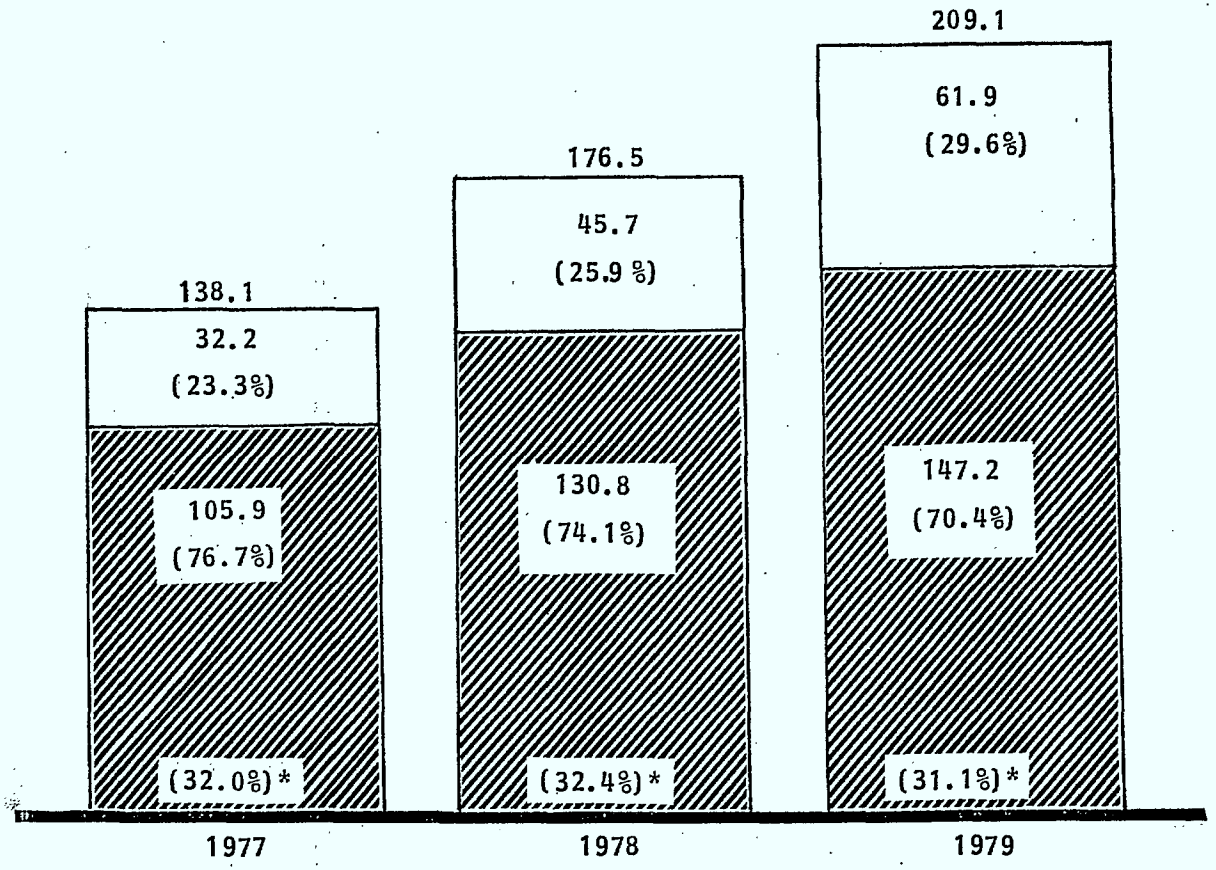
2.4 Canadian Programming

Fragmentation has contributed to declining effectiveness of a broadcasting system that has traditionally depended on advertising revenue generated by peak viewing periods featuring mainly American entertainment programs to cross-subsidize Canadian programming. Exhibit 2-7 shows how cross-subsidization has continued to support Canadian programming in the late 1970s. However, commercial broadcasters have reduced the proportion of programming funds spent on Canadian programming (76.7 per cent to 70.4 per cent from 1977 to 1979). This, of course, is largely due to the escalation of foreign programming costs as competition for them among an increasing number of Canadian broadcasters has intensified. On the other hand, the ratio of Canadian programming expenditures to advertising revenues remained constant in the '70s.

Overall, fragmentation has not reduced viewing shares of Canadian programming, as shown in Exhibit 2-8. Between 1967 and 1980 viewing of Canadian programming remained virtually constant. Fragmentation has, however, reduced audience shares by program category. Specifically, decreases in viewing of Canadian entertainment programming have been offset by increases in viewing of Canadian

Exhibit 2-7

Total Program Expenses of Private Canadian Television Stations 1977-79
($000,000)

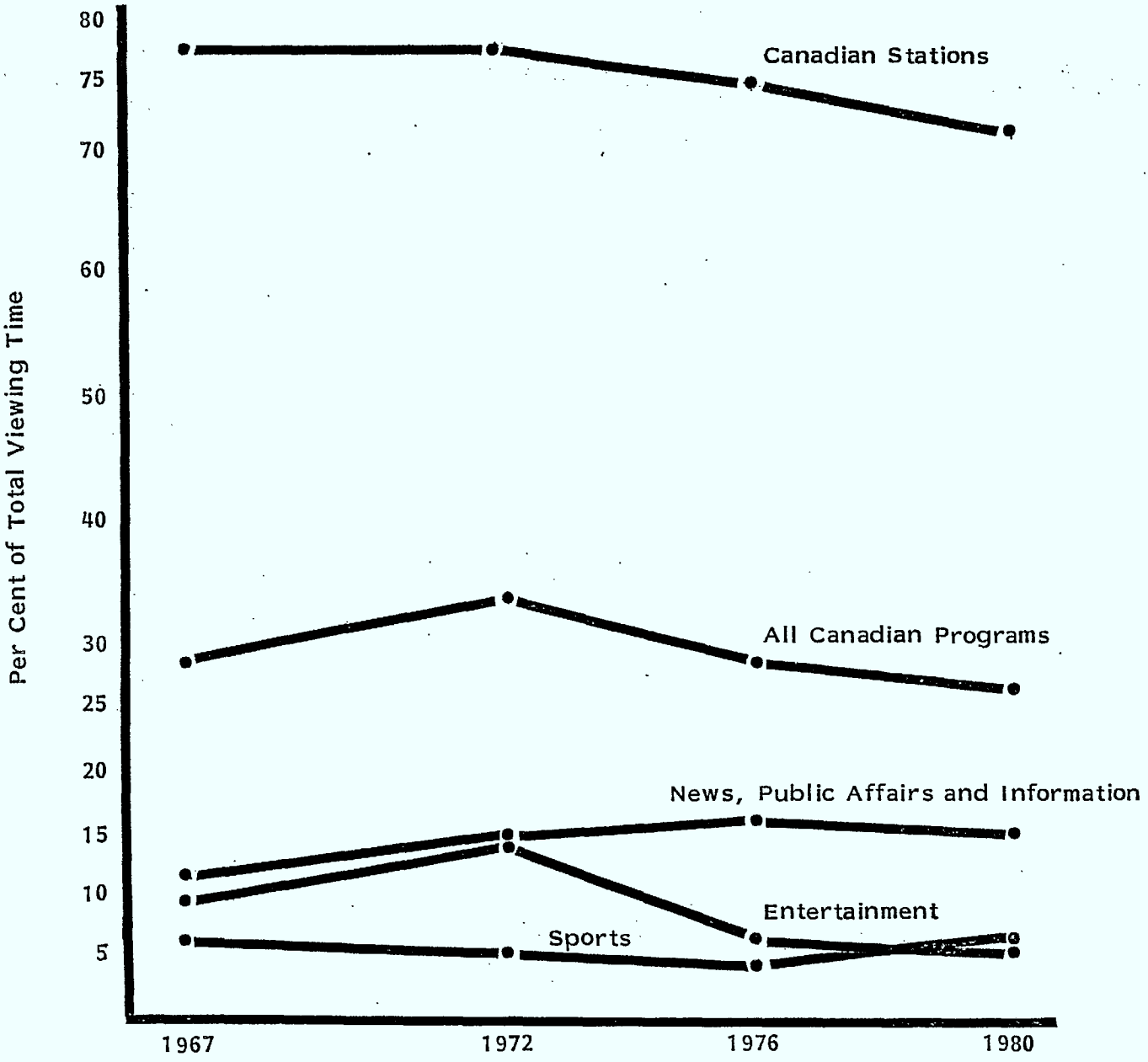


* The cost of Canadian productions and program acquisitions expressed as a percentage of total revenues.

Source: Raymond, Chabot, Martin, Pare & Cie, Private Canadian Television Stations, Selected Financial Data 1972-1980. Prepared for the Canadian Association of Broadcasters, January 1981.

Exhibit 2-8

Canadian Programming Viewership
(English Television)



Sources: CRTC, Special Report on Broadcasting, 1968-1978.
CRTC, Facts Digest, January 1982.

sports, news and public affairs programming.

Programming is basically an in-house operation for both public and commercial broadcasters. The Canadian broadcasting market for independently produced Canadian television programming and film rights has historically been quite limited, as Exhibit 2-9 indicates. To this point, fragmentation has not affected the structural characteristics of the industry--i.e., vertically integrated broadcasters-producers still produce the bulk of Canadian programming exhibited by their stations.

2.5 Conclusions

The past is quite instructive about how the Canadian broadcasting system could face the potential challenges brought about by DBS. The following three conclusions are particularly relevant.

First, the audience share, the Canadian content share (expenditures as a ratio of advertising revenues), and the profit margins of broadcasters have held up well in spite of the spread of cable and consequently the availability of U.S. border station services. U.S. border stations with their network feeds offer the most expensively produced programming one could possibly imagine emanating from conventional television services. That they have not threatened the commercial viability of Canadian broadcasters is evidence of the latter's capacity to meet foreign broadcasting challenges.

Exhibit 2-9

Source of Television Programming

	Public Broadcasters		Private Broadcasters	
	1978	1979	1977	1979
Internal Production	284 (93%)	332 (92%)	55 (65%)	76 (60%)
Acquisition of Canadian Programming[2]	10 (3%)	11 (3%)	9 (11%)	12 (10%)[3]
Acquisition of Foreign Programming	12 (4%)	18 (5%)	20 (24%)	38 (30%)
Total	306	361	84	126

all figures rounded

Source: Bélanger et al. p.31, 32.

Notes

1. Survey excludes CJOH (Ottawa), CHCH (Hamilton) and CITY-TV (Toronto).
2. These figures include both feature films and television production.
3. It is assumed that these figures are primarily from sales by affiliated ("captive") producers to commercial networks.

Second, entertainment programming constitutes the fundamental economic basis for the commercial and audience attraction success of Canadian broadcasters. It is this category of Canadian programming which has declined the most, in contrast with the other categories of Canadian programming. Thus, further outlets for U.S. drama and variety programming in Canada could increase the competitive pressure on Canadian entertainment as well as other programming viability.

Third, while commercial viability has been maintained because of the success of television as an advertising medium, the brodcasting industry cannot be forever impervious to a continuing decline in advertising efficiencies. Future service competition may in fact be more damaging, if it results in advertisers balking at ever higher cost per thousands. The same situation may prevail in public broadcasting if audiences decline proportionately at ever increasing total costs.

This historical perspective, then, provides a base for projection of future trends in the broadcasting industry.

3.0 PROJECTED DEVELOPMENT FOR TELEVISION SERVICES IN CANADA

In this section we project the development of television services in Canada over the next five years, based on an assessment of the implications of emerging services for the existing broadcasting/telecommunications industry. Following development of a services profile for 1987, an assessment is made of the expected impact on commercial broadcasters, cable operators and program suppliers.

3.1 Analytical Approach

The profile consists of a projected national market share of television services by class of service, including both conventional and new services. Services can also be differentiated in terms of sponsorship, delivery, and country of origin (see Exhibit 3-1). All satellite delivered services could be received on a direct-to-home basis (i.e., DBS), but, unless otherwise specified, we have assumed that they will only be offered via community delivery systems--community antenna television (CATV), master antenna television (MATV), and rebroadcast.

The methodology for projecting a television services profile for the late '80s is shown on Exhibit 3-2, based on

- projection of growth of cable, penetration of Cancom and pay television services in Canada, and review of U.S. experience of viewing fragmentation in pay-cable households;

Exhibit 3-1

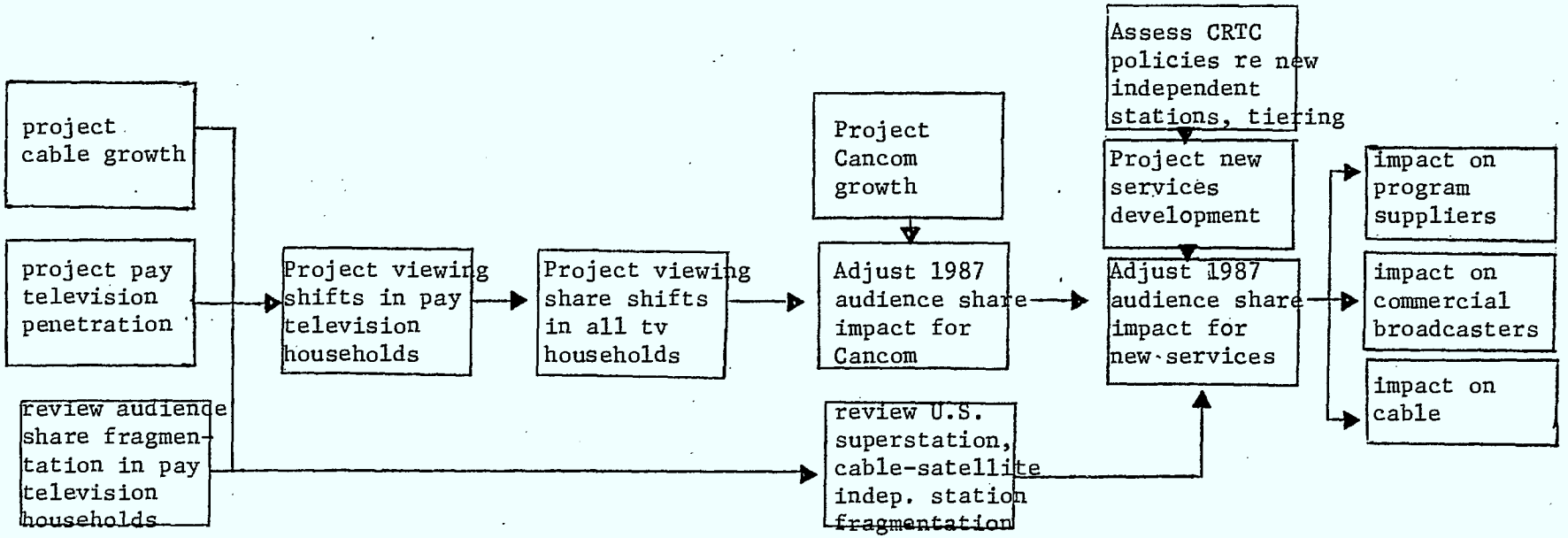
Television Service Categories

CLASS OF SERVICE		HOW SERVICE IS SPONSORED		
		public	ad-supported	subscription based
services (off-air delivery)	independent stations, regional network	TVO, Radio Quebec	eg. CITV (Edmonton) CHCH (Hamilton)	-
	national networks	CBC, PBS	CTV, TVA U.S. border stations	-
new services (satellite delivery)	pay television	"universal" pay television	-	regional/ national licensed
	satellite-to-cable networks	eg. CBC-2	MATV-2	potential part of "tiered" services*
	super-stations	potentially a regionalized CBC	Cancom affiliates though restricted to under-served markets	Cancom package licensed for under-served*

* U.S. services not authorized, but could from part of tiered discretionary services.

Exhibit 3-2

Step by Step Approach to Project 1987
TV Services Profile and Impact



- anticipation of future regulatory approvals for new Canadian and U.S. services on discretionary tiers, and review of U.S. experience of viewing fragmentation as a result of these services.

Historical trends in broadcasting, recent U.S. data on the impact of new services, and research and analysis underlying recent authorization of Canadian pay television services provide an information base for projections about the broadcasting environment in the late 1980s. However, the CRTC's current review of cable tiering and the unfolding Federal broadcasting strategy create a climate of uncertainty in respect of the timing and extent of new service development. Quantitative projections relating to the late 1980s Canadian services profile must therefore be interpreted with considerable caution.

3.2 Subscription-based New Services

The six newly licensed pay television services and Cancom make up the first wave of subscription-based satellite-to-community distribution services that will have an impact on conventional broadcasting. Impact will take the form of viewing shares diverted from conventional broadcasting, since these services will not compete directly for advertising dollars now spent on conventional broadcasting.

3.2.1 Cable and Pay Television Growth Through Cancom

In the four years following the introduction of pay television, we estimate that there will be 5.3 million cable subscribers and that 45 per cent of them--i.e. 2.4 million--will be pay television subscribers. Another 100 M pay television subscribers will be accessed. This means that about 30 per cent of all Canadian television households (about 8.6 million by 1987) will be pay television subscribers. The regional breakdowns are shown on Exhibit 3-3.

Exhibit 3-3

Projected Pay Subscribers to 1987

Region	TV HHs	Cable Subs (000)	Pay Subs National Service (000)	Regional Service	Total Pay Subs
Atlantic	682	303	75	60	135
Quebec	2,202	1,346	336	269	605
Ontario	3,304	2,114	528	422	950
Man/Sask/ Alberta	1,403	798	119	159	278
BC/Yukon/ NWT	1,063	861	215	172	387
Total	8,6	5,4	1.3	1,1	2,4

Source: Projections by Nordicity Group Limited

The projections have been developed on the basis of assumed growth in households by 2.4 per cent annually to 1985 and 1.6 per cent annually to 1990, with 98 per cent of households owning a television set. Cable television penetration is expected to increase slowly, with the majority of new subscribers coming from new households. The actual pay projections have been developed by reference to First Choice's estimates for a competitive environment and to a recent survey commissioned by C-Channel.*

The impact of pay television on the viewing shares of conventional broadcasters can only be estimated at this time, but the U.S. experience to date provides a reasonable basis for doing so. In the U.S., pay services in pay-cable households command an overall audience share of 13 per cent over the full broadcasting day (7:00 a.m. to 1:00 a.m.).** Assuming this pattern of audience fragmentation is duplicated in Canada,

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* A recent survey commissioned by LAMB showed that overall 28 per cent of respondents said that they would subscribe to pay--of that 28 per cent, 70 per cent would subscribe to one service, 22 per cent would subscribe to two services and 8 per cent would subscribe to three services. Together with First Choice's projections, then, they have projected the basis for our projection assumptions--namely,

- First Choice will achieve 20 per cent penetration nationally;
- C-Channel will achieve 5 per cent penetration nationally;
- each regional service will achieve 20 per cent penetration in its own market,
  - regional services in B.C. and Quebec will be licensed;
  - Alberta Super Channel will be available in Manitoba and Saskatchewan;
  - World View will have marginal impact on pay environment;
- 15 per cent of pay households will take more than one service.

** A.C. Nielsen, The Nielsen Pay Cable Report: February 1981 to February 1982.

then by 1987 Canadian pay services could achieve an average four per cent total viewing share for pay cable.

The effect of this impact can be illustrated (see Exhibit 3-4) by assuming a proportional reduction in the viewing of English language programming exhibited by the principal broadcast services (CTV, CBC, independent stations, and U.S. border stations). It is somewhat arbitrary to assign audience losses proportionately; for example, pay television's entertainment programming might well affect commercial broadcasters more than public broadcasters. However, the important point is that pay television's impact on the viewing shares of conventional broadcasters is not as significant as, for example, the impact of cable distribution of the signals of U.S. border stations.

3.2.2 Adjustment for Cancom Impact

The licensing of Cancom presents a new factor in competition for viewership in underserved communities, as well as in some of the areas presently served by cable. The new services provided or potentially offered by Cancom are

- two independent television stations, one CTV affiliate, and one French language programming package (plus eight radio signals) to be introduced into an underserved market of about 600,000 to 650,000 television households on a subscription basis*;

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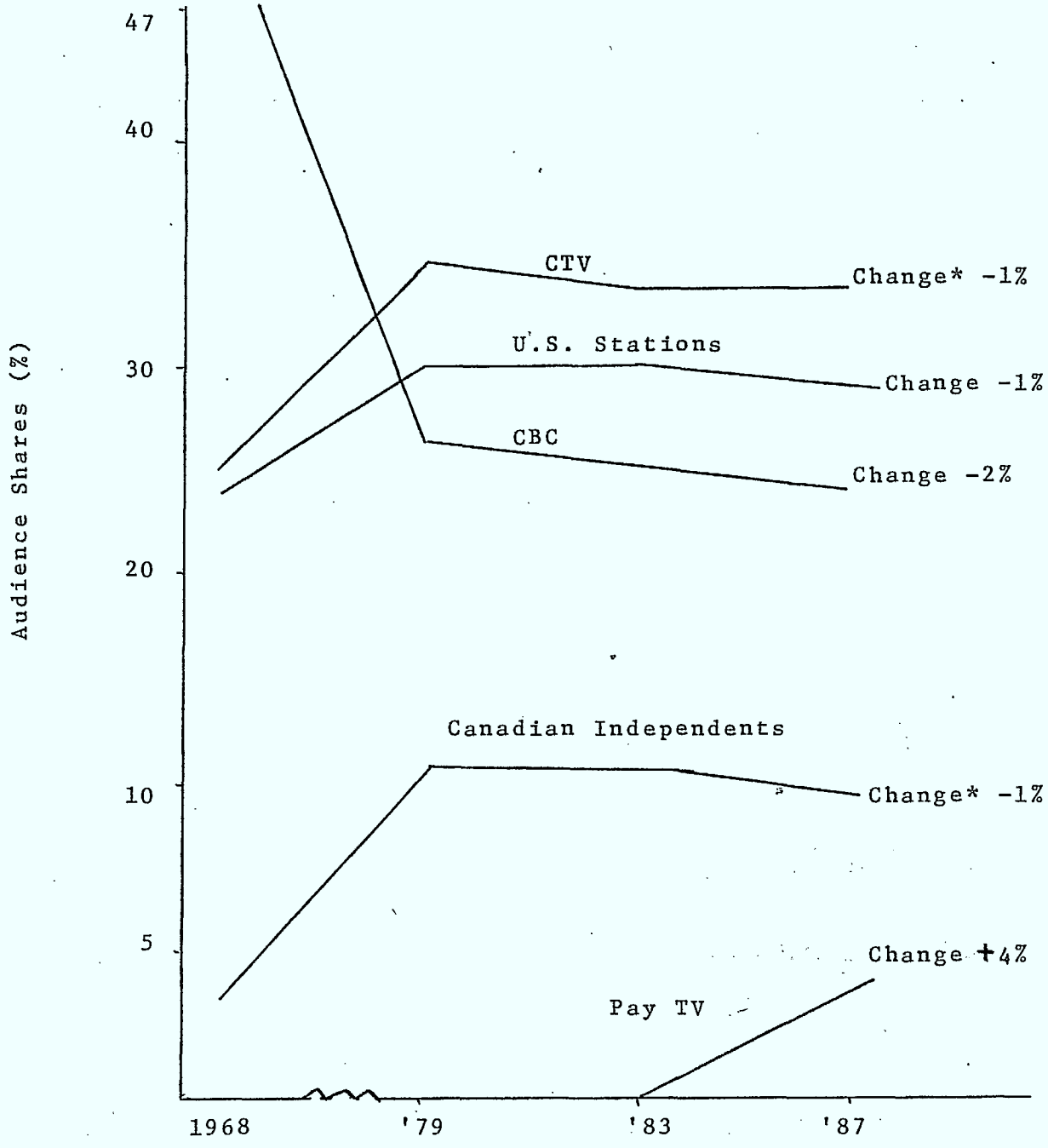
* Estimates of the size of Cancom's market vary considerably. Cancom estimates that the size of its 'core' (i.e., the market for its package of Canadian services) is somewhere between 350,000 and 450,000 households--an estimate based on its own surveys. DOC estimates suggest that of 1.6 million underserved households roughly 960,000 are in communities too small to be served by commercial cable systems. These households, therefore, constitute the principal market for direct-to-home reception. The remaining 640,000 households are in communities large enough to be served by small licensed cable systems--the principal distribution mode envisaged by Cancom. It is on this basis then, that we project Cancom's market in the 600,000 to 650,000 households range.

Exhibit 3-4

Projected Impact of Pay-tv on National Audience Shares



* Change is defined as percentage point change between 1979 and 1987.

- application pending for three plus one U.S. services (i.e., one affiliate of each of the three commercial networks, plus an affiliate of PBS) to be made available to (i) the under-served market and (ii) the cable systems for which microwave delivery of U.S. border stations is prohibitively expensive;

- likely affiliation agreement to be arranged with a pay television license holder to carry pay television services to Cancom's market.

Cancom's basic service could cause a diversion of national viewing shares of about two per cent. The principal broadcasters affected by this diversion will be CBC's owned and operated and affiliated stations serving communities in Cancom's market.

If Cancom is able to add its three plus one U.S. border station service, about 450,000 television households may be subscribing to Cancom by 1987. Cancom's realisation of this market would assume penetration rates that parallel growth of cable in communities previously unable to receive U.S. border stations. The cost of the Cancom basic service, plus a premium for the three plus one package ($10-12), would be more expensive than basic cable in urban communities, of course, but Cancom offers additional Canadian television and radio signals, as well. Thus, the growth projection seems reasonable; certainly, it is consistent with Cancom's expectations.*

Unquestionably, with the penetration levels indicated above, Cancom would negatively affect the viewing shares of broadcasters that presently serve relevant communities. Potentially, Cancom would

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* Cancom is expecting a slightly higher penetration of 60 per cent.

deliver the three plus one services to some 220,000* cable households now off the microwave grid, thus fragmentating viewership in those communities. Delivery of at least one pay television service to Cancom's market would similarly contribute to viewing fragmentation. Based on viewing share percentages developed above for pay television and the historic U.S. border station market share, Cancom's diversion of national viewing can be broken out as follows:

The Impact of Cancom
Viewing Shares of the National Audience, 1987

	Cancom Basic Service	Cancom 3+1 Service	Cancom pay television
Projected Penetration	360,000	450,000	100,000
Audience Diversion (%)	2	1	1/2

The impact would be to decrease CBC's national audience slightly and to boost CTV's and the independents' share by a small amount. While the "Cancom effect" is not a major one overall, it begins to establish (as it is intended to do) a television delivery system to rural, remote and underserved areas. It is these areas, of course, that are the most obvious markets for DBS services (direct-to-home and direct

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* The largest potential audience in the "extra cable market" (cable systems outside Cancom's core market which do not distribute one or more of the U.S. network signals) identified by Cancom amounts to approximately 534,000 subscribers for a PBS signal and 533,000 for a CBS signal. However, the audiences for ABC and NBC are considerably smaller...206,000 and 220,000 respectively. Cancom intends to distribute the signals on an individual basis.

to mini terrestrial systems*).

3.3 Advertising and Public Supported New Services

The rate at and the extent to which non-pay new services will be introduced in Canada over the next five years depends on market forces and CRTC policy and decision making. We have attempted to anticipate these two factors in order to project the impact on viewing shares now established by conventional broadcasters.

New services could include:

- independent stations or regional satellite-delivered services (like ATV-2 in the Atlantic Region);
- new specialized services offered free and supported by advertising or public funds (eg., a news or sports channel or an educational channel);
- superstations consisting of existing conventional services, the signals to be carried to distant cable systems via satellite; and
- cable carriage of U.S. advertising or publicly supported services available from American satellites.

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* They are called "direct passive" and "indirect passive cable" systems by the Tamec DOC sponsored report on "Cost Analysis of Alternative DBS Delivery Arrangements". The "direct passive" cable systems are for cases where the antenna and LNA are shared by up to 10, close-by neighbours, each of whom would be equipped with a receiver and descrambler. The "indirect passive" cable systems are similar to MATV systems, where the receiving and modulating functions are performed at the head end with descrambling at the head end or in the subscriber's premises.

3.3.1 New Independent Stations/Networks

The licensing of new commercial stations or networks would be consistent with CRTC's practice of extending licenses for new VHF/UHF stations and FM radio stations in markets which can support increased competition. A third French language network, like Ontario's Global, in Quebec is one such possibility. For the purposes of this analysis, we have assumed that new stations/networks will achieve viewing shares equivalent to those generated by independent stations licensed in the last decade.

ATV-2, which will commence operations in January 1983, is an example of a cross between a new commercial service and a special satellite-to-cable service. It is a free, advertising supported service (though some of its programming will be provided by provincial education authorities), but will be directly uplinked to a satellite for distribution to remote and underserved communities and cable households. Assuming that by 1987 cable penetration in Atlantic Canada rises to the national average of 75 per cent of homes passed, then in that year ATV-2 will be available to some 276,000 cable households. By 1987, the potential audience for ATV-2, assuming no growth in the number of remote and underserved households, could exceed 500,000 households. The number of actual subscribers will probably be significantly smaller and will depend on the level of penetration in underserved communities where the service will be available on a subscription basis.

3.3.2 New Services Requiring New Policy

New specialized services, superstations, and cross-border carriage of U.S. satellite-to-cable services could well result from the current CRTC tiering hearings and subsequent policy decisions. Over the next five years, several new U.S. originated and Canadian services may be offered as discretionary tiers via cable and community rebroadcasting and terrestrial delivery systems. These services could be in the form of satellite-to-cable packages, such as those proposed by Rogers.* At this time it is assumed that U.S. pay television services will not be available to Canadian subscribers through Canadian cable or other community systems.

In the absence of information on the nature, quantity, start-up dates, markets, and other factors pertaining to possible new services, U.S. experience, once again, must provide the basis for our analysis. In the U.S., most pay cable households also subscribe to a tier of advertising supported services (eg, ESPN, CNN, THE WEATHER CHANNEL) offered in combination with a premium pay service. On the basis of this experience, if we assume that U.S. originated advertising supported services will achieve the same level of penetration as pay television, then the market for new services in Canada would be three million households (47.7% of cable households).

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* Rogers' proposed Silver Service consists of three services: a music service, a news service and a sports service. Rogers anticipates that the subscription fee for the proposed service will be in the range of $3 per month per subscriber.

U.S. experience has also shown that, in pay cable households advertising supported services command an overall average viewing share of three per cent.* Assuming similar viewing habits in Canadian pay-cable households, the total audience for these American services would be 90,000 households, or about one per cent of all television viewing. This assumption is possibly conservative, for Canadian pay subscribers might find it attractive to subscribe to a tier of several new American services as an alternative, rather than in addition, to a pay television service.

New Canadian satellite-to-cable advertising supported services, including superstations, could be available to cabled homes as part of a discretionary tier, or as part of an all Canadian basic cable service. The distinction is important because the latter would provide universal access to cable systems across Canada; services in this category would constitute national or possibly regional networks. In homes reached, it could be assumed that, collectively, they could attract half of the market share of a successful local independent conventional broadcaster. Based on the independent commercial station's record in Edmonton, Toronto, and Hamilton, this market share is two to three per cent for all Canadian cabled homes, or one to two per cent relative to all television households.

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* Calculated for the full broadcasting day (7:00 a.m. to 1:00 a.m.) on the basis of data reported in the Nielsen Pay Cable Reports from Feb., 1981 to Feb., 1982.

The final possibility to be considered in terms of new services is a "universal pay", entertainment oriented satellite to cable network. This alternative is under study by the CRTC in the context of tiering. The program offering of such a network would presumably be emphatically Canadian and thus divert fewer viewers than would pay television services founded on schedules that are anchored by blockbuster feature films. A conservative assumption is that about a third of the viewers expected for a movie driven pay television service would be attracted to a universal pay service. As it has universal access to cable subscribers, however, the resulting audience diversion is similar to that accruing to pay television--i.e., four per cent, although viewer attraction would of course be spread among all basic subscribers.

A variant of universal pay is a new public (i.e., CBC) network supported by a cable tax, as proposed in published accounts of DOC's draft broadcasting strategy. The programming would likely be different from an entertainment oriented pay television service , with particular appeal to the relatively restricted market that was envisaged in the CBC-2 proposal. For the purpose of this study, an estimate of viewer diversion is based on a discounted parallel with C-Channel, but with a national subscriber base, or a national impact of about one per cent.

3.4 Combined Impact on Viewing Shares

The combined impact of pay television, Cancom and as yet unlicensed new services (both U.S. and Canadian) that have been discussed could fairly substantially alter the viewing patterns of Canadian audiences. Exhibit 3-5 indicates the total effect of the introduction of new services in audience terms, showing a total market share shift of about 10 per cent allocated to new pay television and advertising or publicly supported services, with the viewing shares of CBC, CTV and U.S. border stations declining as a result.

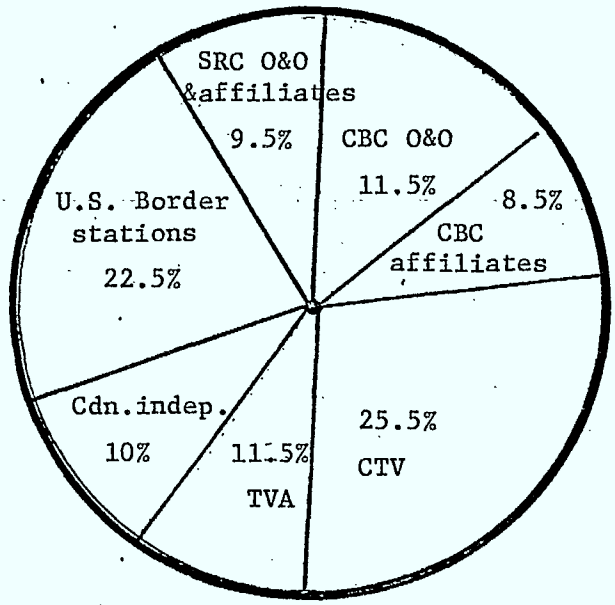
Two assumptions, discussed earlier in this section, underlie this conservative proejction:

- the only viewers affected are subscribers to pay television and new tiered discretionary services; within these households the audience diversion will be much larger--i.e., about 20 per cent;
- projected viewership is based on experience viz U.S. new service households, an experience that itself is still very recent--i.e., the impact of these services may in the long run be much greater than what has occurred to date.

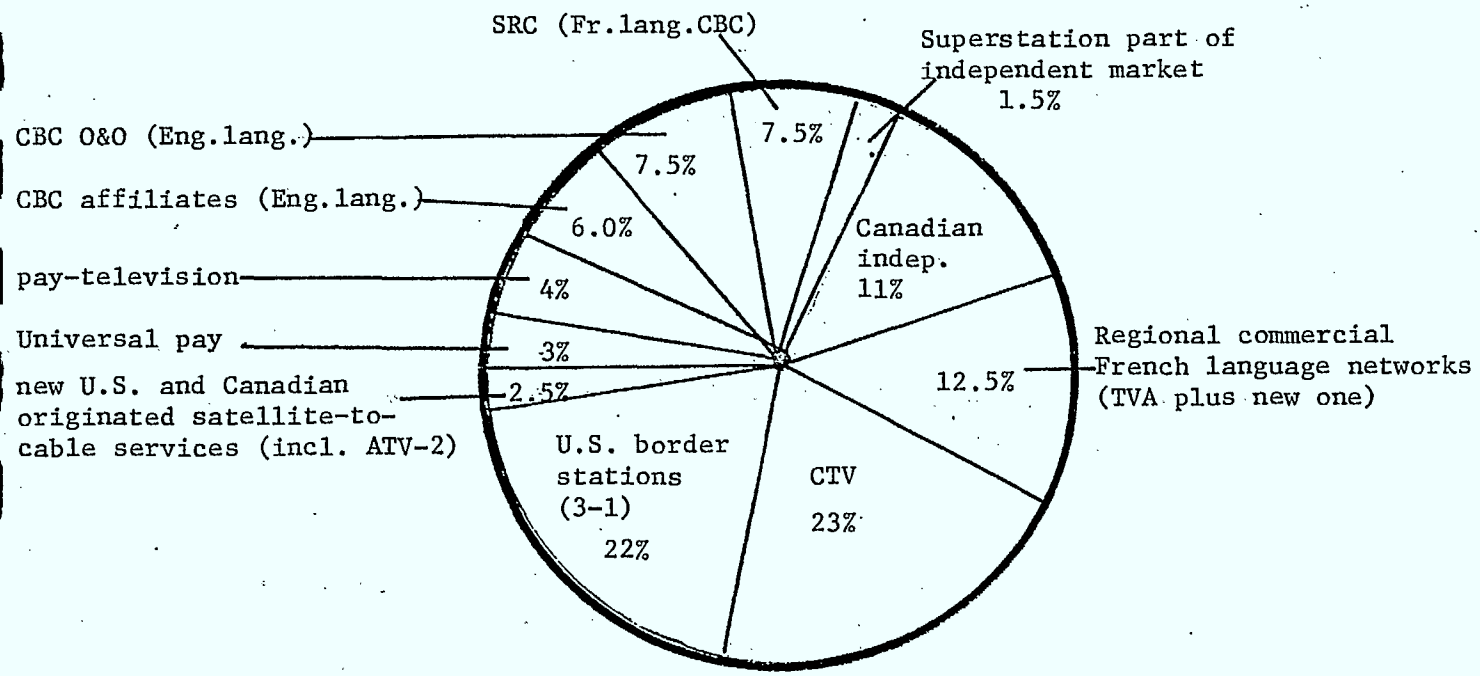
Changes in market shares by class of services are projected on the following basis:

3.5 National Audience Shares by Class of Service

1979 Nielson Figures



1987 Projections



- CBC and CTV audiences will both drop in view of the availability of new services, CBC will suffer somewhat more as the expansion of the Cancom services provides audiences with new choices in previously captive markets;

- TVA and SRC are expected to be seriously affected by the emergence of a third Quebec network, which is assumed to be proportionately as attractive as Global is in Ontario;

- Canadian independents are permitted to become superstations, thus enabling Canadian independent stations to collectively maintain their share of the market; no new English language independents are assumed to be authorized;

- U.S. border stations lose audiences to new services, proportionately the same as the CBC/CTV, although offset to some extent by their extended coverage via Cancom;

- new Canadian and U.S. satellite-to-cable services that are ad-supported are authorized as part of new discretionary tiers; they are assumed to draw the audiences as projected in the preceeding analysis, based mainly on U.S. experience.

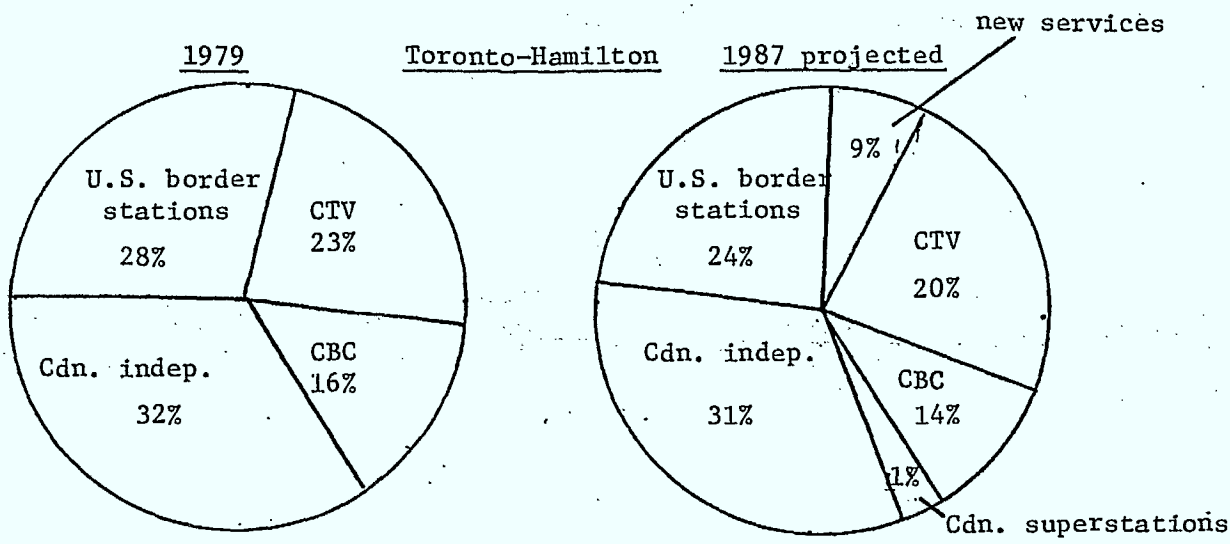
Because circumstances will differ in different markets, we examined three regional markets, projecting viewing shares of different station groups and services (see Exhibit 3-6). The regions are:

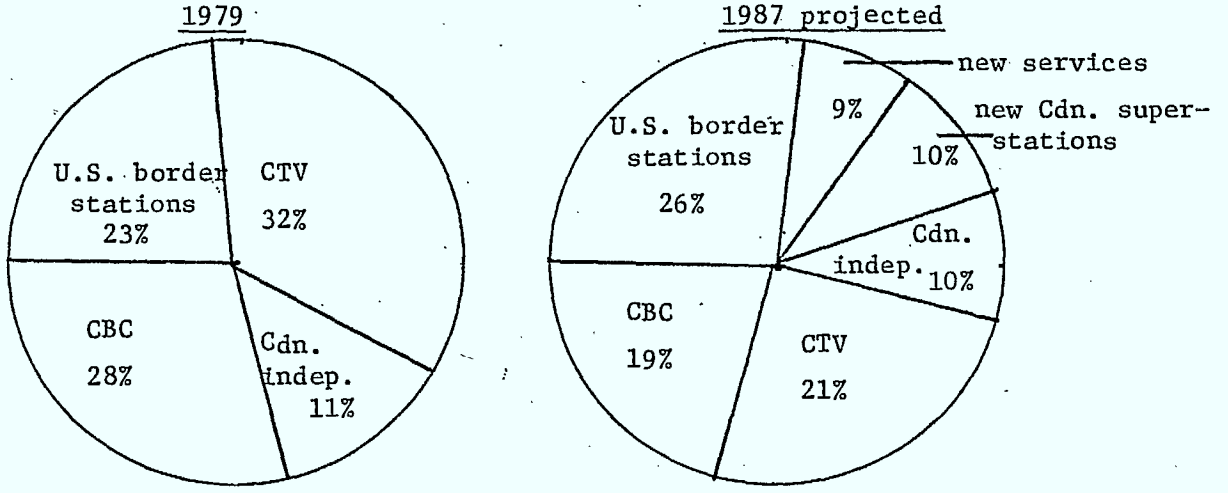
- a large English language metropolitan market (Toronto-Hamilton);

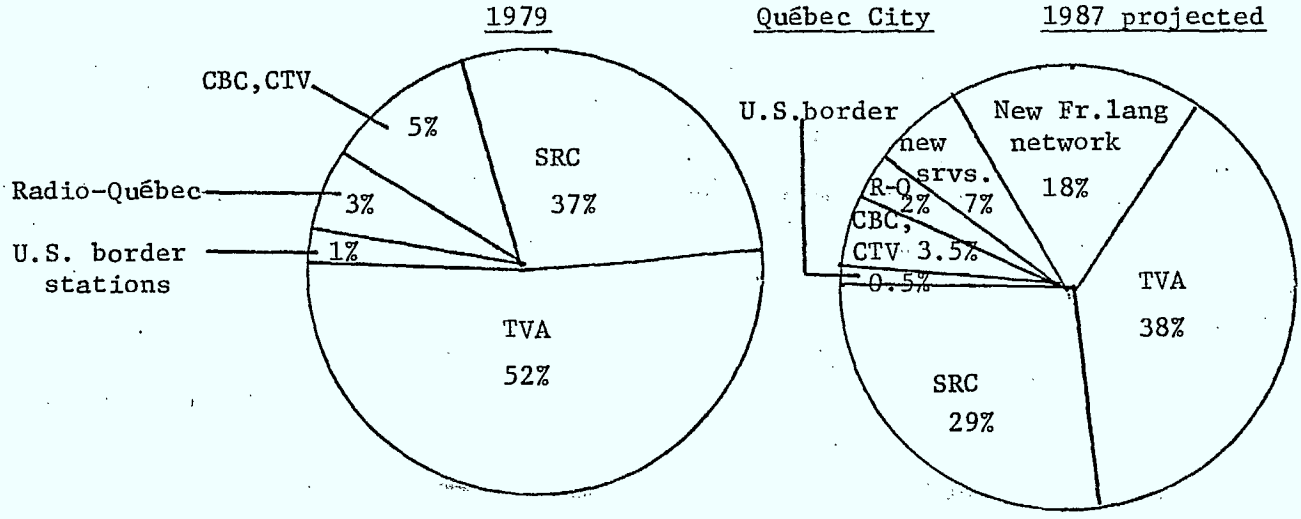
- a smaller English language market (Sudbury-Timmins-North Bay);

- the largest French language community outside Montreal (Quebec City).

Exhibit 3-6: Regional Audience Shares by Class of Service*







*Stations reporting less than 1% are not included in Nielson's audience share statistics. This is why the audience share totals equal less than 100% in these cases.

In the Toronto-Hamilton market, pay television, universal pay, U.S. satellite services and Canadian satellite services could divert about nine per cent of the audience of conventional broadcasters. However, it is already a highly competitive, crowded market and new non-pay television services will have to fight for market share.

In other markets where there is less competition the impact will be greater. For example, the introduction of superstations (e.g. CITY and CHCH which now serve the Toronto market) into Sudbury-Timmins-North Bay would lead to a much larger share for Canadian independents (as shown on Exhibit 3-5). The impact would be greater still in markets where Cancom's 3+1 services could make available additional U.S. signals to cable subscribers not receiving a 'full' package of U.S. stations.

In the Quebec City market, the introduction of a Quebec regional service will have a major impact on the viewing shares of SRC and TVA. If such a service achieves the same audience share that Global has achieved in Ontario, relative to CTV for example, it alone could divert about 18 per cent of viewership from existing broadcasters. Further, French language pay television (premium and universal) could divert an additional seven per cent of the audience from conventional broadcasters. However, English language services, such as U.S. and Canadian satellite services and Canadian superstations, would have no discernible impact on audience shares, except to cut into the small existing English language market share.

Canadian broadcasting will indeed change over the next five years. While the audience share impact should vary considerably according to region or broadcasting market, our general conclusion is that the impact cable carriage of U.S. border stations been more substantial than the impact of pay television, new public and new U.S. satellite-to-cable services are likely to have. Similarly, the licensing of new independent local or regional broadcasters and their authorization to become superstations will likely have a greater impact as an alternative advertising medium than specialized advertising supported satellite-to-cable networks in the future. Thus, while one could conclude that the advent of new services will form a new chapter in broadcasting, they will transpire within an industry which in its short history has adjusted to other competitive pressures and developments.

3.5 Economic Impact

The projection of audience share displacement as a result of new services is only the first part of the story in terms of the resulting impact on other economic viability of commercial broadcasters, cable companies, and the affected components of the telecommunications industry. How will increasing fragmentation in the next five years affect economic viability of the main players?

3.5.1 Impact on Broadcasters

To assess the potential impact of new services on Canadian commercial broadcasters, a closer examination was made of the existing audience market shares by time of day and season. The

strength of many commercial broadcasters in Canada lies in the early fringe programming hours--i.e. just prior to the peak evening viewing time, when border stations show local rather than network programming. The BBM data on Exhibit 3-7 show audience viewing habits on an overall national basis and for specific regions. These figures illustrate that although different television stations do best at different times, some of their highest ratings typically occur in the pre-peak, fringe part of the schedule.

Generally, it would appear that commercial broadcasters have managed to exploit the scheduling weaknesses of the U.S. border stations, when these American network affiliates are exhibiting local programming. The Canadian commercial stations are doing well with their own local news and public affairs programming. The U.S. border stations become very attractive to Canadian audiences when they schedule the high appeal network programming in the peak evening viewing period. Should new services schedule high audience appeal programming at the early fringe, Canadian commercial stations could be relatively more severely affected.

The vulnerability of conventional television programming at fringe or summer periods has been demonstrated in the U.S. following the introduction of new services. In the U.S. the new pay services draw very well in the off-season, both in peak time and the late fringe. Exhibit 3-8 shows that the combined audience for pay television services exceeds that of any of the three U.S. commercial networks in these two time periods (see top part of exhibit).

Exhibit 3-7: Fall 1980/Spring 1981
Daily Average Viewing Pattern (Monday to Sunday) Expressed in Percentages of the Total Regulatory Day

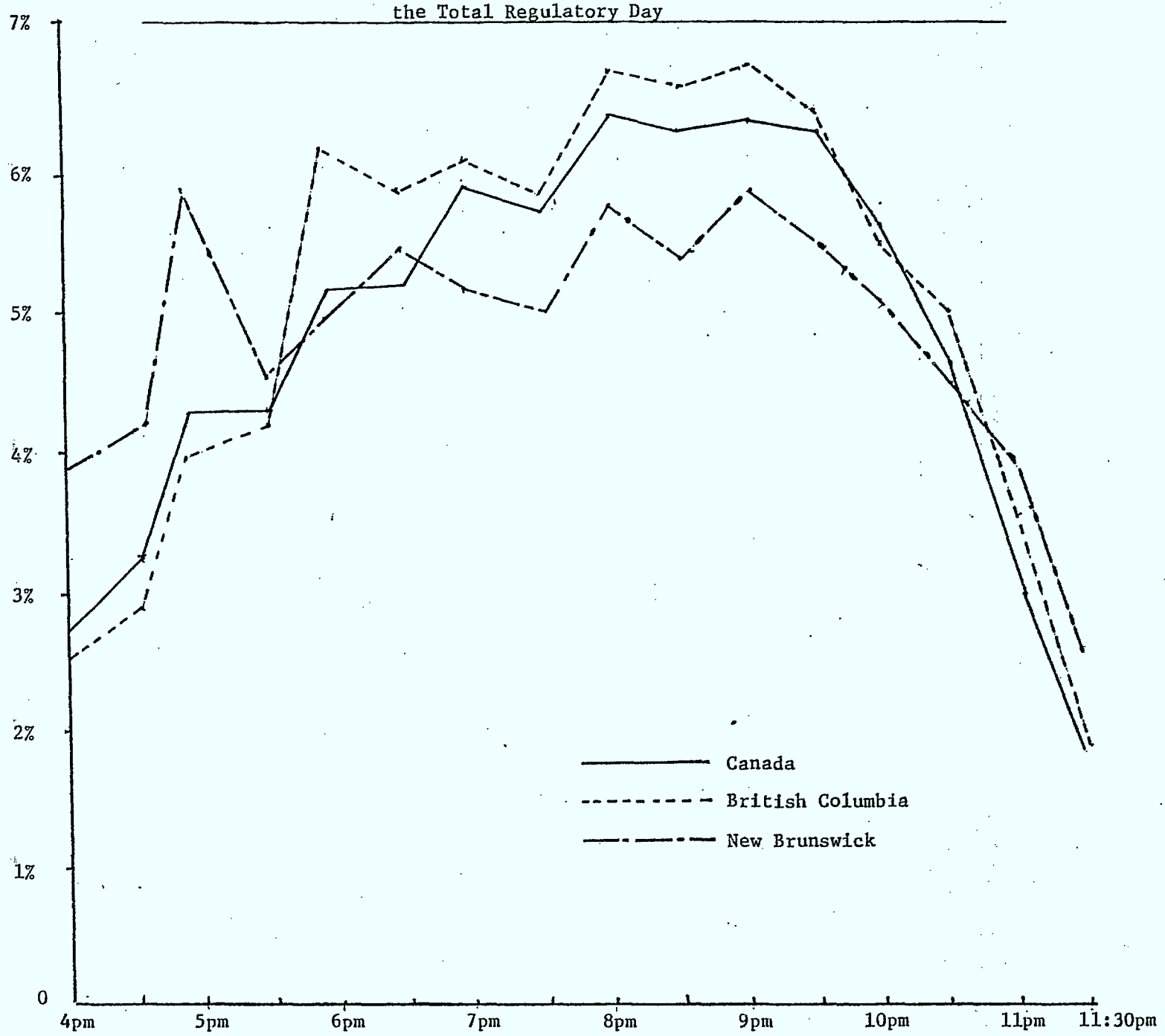
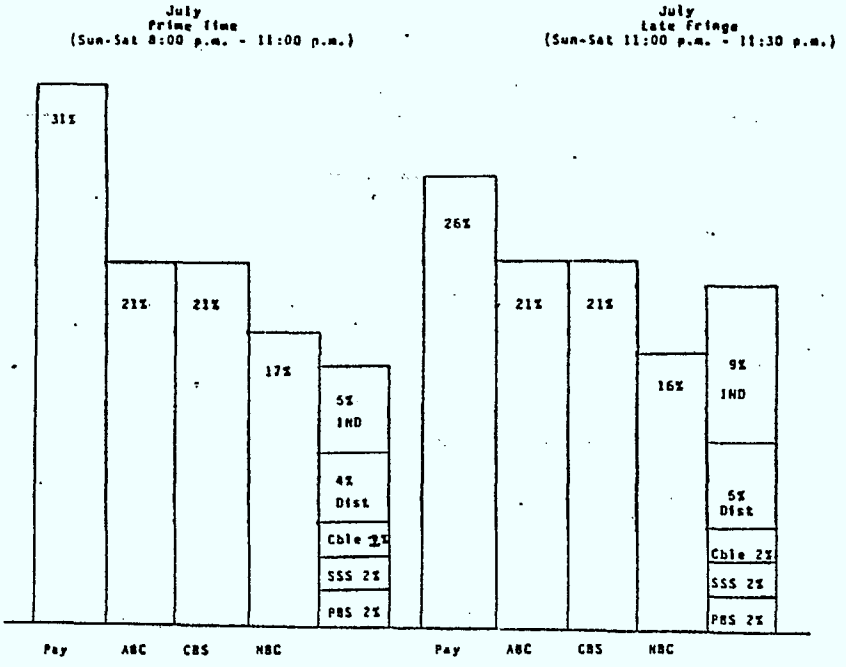
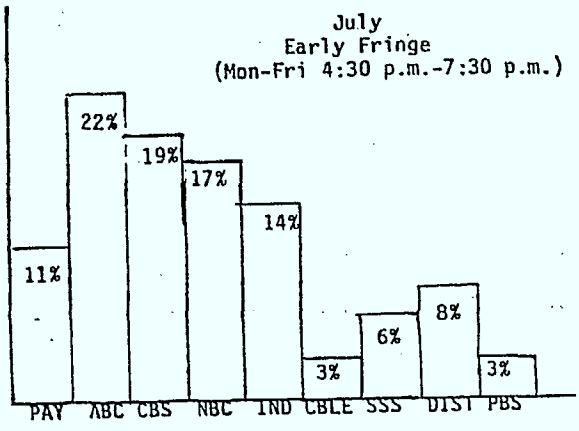
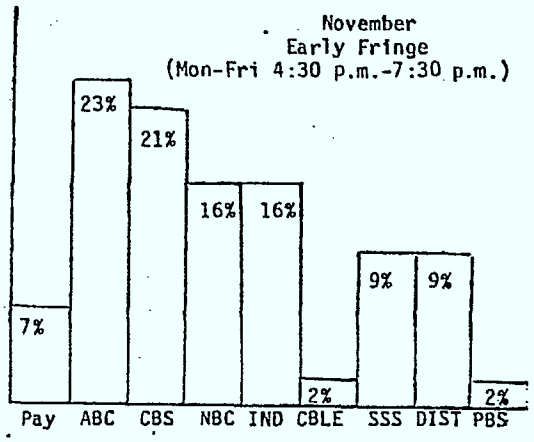


Exhibit 3-8

U.S. Pay Cable National Audience Shares







Source: A.C. Nielsen, Pay Cable Report, July, November 1981

INO: local independent stations
DIST: distant independent stations
CBLE: cable originated and satellite delivered stations
SSS : superstations

In the early fringe and during the regular television viewing season, pay television drops in audience share, as shown in the bottom part of Exhibit 3-8. However, independents, superstations and advertising supported satellite-to-cable stations fare much better. These results show how the traditional network affiliates are suffering in those time periods due to competition from other advertising supported stations.

These U.S. figures suggest that new services in Canada (both U.S. and Canadian originated) could generate considerable competition for existing conventional broadcasters at the time of day and even season where Canadian commercial stations now deliver their best audiences to advertisers. Canadian superstations and satellite to cable services could be aimed directly at the fringe time with programming designed to capture a sizable share of this market...and its advertisers. New U.S. services, which could be pursuing the same strategy in the U.S., would add to the competition for the viewer's attention in those time periods, in Canadian cable television households subscribing to the relevant new tier of television.

Given the impact of these new U.S. and Canadian services, local operations could be squeezed by more competitive fare at the fringe periods in the day. While they should always have an edge in providing a local and community orientation, the rising cost of program acquisition for other time periods and other expenses must be paid for out of the limited local advertising base. As CPM's rise with lower audience share, even this local advertising could be diverted to some extent to more efficient local media.

Radio could benefit in this case, since it could attract some advertising away from local television. Satellite-to-cable radio services should form part of the overall competitive environment in the late 1980s. However, even in cable homes, distant radio stations should be a relatively less important factor, given the virtually ubiquitous reception of radio signals.

Fragmentation will lead to increasing examination by television networks of the support they provide local broadcasters. CTV executives may well be contemplating the rationalization of losing operations in several Atlantic Canada cities and in other centres like Saskatoon. The intent could be to replace local operations with regional services through twinsticking, satellite to cable services, or through Cancom. With respect to the CBC, the network's requirement to find money for national programming could be effectively argued at the expense of continued operation of many local services.

As new services take their toll among broadcasting license holders, some institutional adjustment is bound to take place. For example, the CRTC may permit more cross ownership between cable and broadcasting (as it has in North-Eastern Ontario) to keep local broadcasting alive. The CBC's payments to affiliates could compensate for continued business downturns, or the CBC might eventually acquire ownership of the local broadcaster's transmitter and contract him to continue local operations.

3.5.2 Impact on Cable

The introduction of new services presents the cable industry with significant revenue opportunities. But, to realize these opportunities, the industry must invest heavily in both its delivery system and in marketing--at a time when interest rates are high and when the industry has accepted the Federal Government's "6 and 5" program.

These requirements will strain the resources of small and medium sized cable systems, especially regarding channel capacity. For example, 50 per cent of the 207 small sized systems (systems of between 1,000 and 10,000 subscribers) are able to carry only VHF services. Therefore, these systems, which account for 16 per cent of Canadian cable subscribers, have to make substantial capital investments to carry the new services.

Master antenna re-distribution of a satellite delivered package of services including, minimally, Canadian services, pay television, and principal U.S. broadcast services (3+1) also exposes this industry to competition. The lower earth station costs from the Anik C interim Canadian DBS system make master antenna delivery system potentially even more competitive with cable. Also, the recent Shellbird decision, which established the illegality of satellite reception of U.S. satellite signals, leaves the reception and delivery of U.S. services as a viable SMATV business. Smaller or underfinanced systems that are unable to expand capacity in time to meet competition from master antenna operators will lose potential subscribers, who will be very difficult to recover.

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* Canadian Telecommunications Research Institute, Research Paper RRe. 001/82: appendix II, 1982.

3.5.3 Impact on Programming Suppliers

As described earlier, private and public broadcasters spend very little on acquiring Canadian programming rights or commissioning projects from (or co-producing with) Canadian independent producers. This situation should be changed substantially by the projected development of television services over the next five years--i.e.,

- pay television packagers are enjoined by the CRTC to acquire programming from third parties as well as to spend a minimum of 50 per cent of programming funds on drama;
- a more centralized broadcasting industry, arising from new cable-satellite services and superstations, will alter programming requirements.

Each of these two factors will be discussed in turn.

Pay Television

Pay television license holders should be injecting about $125 million into the acquisition of Canadian programming rights and the commissioning/co-production of Canadian programming on an annual basis within five years. This figure is derived from the assumptions about pay television's growth, discussed above and calculated in Exhibit 3-9. The calculations also assume that pay television packagers are able to live up to their commitments to the CRTC.

Exhibit 3-9

Projected Gross Pay Revenues, 1987
($000)

	Subs (000)	Exhibitor Annual Revenues*	Pay Operator Annual Revenues*
Regional Service	905	65,160	97,740
F.C.	1,020	79,560	116,280
C-Ch.	216	16,848	20,736
R/F.C.	151	15,396	33,516
R/C-Ch.	136	12,240	28,560
F.C/C-Ch.	72	6,912	15,120

* Derived from projected revenue distribution schedule among pay television license holders according to the exhibitor/packager affiliation agreements signed this far.

Projected Expenditures on Canadian Programming from Pay Television, 1987

	Gross Pay Operator Revenues (000)	Commitment to Canadian Programming (000)	
F.C.	$140,598	63,296	(45%)
C-Ch.	42,576	8,515	(20%)
Regional Services			
Star Channel	7,082	1,062	(15%)
Super Channel (Ontario)	50,223	25,111	(50%)
Super Channel (Alberta)	18,917	6,620	(35%)
Quebec Regional	31,936	12,774	(40%)
B.C. Regional	20,346	8,138	(40%)
Total Commitment	$311,952	$125,489	

In the first year or two, however, license holders will utilize their Canadian programming acquisition funds for rights to material already produced, rather than to initiate original production. The competitiveness of pay television's environment will likely delay significant infusion of funds into original production, but by year five it is possible that pay television will be performing the role expected of it by independent producers.

Broadcasting Structure

The decline of local broadcasting services, at the expense of new regional/national advertising supported services, will change the programming needs of broadcasters/service packagers. A greater proportion of programming funds will be spent on regional/national programming projects as opposed to local services. Independent suppliers might, therefore, take a larger share of the total amount of Canadian programming funds, although broadcasters/service packagers will continue to be motivated to use their captive production studios. This change in competition of programming needs could dovetail with pay televisions's programming needs, leading to significant co-production opportunities between advertising supported broadcasters and pay television operators.

It is uncertain whether the total amount spent on Canadian programming by broadcasters will change. Increased competition and fragmentation would normally leave less for programming. Less reliance on television by advertisers or media buyers balking at continually rising rates, as discussed earlier, could also depress the amount left for Canadian programming.

A counter argument is that increased services will segment the viewing market in ways that will allow advertisers to target their audiences more selectively. Advertisers do not seem to be convinced of this argument, but do point to advertising "inventory" deficiencies (particularly in French speaking Quebec). The resulting impact on Canadian programming suppliers, then, is less clear than it would appear to be in the case of pay television.

3.6 Summary

In this section, audience share projections have been undertaken with respect to the major elements of the broadcasting system: CTV, TVA, CBC, O&O, CBC affiliates, independent regional/local, Cancom, pay television licensees, and future advertising or subscription supported discretionary tiers of services. The analysis considered industry projections on cable and pay television growth in Canada, U.S. experience to-date in pay television and discretionary services, and the historical impact in Canada of the introduction of cable and the licensing of new broadcasting services.

While specific projections are hazardous, the analysis supports some basic conclusions--namely:

- even without U.S. DBS spillover, substantial changes are occurring that will affect existing broadcasters, cable operators, and programming suppliers;
- pay television and new services should have established their market presence within five years in the Canadian broadcasting system, alongside whatever new U.S. services are permitted access to Canadian cable systems;

- the Canadian broadcasting system as a whole should at least hold its own in the face of new U.S. satellite-to-cable services, in part because of the expected decisions to license equivalent new Canadian services;

- the changes should lead to a greater degree of competition among service providers, which will remove some of the economic protection that carefully dispensed broadcasting licenses have been assumed to provide in the past;

- the services to smaller markets will generally suffer the most because of the greater intrusion in their marketplace by distant existing as well as new services.

4.0 PROPOSED U.S. DBS SERVICES

In this section of the report we examine U.S. DBS developments. Our first area of concentration is the satellite transponder demand and supply that provides a context for interim DBS development. Then we focus on the "interim" DBS services which are proposed, using medium power Ku-band fixed service satellites scheduled for launch prior to 1986; the success or failure of these services could clearly play a major role in determining whether full DBS services are successfully launched and marketed in the latter half of the decade. Finally, we turn to the structural, technical, financial, and service characteristics of the ten proposals for full DBS services that have been proposed, highlighting those aspects which will play a major role in determining the implications for spillover into Canada.

4.1 Transponder Demand/Supply

The 1977 WARC determined that the Ku-band would be segmented into two parts, the 11.7 - 12.1 Ghz portion allocated to fixed satellite service (FSS), and the 12.2 to 12.7 Ghz portion allocated for high-power direct broadcast satellite service (DBS). At this meeting the radiated power of fixed satellites in Region 2 was limited to a maximum EIRP (Effective Isotropic Radiated Power) of no more than 53 dBW, until this figure could be revised in accordance with the decisions of the 1983 RARC for Region 2.

There are several fixed-service satellites in orbit and planned for orbit in the near future, carrying Ku-band transponders (see Exhibit 4-1). However, none operates or will operate in the DBS portion of the Ku frequency band. In apparent compliance with this restriction, no fixed-service satellite in Region 2 operates at greater EIRP than 53dBW, well below the power of the direct broadcast satellites planned for 1986 and beyond by several corporations in the U.S. Also, none of the fixed-service satellites listed in Exhibit 4-1 planned through 1983 (and in fact, through 1985) will exceed this figure.

All current usage of Ku-band transponders is for business purposes: voice, data, teleconferencing. But the potential exists for use of them to broadcast entertainment video. Several companies have announced an intention to use some future Ku-band transponder capacity for the purpose of broadcasting entertainment in the U.S.

The direct broadcasting of entertainment video to community and individual receivers in the U.S. that will take place within the next three years will not comprise true direct broadcast satellite (DBS) services. Instead these "interim" DBS services will be a transitional form of satellite broadcasting. Despite the differences between these fixed-service satellites carrying Ku-band transponders and the specialized DBS systems planned to come in the years after, there are important market, technical and regulatory factors linking them. These linkages are examined in Exhibit 4-2.

Exhibit 4-1

Short-term Availability of Ku-band Transponders (1982-86)

Satellite	Launch Date	Transponders C-band	Transponders Ku-band	EIRP dBW (edge)
SBS 1*	in orbit		10	43.8
SBS 2*	in orbit		10	43.8
Intelsat V*	in orbit		10	38
SBS 3*	11/82		10	43.8
Advanced Westar "shared spare"*	1/84	12	6	53
Spacenet 1 (SPCC)	1/84	18	6	39
GSTAR 1	1/84		16	43.1
GSTAR 2	4/84		16	43.1
Spacenet 2 (SPCC)	8/84	18	6	39
American Sat. 1*	3Q/85	12	6	42
WU #1*	2Q/85		16	40-50
RCA #1	5/85		16	38-42
WU ku-band #2*	4Q/85		16	40-50
RCA #2	10/85		16	38-42
Total		60	168	

Note: There are 9 satellites in the Intelsat V series, each with 1 Ku-band transponder; only Ku-band transponders are listed.

* Transponder capacity on these satellites is expected to be used predominantly for business services such as teleconferencing, voice and data, as opposed to broadcast of entertainment video.

Exhibit 4-2

Linkages Between Interim DBS services and True DBS Services

Factor	Consequence
Interim DBS subscriber base	Can be "carried over" to operation of a true DBS service
Interim DBS operator corporate structure	Corporate structure and knowledge base supporting interim DBS service can be applied to operation of true DBS services
U.S./Canadian agreements (such as USTV's use of Anik C) permitting reciprocal use of each other's satellite capacity	Set a precedent for reciprocal exchange of true DBS services
Higher power of planned Ku-band transponders	Ground station manufacturers economies of scale are achievable in advance of new DBS systems, lowering costs of hardware to subscribers and operators of the systems

In order to assess the likelihood of the developing scenario of interim DBS services, an examination is required of the overall supply of Ku-band transponders, both those in use now, as well as those anticipated. This assessment also requires an examination of the overall demand for medium power Ku-band transponders. It is important to examine the questions of overall supply and demand, going beyond only the stated intentions of prospective operators of interim DBS services, for two reasons:

- Ku-band transponders of sufficient power (EIRP ranging from 30 to 50+dBW) can be used to broadcast entertainment video as well as transmit business communications; and
- the level of overall demand, both business and entertainment-video based, will help to drive the actual construction and operation of Ku-band satellite systems.

4.1.1 Availability of Ku-band Transponders

The number of U.S. domsat-based Ku-band transponders in use is expected to rise to 40 by the end of 1982, when a satellite belonging to Satellite Business Systems (SBS) will be launched. If all planned launches of Ku-band satellites (dedicated and C-band carrying hybrids) occur in 1984, 50 additional transponders will be available, and by the end of 1985, it is possible that there will be as many as 168 Ku-band transponders available for commercial users in the U.S. The probability is that this number will be lower, due to deferral of launches beyond the time frame of this study, due also to transponder failure, and because of firms' failure to carry out their intentions because of business reasons. However, it may be assumed that there will be over 100 Ku-band transponders available on fixed-service satellites by 1986.

A significant short-term factor affecting the availability of Ku-band transponders for U.S. leasees is the agreement between the Canadian and U.S. governments to permit the lease of transponder space on the Anik-C 2 satellite to American companies seeking to distribute services in the U.S. Two U.S. companies, Oak Satellite Corporation* and the United States TV Network, committed themselves to lease transponders on Anik C 2, which will be tilted to better serve the U.S. markets. These unprecedented leases were permitted on a temporary basis (as per the 1972 Exchange of letters), until the supply of Ku-bands transponders on U.S. domestic satellites becomes adequate to satisfy U.S. demand. This development emphasizes the importance of including the Anik series in any analysis of the supply of Ku-band transponders.*

4.1.2 Demand for Ku-band Transponders

There are four factors to consider in developing an overall assessment of Ku-band transponder demand:

- o existing short-term estimates of transponder demand;
- o demonstrated use of existing transponders;

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* Oak has recently advised Telesat that it will not go forward with its planned interim service and will not lease the indicated transponder space. Apparently, the company has cut out its planned interim DBS service as part of economic rationalization.

** The launch schedule for the Anik C satellite series and its capacity are:

	Launch date	No. of Ku-band transponder	EIRP
Anik C-1	11/82	16	48
Anik C-2	4/83	16	48
Anik C-3	4/84	16	48

- demonstrated demand for future transponders;
- the unproven and speculative nature of alternative uses of Ku-band transponders, as for broadcast of entertainment video programming.

The use of Ku-band transponders for providing business services or video entertainment programming has not been adequately assessed in other studies. A report by Browne, Bortz and Coddington (BBC) in 1981 (Direct Broadcast Satellites: Service, Economic and Market Factors, 73 pp.) summarizes several studies of demand for U.S. domestic satellite services performed by Western Union, United States Telephone and Telegraph (part of ITT), Future Systems, Inc. (as part of the Southern Pacific Communications Company's (SPCC) application). Demand estimates among these studies vary widely, based on divergent assumptions of growth of data, voice traffic, teleconferencing and entertainment video broadcasting.

It was also observed by BBC that these studies did not distinguish demand for Ku-band services from general demand for all U.S. domestic satellite transponders, both Ku and C-band. Also, the ten-year time frames used in these studies make it difficult to apply their findings to the time frame of this study. Thus, we have not identified any prior research base which predicts the short term demand only for Ku-band transponders, for any purpose, whether DBS or business (data and voice) purposes. The overall assessment of the BBC report, however, is that demand for fixed satellite transponders will continue to exceed the anticipated supply through the end of the decade.

4.2 Interim DBS Development

The aspect of Ku-band transponder demand most relevant to this study is the demand for transmission of video entertainment services. Companies wanting to offer these services have been faced with a limited supply of domestic satellite transponders, and they have turned to Ku-band transponders as a means of reducing receive-station costs. Our assessment of the demand for Ku-band transponders has been prepared on the basis of available trade press information, and interviews conducted with corporate lessors of Ku-band transponders. To date, we have determined that four specific companies have an interest in using fixed satellite Ku-band transponders to provide some form of interim DBS services to viewers in the U.S. Those companies are United States Television (USTV), CBS, Focus Broadcasting, and Comsat (Exhibit 4-3). Oak Satellite Corp. (Oak) had an interest but has now dropped out, although their approach will be discussed in view of their prior Anik C lease expectations.

Telephone interviews with staff of GTE, SPCC, SBS, Intelsat, and American Satellite have revealed varying interests in transponder leasing. Interest has been expressed by concerns currently providing entertainment programming by conventional means, including major motion picture studios and television programmers. Interviewees were understandably reluctant to reveal the names of these potential clients. However, several companies contacted said that they had received no overtures from television programmers. GTE's personnel stated that all of the inquiries they received were from firms interested only in business services, although this has not been borne out by reports of the USTV Networks' intention to use transponders on either of GTE's GSTAR satellites to conduct interim DBS operations. SBS also indicated

Exhibit 4-3

U.S. Interim DBS Services

	Number of Transponders	Leasor	Lease cost	Service Areas	Program Types	Date of Service	Service Pricing	Plans for own DBS
United States TV Network	10 (Anik C)	GTE, through Telesat	$25 M annual	NE U.S.	Premium movies	4/83	$30/mo	no
Oak Satellite Corporation**	4 (Anik C)	Telesat	NA	NE U.S.	From Oak's ON-TV service	4/83	$30/mo	yes
Focus Broadcasting	1	Western Union	$1 mil. annual	Major U.S. cities	ad-supported and pay	1984	$20/mo	no
CBS	NA	Western Union	NA		HDTV experiments	NA	yes	
Comsat	2	SBS	NA	NE U.S.	Premium	1983	$20-25/mo	yes

* USTV intends to relinquish use of the Anik-C#2 and use Ku-band transponders on one of the GTE GSTAR satellites to be launched in 1984.

** As indicated earlier, Oak has declared its intention not to proceed at this time.

that its intention was to concentrate on building its data network among commercial data users, and that the greatest number of inquiries it received were from clients of this kind. Intelsat also reports no offers to lease transponders on Intelsat V for the purpose of broadcasting entertainment programming.

However, SPCC claims that all but one transponder of the six (Ku-band) that will be available on Spacenet 1 have already been leased to entertainment concerns. Western Union indicated that CBS has shown interest in using transponders on the shared space Advanced Westar to conduct high-definition-television (HDTV) experiments. Neither of these carriers report that any payments or deposits have been made to guarantee these leases.

Estimates of short-term transponder demand presented in previous studies (Exhibit 4-1), though inadequate for precise application to Ku-band transponders, do provide useful support for the conclusion that the majority of Ku-band transponder use in the 1982-85 time period will be for the purpose of supplying data and voice (as well as some video teleconferencing) to business users. These estimates indicate that most transponder demand will come from the business sector, and that video applications such as teleconferencing will become increasingly important. In addition, it is the consensus of these reports that the demand for transponders will outstrip supply.

In addition, business services provide the current client base for all existing major providers of Ku-band-based satellite services, especially SBS. SPCC, also, is currently an important carrier of business and

consumer voice traffic. Business services define the marketing, billing and service organization of the companies. It is highly unlikely that these companies will look to markedly increased carriage of entertainment video.

However, there has been a sizable demand evinced by interests intent on providing entertainment video through Ku-band means. If this demand were to bloom in the next three years, it is possible that these carriers might shift some of their business-orientation to this sector. Some of the positive linkages between operation of a successful interim DBS service and true DBS service have already been recognized by prospective interim DBS service providers. In order to provide further insight into the likelihood for success of interim DBS services, some negative factors must be mentioned:

- the intense competition any new pay service will face in areas already well-served by cable systems and terrestrial broadcasting;
- development of terrestrial broadcast systems such as MDS, Master Antenna (for C band satellites), STV as a relatively inexpensive means of providing pay services to uncabled areas, or those unserved by pay television. Increased deregulation of terrestrial pay services combined with lower capital costs may induce investment in these areas, and not in a satellite pay service, with its high transponder leasing costs and fragmented earth station market;
- high costs pertaining to development of installation and service networks. Subscribers to interim DBS services are likely to be widely dispersed, requiring high expenditures on labor and energy to adequately service their ground station equipment.

These factors may act to seriously impede the development of interim DBS services.

4.3 "Full" DBS Applications

Having assessed the development of interim DBS services prior to 1986, we now turn our attention to the mid-term prospects of full or true DBS systems. A total of eight applications for DBS services were accepted for filing by the FCC in July 1982. Since then, two additional DBS applications have been filed by Oak and Satellite Syndicated Systems (SSS). The structural, financial, technical and service aspects of these ten proposed DBS systems have been analyzed on Exhibits 4-4 and 4-5.

If all of these DBS services were implemented as proposed, there could be as many as 30 satellites devoted exclusively to DBS service operating by 1988. This would provide 47 channels of video programming transmitted at high power for direct reception by home earth stations. However, if the minimum proposed bandwidth of 16 Mhz is adopted at the 1983 RARC, only 36 nationwide DBS channels would be feasible in the 500 Mhz allotted for DBS service.

Three of the ten DBS applicants (RCA, Western Union and Direct Broadcast Satellite Corporation (DBSC)) propose to serve as DBS carriers, leasing transponders to other programmers. RCA and Western Union reserve the right to program one or more of their transponders themselves, and to lease the remaining capacity on a non-common carrier basis. This will allow them to select their own customers, and to consider a variety of arrangements such as lease, sale or joint venture. DBSC is the only application proposing to lease transponders on a common carrier basis. In either case, these DBS systems would be primarily supported by transponder lease payments from other programmers.

Exhibit 4-4

United States DBS Applicant Profiles

	Structure	# of Satellites and Spares	Capital Cost of System	Channels Per Time Zone	Program Types	Sources of Revenue	Service Pricing	Scrambled Transmission
STC	Broadcaster	4 (2)	$683 Million	3	1) Movies 2) Classic Films 3) Sports	Monthly Subscription Fees	$17-25/mo. + hardware	Yes
DBSC	Common Carrier	3 (1)	$725 Million	6 plus 8 spot beams	Diverse	Transponder Lease Payments from Programmers	No Information	Up to Lessee
CBS	Broadcaster	4 (2)	$700 Million	3	HDTV 1) Ad-supported 2) Pay TV 3) Theaters	1) Advertiser Support 2) Subscription	None Provided	Yes
Graphic Scanning	Broadcaster	2 (1)	$136 Million per-satellite	2	No Information	Monthly subscription fees	$24.95/mo. $300 install	Yes
RCA	Carrier	4 (2)	$775 Million	6	Up to Lessee	Transponder Lease Payments From Programmers	$60-80 Million/ year per Transponder	Up to Lessee
Western Union	Carrier	4 (2)	$516 Million	4	Up to Lessee	Same as RCA	No Information	Up to Lessee
U.S.S.B. Hubbard	Broadcaster	2 (1)	$234 Million	3	1) Entertainment 2) News-Info 3) Diverse	Advertisers Support	No Charge	No
Video Satellite Systems	Broadcaster	2 (1)	$228 Million	1 plus spot beams	Entertainment, News & Public Affairs, Education	Advertiser Support	No Charge	Yes

Exhibit 4-4 (continued)

United States DBS Applicant Profiles

	Structure	# of Satellites and Spares	Capital Cost of System	Channels Per Time Zone	Program Types	Sources of Revenue	Service Pricing	Scrambled Transmission
Oak	Broadcaster	Phase 2-1 Phase 3-4 (2)	$225 Million	2-Phase 1 6-Phase 2 12 Phase 3	Movies, cultural, educational, children's programming, sports, news	1) Sub fee 2) Advertiser support	$25-$30 including leasing of equipment	2 out of 3 channels scrambled
SSS	Broadcaster	4(2)	$ 529 Million	6	Performing arts, movies, sports, foreign programs	1) subscription 2) Pay-per-view	$4-$14/mo.for services plus $5/month connect fee	All scrambled and addressable

Exhibit 4-5

United States DBS Applicant Profiles

	Power Per Channel (Watts)	EIRP Range (dBW)	Antenna Size	Total Satellite Power (Watts)	Orbital Position (Deg.W.Long)	Non-Video Services	Corporate Resources	Relevant Experience
STC	185	58.2-55.1	0.75m Ideal	1700	175, 155, 135, 115	Closed captioning stereo teletext	COMSAT subsidiary '81 Operating revenue $330M+, net income $28M	COMSAT is major satellite operator
DBSC	200	Zone beam 56.0 at edge Spot beam Col.3 to 56.0	1.1m	4600	103, 123, 143	Closed captioning teletext Second language	New corp. DBSC's V.P. is also V.P. of Satellite Systems Engineering	Proposals technical details supplied by SSE
CBS	400	63.5-60.0	1m	4000	None requested	Videotex	'81 revenue $4.1B, net $164M	Primarily as programmer, but has new Research Technology Center
Graphic Scanning	300	56.7-53.7	0.6-1m	2000	115, 143	Closed captioning stereo teletext	'81 revenues $44M, net $10M	Communications networking, radio paging
RCA	230	58, minimum	0.6-1m	4770	95, 125, 110, 140	None mentioned (up to lessee?)	'81 operating revenues $8B, net $598M	Major operator of domsats
Western Union	100	58-55.5	0.4-0.9m	no estimate	80, 100, 120, 140	Stereo second language	'80 revenues $1.3B	Major domsat operator-- '80 satellite revenues were $30M
USSB Hubbard	230	57	0.75m	4000	115, 135	Stereo possibly teletext	Privately held. Parent is Hubbard Broadcasting	TV and Radio Broadcaster: 3TV, 3AM, 2FM

Exhibit 4-5 (continued)

United States DBS Applicant Profiles

	Power Per Channel (Watts)	EIRP Range (dBW)	Antenna Size	Total Satellite Power (Watts)	Orbital Position (Deg.W.Long)	Non-Video Services	Corporate Resources	Relevant Experience
Video Satellite Systems	150	58-54	0.9m	1000	115, 135	None mentioned	VSS is held by Dominion Satellite Network	Dominion is a new company-plans to distribute programming first on C-band satellite.
SSS	230	58	0.6-1m	1380	95,125,110, 140,125,155, 140,170	Teletext stereo second language	Privately held. Support from major investment brokers.	STV operator and satellite service company.
Oak Phase 2	40	52.5	1.2-1m	240	45	Teletext stereo	Subsidiary of Oak Industries, '81 Operating Revenues $500m Net Income $30m	Parent company is an STV operator with over 600,000 subs. in 5 major markets. Sister company is program packager of ON-TV STV service. Oak Media Development subsidiary is a production company. Oak Communications is major manuafacturer of cable and STV equipment and Orion satellite scambling system.
Phase 3	150	55	.7m	1800	45, 60, 130	HDTV		

The remainder of the DBS applicants propose to operate their DBS system as broadcasters, distributing their own program services with complete control over content and marketing of the service. U.S.S.B. (Hubbard) and Video Satellite System propose to rely on advertiser support for their program services, relying heavily on affiliates as per a conventional network system. CBS, which proposes to provide three channels of high definition television (HDTV) services on its DBS system, indicates that one of its channels will be advertiser-supported. The remaining DBS applicants, including STC (Comsat), Graphic Scanning, Oak and SSS, each plan to distribute a package of premium television programming supported by subscription fees from individual residential subscribers. These fees are comparable to those currently charged by single-channel subscription television services, ranging from $17 to $25 per month, plus the cost of reception equipment.

In terms of programming, six DBS applicants are relying on their ability to assemble unique program services which will attract a large base of viewers. Very little information is available, at this stage, regarding the programming which these services will provide. A total of 16 DBS channels have been designated by applicants for new program services, relying to some extent on "made for DBS" programming. STC, for example, has budgeted $76 million for program service development, the majority of which will be purchased from established producers. U.S.S.B., which proposed to distribute "broadcast network-like" programming through affiliated broadcast television stations, indicates that over $600 million will be spent on producing and acquiring programming from a variety of sources. Video Satellite System also intends to develop

programming for distribution by broadcast stations, with approximately 10 hours per day of original programming to be produced by a companion company, Dominion Satellite Network.

The technical aspects of these DBS proposals also vary considerably. Depending on the number of satellites an applicant plans to use to achieve national coverage, higher power levels may be required per satellite or per transponder to achieve the same EIRP range. For example, U.S.S.B. proposed to use only two satellites to achieve national coverage of three channels to be received via .7 meter receiving antennae with an EIRP range of 57 dBW. To accomplish this, satellites with 4000 watts of total power are required, with 230 watts per channel. In contrast, STC proposes to use four satellites to provide national coverage of three channels per time zone for reception with a .75 meter dish at an EIRP range of 58.2-55.1 dBW. This will be accomplished with a total satellite power of only 1700 watts and 185 watts per channel.

Each of the DBS applicants place some level of emphasis on the delivery of non-video services. Teletext and videotex services are proposed in most of the systems, with others relying on closed captioning, second language or stereo sound to enhance their video package. Only CBS has proposed a DBS system which will provide only high definition television services, with one channel specifically allocated for distribution to movie theaters. The information provided on Exhibit 4-5 regarding corporate resources and relevant experience of the DBS applicants will be referred to in our analysis of the financial and corporate factors affecting DBS development.

5.0 FACTORS AFFECTING U.S. DBS DEVELOPMENT

In this section we assess certain critical factors affecting DBS development in the U.S. based on the eight DBS applications accepted for filing by the FCC, and the two additional applications placed on file subsequently.

5.1 Factors

We address four general categories of such factors, which are:

- regulatory,
- technical,
- economic and market,
- financial and corporate.

Each will play a significant role in determining the future of the DBS industry, and as such will provide an important input into the development of scenarios for DBS development.

The regulatory factors we will examine are related to future FCC action, bilateral agreements between the U.S. and other North American countries, and the outcome of the 1983 RARC. Regulatory action at any of these three levels could affect the number of orbital slots and channels available for DBS in the U.S., the timing of DBS development, and potential for interim DBS services prior to 1986. We will also consider technical factors related to the transmission power of DBS satellites,

compatibility of subscriber reception and decoding equipment, and the cost trade-offs between investments in terrestrial and space facilities. These factors could also play a significant role in determining the cost of subscriber equipment, the number of channels an individual consumer can access, and the ability of DBS operators to control the spillover of their signal into adjacent countries.

Equally important are the economic and market factors related to the demand for DBS services and potential competition from existing and developing distribution alternatives. These factors could play a large role in determining the size of the potential DBS market, as well as overall penetration rates. Our analysis of corporate and financial factors is concerned with the ability of DBS applicants to obtain the financing necessary to launch their services, and with the other corporate priorities which may compete with an applicant's plan to offer DBS services. These factors could in the end determine how many (and which) of the applicants will actually initiate DBS services, and the number of services which will be viable in the marketplace.

5.2 Regulatory Factors Affecting U.S. DBS Development

The regulatory environment affecting the development of U.S. direct broadcast satellite systems must be understood relative to the rush to deregulation that has marked U.S. communications policy in recent years. In the satellite field, the FCC set the tone in the early Seventies with its "open skies" decision on domestic fixed satellite service, encouraging competition by any firm with the technical and fiscal capabilities to operate a system. The rationale for this policy was

re-affirmed (and expanded) for the domestic direct-broadcast field in a key document issued by the Commission's Office of Plans and Policy in 1980.* The report argued for a minimalist approach in regulating domestic DBS operations. In its recent decisions, the Commission has accepted the thrust, if not all the detailed recommendations, of this staff report.

The goal of satellite development regulated primarily by market forces was easier proclaimed than implemented. Politics, economics and technology have all imposed constraints. Frequency and orbital-slot decisions had to be made, involving economic as well as technical factors. The FCC had to restrain AT&T from early entry into domestic FSS operations under the rubric of protecting smaller companies. Given the limitations of frequency and orbital resources, the Commission has had to put restrictions on the timing of the entry of companies. The Commission has also been involved in the sales methods of satellite companies--notably the recent attempt by RCA to auction transponders.

The same pattern of "regulated open skies" will obtain for broadcast satellites. It began with the industry uproar over the Commission's decision to give Comsat's Satellite Television Corporation (STC) the first interim authorization to move ahead with a domestic broadcast satellite system. There was a quick turnaround, with the Commission hastily soliciting applications for other interim authorizations. This process was completed, for the time being, with the issuance of interim

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* Policies for regulation of Direct Broadcast Satellites, Office of Plans and Policies, Federal Communications Commission, Sept. 1980.

authorizations to nine companies, including STC, in June 1982. The process was politically complex, since it involved dealing with strong opposition to the Commission's policy of moving ahead on broadcast satellite authorizations. Opposition forces included the over-the-air broadcasting industry, which sees DBS as a threat, and also users of microwave frequencies in the 12 GHz band who, under the Commission's June decision, will have to vacate the band.

5.2.1 Federal Communications Commission

The FCC's "open skies" approach to the development of DBS services will be modified by regulatory actions dictated by technical and political factors. The decision to grant interim authorizations to nine firms is a case in point. The authorizations are for experimental operations, limited to five years. The Commission has indicated that it retains the option to review this initial decision and to modify it in the light of future events. A number of factors could affect such a review, including (1) the results of the 1983 RARC; (2) further advances in DBS technology with particular attention to those affecting frequency and orbital spacing factors; and (3) pressures for relief from DBS competition from other segments of the industry (eg., the networks, terrestrial microwave users, and CATV operators).

These factors could restrict the activities of at least some of the nine companies: they constitute uncertainties which must be factored into any decision to invest heavily in early entry into the domestic DBS market. The "window" for such decisions is fairly narrow, since the Commission mandated, in its June 1982 interim-authorization decision, that the firms

involved must begin construction, or complete their contracting for construction, within one year of the time their construction permits are granted.

During the summer of 1982, two additional DBS applications were being filed at the FCC by Oak Satellite Corporation (Oak) and Satellite Syndicated Systems (SSS). A recent action at the Commissison was taken in late September, 1982 when Satellite Television Corporation was granted a construction permit for the first phase of its planned national DBS system. This authorization did not include launch or operational authority, nor did it assign frequencies or orbital slots. According to the FCC, these matters cannot be addressed until after RARC 1983. At the same time, the Commission conditionally approved the three later phases of the STC system, and imposed a condition on STC intended to decrease the possibility that Comsat could use revenues from its regulated businesses - Intelsat and Inmarsat - to cross-subsidize STC's DBS services. The Commission staff has also indicated that a single recommended order regarding the eight other DBS applications will be presented to the Commission before the end of 1982.

Domestic DBS operators will be subject to the statutory requirements covering broadcast and common carrier operations in the Communications Act of 1934, depending upon which type of service the individual operator chooses. Given the trend towards relaxing the Act's restrictions in Congress, DBS operators should expect more relief (from the Fairness Doctrine, for instance) in this area--as well as a more competitive environment involving other common carrier and broadcast techniques.

In summary, the current FCC regulatory pattern for domestic DBS operators has resulted in naming the initial players and giving them considerable leeway to experiment with a range of DBS services, from orthodox common carrier operations to high-definition television. At the same time, it has yet to establish a firm regulatory framework within which they would operate. In part this reflected uncertainties surrounding the 1983 RARC's decisions, together with a desire to revisit the subject on other technical, economic and policy grounds once DBS operations are underway. As noted earlier, this introduced an element of uncertainty for the nine firms in determining the level of their commitment to full-fledged operations.

5.2.2 1983 Regional Administrative Radio Conference

As suggested above, the lack of a definitive resolution of frequency and orbital-slot problems in Region 2 (Western Hemisphere) at 12 Ghz is a major factor affecting the regulatory pattern of domestic DBS operations. In granting the nine interim authorizations, the FCC has, by implication, adopted the assumption that the United States will be allocated sufficient frequencies and orbital slots to meet the needs of these firms. Nevertheless, each of the authorizations is contingent upon any relevant decisions made by the conference.

Given the intricacies of international negotiation in this general area, it is difficult to predict with certainty that the FCC's assumptions about the outcome of the conference will hold true. The United States has played a key, and generally successful, role in developing proposals that (in its view) assures a flexible allocation of frequency and orbital

slot resources for itself and other Region 2 countries. It pressed for a separate regional conference to avoid rigid allocation plan adopted by a 1977 ITU conference dealing with 12 Ghz issues. It persuaded other Region 2 countries to abandon an arc segmentation plan which would have limited satellites in those bands, proposing instead to expand the band and divide it into separate frequency segments--11.7-12.2 Ghz for fixed satellites and 12.3-12.7 Ghz for broadcast satellites, opening the entire Region 2 portion of the arc to each service and providing 500 Mhz of spectrum for each service. This approach, with some modifications, was adopted by the 1979 WARC as the basis for negotiations at the 1983 regional conference.

These initiatives set the tone for the 1983 meeting, making it technically possible to develop a flexible regional plan. There appears to be a general consensus among Region 2 countries on the desirability of flexible planning. However, most of the countries have not yet become involved in detailed preparation for the conference. CITEL, the regional telecommunications organization, has had several meetings at which the conference has been discussed. For the present, detailed planning, at the regional level, is conducted primarily by a Panel of Experts, made up of technicians from eight countries including the U.S. and Canada.

Meanwhile, the United States government is pressing ahead with the development of its own proposals. The FCC issued a general Notice of Inquiry on the 1983 RARC in June 1980, calling for public comments on a U.S. position. (There have been two NOIs on the subject since then.) Public comments have been filtered largely through an advisory committee

which submitted its report to the Commission in April 1982. The report reflects general agreement on the concept of flexible "evolutionary planning," in which not all frequencies and orbital slots would be allocated, to permit new entrants into the process and to permit expansion of operations of current entrants. However, the report also reflects, in its specifics, the differing views of potential DBS domestic operators, all of whom were active on the committee.

The FCC timetable calls for a final Report and Order, recommending a U.S. position, to be submitted to the Department of State by November 1982. (Under ITU regulations, proposals have to be submitted to Geneva six months before the conference, which opens in June 1983.) Thus, the FCC still has several months to resolve remaining differences, mostly in the technical area, reflected in the advisory committee report. There have been relatively few indications of the specifics of the final recommendations the Commission's international staff will make in their report.

5.2.3 Factors Affecting U.S.-Canadian Relations in this Area

Bilateral cooperation in the satellite area has been close and continuing between Canada and the United States. This has included, among other projects, the joint sponsorships of CTS, the first powerful experimental broadcast satellite, in the mid-Seventies. In the regulatory area, cooperation dates from an exchange of letters in 1972 between the two governments relating to conditions for use of each country's satellites by operators for service in the event of a lack of capacity. (At the time, Canada had the only domestic satellite--Anik I--in the world.)

The 1972 letters did not cover satellite transmissions between the two countries. This matter has been the subject of bilateral negotiations in recent months, which have resulted in a new exchange of letters, authorizing cross-border operations of each country's domestic fixed-service satellites, specifically acknowledging each country's right to regulate the incoming signals. The practical effort of this agreement would be to permit several U.S. operators to negotiate agreements with Canada's Telesat to operate circuits to Canadian points. The FCC has specifically authorized Satellite Business Systems (SBS) and American Satellite to conduct such cross-border business.

The agreement does not assure Telesat a specific share of the cross-border traffic but does contain a U.S. guarantee of marketing opportunities. SBS would, given its operating mode, work strictly from its own satellite. American Satellite, however, leases all its circuits, and has thus been in a position to negotiate with Telesat.

U.S.-Canadian cooperation in RARC-83 planning has been close. Both countries are members of the eight-nation Panel of Experts on the subject. Both support the "evolutionary planning" concept in general terms, but there are differences in their detailed views at the technical level. These stem from differing market sizes reflected in the generally higher-powered satellites being planned by U.S. firms as against lower-powered satellites proposed in Canada. At the recent CCIR meeting in Geneva, Canadian and U.S. experts in bilateral meetings decided that they were about 4.5-5 dBW apart. However, the ITU radio regulations are silent on how to handle technical coordination problems in this area, and it remains for RARC to harmonize technical requirements between the two types of national broadcast satellite systems. The U.S. officials have expressed confidence that such harmonization is feasible but, as one of them has put it, "you can't hit a moving target."

5.3 Technical Factors

A variety of technical factors will have significant implication for the successful and timely development of U.S. direct broadcast satellite issues, as well as for the impact these developments will have on the Canadian telecommunications industry. For the purpose of this study, we have focused our analysis on those issues most directly related to trans-border spillover of DBS signals between the U.S., and Canada.

5.3.1 Spillover

Because most of the populous areas of Canada lie close to the Canada-U.S. border, spillover of U.S. DBS signals to Canadians is difficult to prevent. Satellite Television Corporation's earth illumination footprints, which are designed to minimize spillover to Canada, yet effectively serve the U.S. population, are illustrative. Figures 13 through 16 in Volume 3 of the STC application present the planned footprint power contour absent point error.

In spite of careful design, the most populous areas of Canada--Montreal; Toronto to London; Vancouver and Victoria--lie within 2dBW contours, some 7dBW above threshold. And most of the remaining populous areas of Canada--including Winnepeg and Regina--lie within 5dBW contours. Thus, more than half of the population of Canada would be well illuminated by STC's signal. Yet one very populous border area of the U.S.--the Detroit area--and many moderately populous border areas of the U.S. would receive 3dBW or lower illumination. Along the footprint edge, contours 1dBW different are spaced about 40 miles to 60 miles. The specified possible pattern pointing error is 0.1, or 0.018 radiance. An error of this size

along the border would shift the pattern about 40 miles, and along the border 1dBW illumination change.

This applicant and the others could have designed and proposed a system producing less spillover, both shaping the footprint more precisely to the border and narrowing the contour spacing at the edge. To gain these benefits, a larger reflector would have to have been provided with a larger feedhorn assembly assuming the same 12 Ghz band is used. Also, more precise pointing error detection and more precise pointing control subsystems would have to have been provided. To power the latter, more fuel would have to have been provided. To provide the former, more weight would need to be lofted. Thus, either the cost of launching would have to have been increased, or other capabilities sacrificed.

To significantly reduce the percentages in the very populous Toronto and Montreal areas, the reflector and its feeds would probably need to be larger by a factor of over three in the N-S direction and over two in the E-W direction, and the pointing control for all axes would need to be improved by somewhat smaller factors. The weight of the antenna assembly required would increase by the three-halves power of the product of these factors--that is, in excess of $6^{3/2} \approx 15$. For this satellite, the increase would be 15 (44 kg) $\simeq$ 660 kg, equal to the total weight of the initial design payload. The cost increase to loft this weight increase would exceed the total initial cost of the system.

Further, the antenna then would be much larger than the size of the launch rocket, about a three-meter diameter, implying that a folded antenna would need to be used. This would be heavier than the scaling above implies. Even such an antenna-size increase, as mentioned above could reduce illumination to the populations of these ares only on the order of 6 to 9dBW (we have not attempted to recalculate footprints). Thus, although the populations of these areas would notice reduced picture quality, they still would be able to receive the signals reliably*.

Canadians in these areas, who wanted the U.S. programs badly enough, would be able to acquire and use a receiving antenna large enough to overcome the quality reduction. In all likelihood many of those who deemed the U.S. DBS services of importance would also be among those who found desirable the U.S. DBS services from the planned lower-powered, weaker-footprint interim DBS systems. If these viewers had acquired a receiving antenna large enough to receive adequately signals from Anik C, it would likely be large enough to receive well a second generation U.S. DBS signal, even if the U.S. DBS system had been designed to suppress spillover to the area concerned.

Canadian viewers in these areas receive good terrestrial USTV signals, and many already purchase local CATV service, in part, so as to receive U.S. stations better. Therefore, the principal effect of launching a U.S. DBS designed to suppress spillover in the manner discussed above

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* Because the TV sets of most consumers are neither well aligned nor well maintained, many viewers in these areas might not perceive much difference.

would be to decrease quality to many Canadian users. It would not be to deprive them of services or to impose upon them additional costs if they desired to recover full quality, either through purchase of a larger receiving antenna or through cable service or other delivery means.

5.3.2 User Terminal

The typical user terminal for DBS will comprise a receiving antenna and mount; a frequency translator (mixer) mounted (outside) at the antenna; a cable to a converter, the converter comprising an FM demodulator, addressable decoder and logic, descrambler, and remodulator; and a conventional television set. The translator converts the 12 Ghz band signal from the antenna to a lower frequency signal for transmission over the cable at whatever intermediate frequency band is required for the converter. Translators such as now used for MDS could be used, but a different frequency range (500) would need to be provided. Descramblers and addressable decoders of various designs now used for terrestrial broadcast pay television and cable pay television could be used, but time-varied descrambling is likely to be adopted to provide better security from unauthorized use.

One of the applicants, CBS, has proposed high definition television DBS, rather than conventional NTSC, and STC and other applicants proposed to perform HDTV experiments. The user terminal for HDTV DBS will comprise the same units as above, plus a decompresser, which may or may not be incorporated into the television set. It is likely that an antenna suitable for any of the NTSC DBS systems also will be acceptable for HDTV DBS, and it is possible that a converter may also be acceptable. No

NTSC television set, however, will be acceptable for HDTV, nor will any NTSC descrambler likely be acceptable.*

Each of the DBS applicants appears to propose both an NTSC signal format for its transmission and a scrambling process which would differ slightly from the others. The converters for each would not likely be interchangeable (U.S. or Canadian) unless specifically equipped to emulate the others. Up to 12 NTSC DBS channels (16 Mhz bandwidth, 40 Mhz spacing) could be received concurrently at any fixed receiving antenna pointing, as long as converter emulation is provided or interchangeability is accomplished.

More likely, fewer DBS channels will be available at any given pointing, but additional channels will be available at nearby latitude pointings. A range of pointing of about 20, representing from 7 to 10 bandwidths, is likely to be needed. The relative precision of pointing necessary will be about one-quarter bandwidth. Thus a range of about 30 to 40 positions is needed, but this is not a demanding requirement. Unless covered by a radome, the antenna, about 0.5 to 1.0 meter in diameter, will be exposed to wind and snow and must be held accurately as well as re-positioned accurately in that environment. The positioning capability required can be provided by any of many possible inexpensive remote-operated, motor-driven mechanical linkages. Alternatively, non-mechanical electromagnetic beam switching may be used. The cost for the pointing control will be comparable to the cost of a deluxe conventional

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* See Kalba Bowen Report "High Definition Television to the Year 1990," February 1982 for information on the CBS service.

television antenna rotator (initial, low sales volume pricing will be higher; later pricing may be lower).

Because the path from the DBS to the antenna must not be obscured, and because for certain areas along the border the receiving antenna beam will be elevated not over 20 from the horizon, many householders and apartment dwellers will find it difficult to find a practicable place to put the antenna. Convenient locations may be obscured; possible locations may be unsightly, or require unsightly brackets and/or radome. Thus, we anticipate that many users will seek, or be forced to seek, locations on some neighbour's property, and probably in many small neighborhoods several households will share one antenna. Although this approach can reduce cost per person for equipment, it may raise the financial and social cost per-person as well as complicate subscription revenue collection.

The true generation of DBS will emit more power, permitting use of smaller-sized receiving antennas and thus alleviating appearance concerns and reducing antenna cost. However, as more DBS satellites are put into orbit, receiving antenna angular directional discrimination could become important. If so, smaller antennas might not be tolerable, until ultimately a higher frequency transmission band is adopted, such as the 20 Ghz band.

5.4 Economic and Market Factors

Regulatory factors may affect the number of channels available for DBS in the U.S., and technical factors will affect the cost of subscriber equipment and the number of channels an individual consumer can access. However, a number of critical economic and market factors related to the demand for DBS services will have a significant effect on the size of the

potential DBS market, and competition from existing and developing distribution alternatives will be the major determinant of the overall penetration rates that DBS services will achieve.

Most research assessing the viability of DBS services begins with the assumption that the primary markets for DBS services are those areas where cable television service is not available. Studies conducted by Kalba Bowen Associates, Donalson Lufkin and Jenrette, and Arthur D. Little all argue that cable systems offer a wider range of services than any single DBS system could, and potential subscribers would choose cable over DBS as the means to obtain premium television services given comparable service costs. These assumptions are supported by market projections supplied by DBS applicants such as STC and Oak, who claim that their target audience is households which are underserved by broadcast or cable television. While this includes rural areas with low population densities, it also includes major urban markets where the high cost of wiring may preclude or postpone future cable development.

Comsat's STC has estimated that approximately 20 million homes or 22 per cent of all U.S. television households are unlikely to be reached by cable by 1985. Oak's estimates are even more conservative, that 17 million homes or 20 per cent of all U.S. television households who could afford a $250 investment in DBS equipment will not have access to cable by 1985. In their study of the DBS market, securities analysts Donalson Lufkin and Jenrette project that at present construction and franchising rates cable service will be available to approximately 71 million homes (81 per cent of all U.S. television households) by 1985, with an

estimate of the resulting DBS universe comparable to Oak's 17 million households.

A study by Bortz, Brown and Codington for the NAB, however, concluded the availability of pay television services through other distribution systems such as MDS, STV and low power television could further limit the potential market for DBS services. This study argues that while the potential non-cable market for DBS might be 17 to 20 million homes, only four to 10 million of those will have no pay television services available from other means such as STV and MDS. Following this logic, one might further postulate that future sales of videodisc players and developments in low-power television could also add to the erosion of the market for DBS services.

While there is no doubt that these and other competing technologies will have some effect on the potential market for DBS services, there seems to be a need for a more rigorous analysis of the ability of DBS services to directly compete with these alternative distribution systems. For instance, most of the previously mentioned studies focus on the limited number of channels which a single DBS service can offer as the most significant factor restricting its ability to compete with a cable system.

Exhibit 5-1 compares the three existing pay television delivery systems in terms of the range of service they provide and the cost to the consumer. Cable television seems to have a clear advantage over the other technologies. In terms of channel capacity, over half of all cable

EXHIBIT 5-1 COMPARISON OF ALTERNATIVE PAY TV DELIVERY SYSTEMS

	Total No. of Channels	# of Pay TV Channels	Range of Programming Offered	Avg. Monthly Subscriber Rate	Avg. Monthly Revenue per Subscriber	Avg. Capital Investment per Subscriber	Other Revenue Sources
Cable TV	12-100 Avg: 40	1-10	Basic: broadcast signals, sports, news. Pay: Movies, specials, culture, adult films.	Basic: $10 Pay: $10 per channel	$15.50	$600	Advertising sales. Interactive service. Pay per view. Business Data. Home Security.
Subscription Television	1	1	Movies, specials, local sports. 2nd Tier: Adult films	$20+ $4 for second tier	$22	$300	Pay per view
Multi-point Distribution System	1	1	Movies and specials	$15	$15	$200	Business Data and video services

subscribers have access to 20 channels or more and recently constructed systems promise between 50 and 100 channels of programming. Basic cable service consists of local and distant broadcast signals, community programming and satellite delivered cable services offering sports and news, for an average monthly rate of $10. In addition, anywhere from one to ten pay cable services are available to subscribers, each for an average fee of $10/month, featuring first run movies, specials, cultural programs, or adult films. On the average, cable subscribers pay $15.50 per month, and cable operators are developing a number of new services to offset the average $600 capital invested per subscriber.

Currently, cable service is available to less than 60 per cent of all U.S. television households, with only 30 per cent penetration of the market. Many of the major television markets will have cable systems constructed and/or licensed by 1986, resulting in projections that cable service will become available to over 75 per cent of all television houses with nearly 45 per cent penetration by this date.

Subscription television service is currently limited to a single channel in the over 20 major television markets where the service provides a package of first run movies, specials and local sport events for an average monthly fee of $20. Several STV operators offer a "second tier" of service, typically consisting of adult programming, with fees ranging from $4-6 above the basic service. With nearly 1.5 million STV subscribers nationwide, the average subscriber pays some $22 per month. STV operators are currently experimenting with pay per view programming as a means of increasing per subscriber revenue. There is some prospect

that, in the future, an STV subscriber in a market with multiple STV services (such as Dallas, Los Angeles or Boston) will be able to obtain all service through a single decoder. This would effectively increase the channel capacity (and eventually the range of programming available through STV service).

MDS services are also limited to a single channel today, with a typical package of movies and specials offered at an average rate of $15 per month. MDS is available only in the major television markets, and is limited by a 15-25 mile operating radius and the need for "line-of-sight" transmission between the tower and the home receiver. While some MDS operators are pursuing alternative sources of revenue from business data and video service, the largest MDS company, Microband, has submitted a proposal to the FCC for an eight channel MDS pay television service. With a projected monthly rate of $20, this proposal could increase the ability of this technology to compete with cable, STV and, eventually, DBS.

The ability of a DBS service to compete with these existing pay television distribution systems is directly related to the range of programming and services which can be offered, and the cost to the subscriber. One distinct advantage of DBS technology is that it provides the operator with direct access to a national market of potential subscribers without the need for an intermediate terrestrial distribution system. This provides the potential means to aggregate a large national subscriber base, and the ability to target highly specialized audiences with narrowcast programming. It may also provide the economies of scale

necessary to effectively reduce the cost of program acquisition on a per subscriber basis.

Most of the existing DBS proposals call for a system offering 3 or 4 channels of premium television service for a fee of $20-25 per month. A range of programming similar to that of pay cable services is provided. The capital investment required to launch the service ($500,000,000 or more) and the cost of subscriber receiving and decoding equipment are significantly larger than competing distribution systems. One way to compare these costs is on a per channel, per subscriber basis.

Chip Morris, Vice President of development for Rifkin Fox Communications, estimates that the cable industry is spending about $10 per channel per subscriber on a typical 40 channel cable system. A single DBS operator would have to invest an average of $15 per channel per subscriber, significantly more than the cable figure. This analysis, however, is based on the assumption that each DBS operator would operate independently through a separate receiver and decoder. If multiple DBS services could be received through a single antenna and decoded through a common descrambler, the cost per channel per subscriber would be reduced significantly to a level competitive with cable service.

In addition, a recent study of the competition between cable and other pay television distribution systems by Browne, Bortz and Coddington, suggests that a large portion of the consumer demand for non-broadcast program services could be satisfied by a four or five channel service. The demand for additional channels of premium television service was

found to decline dramatically beyond the level of 5 separate tiers, and per subscriber revenues are maximized when four or five premium services are available. The conclusion of this study was that a five-channel service consisting of two movie services, a local sports channel and two basic cable services could be a formidable competitor to a full cable service, if offered at the same price. This analysis lends support to the notion that even a single DBS operator would structure a five channel service which could compete with a comparably priced cable package.

The ability of DBS services to compete with existing pay television distribution systems will also depend on the extent to which a unique program service can be offered. If a DBS service provides a schedule of popular programming which cannot be obtained through other means, it will be more competitive. Perhaps the greatest potential exists for a high definition television service delivered via DBS, as it would be completely unique in the pay television marketplace. Other ancillary services, such as teletext or stereo sound, could also enhance the competitiveness of the DBS package, and other sources of revenue, such as advertising, could contribute to the financial viability of a DBS system. In the end, it will be a combination of these economic and market factors which will determine the universe and future penetration of DBS services.

5.5 Corporate and Financial Factors

DBS systems will be extremely expensive to construct and operate. The cost of constructing, launching and initiating operation (first-year operating expenses) of a four-satellite DBS system has been estimated to

be as high as $775 million (RCA's filing) to a low of $516 million (Western Union). These figures do not include the cost of programming, promotion and advertising or subscriber hardware.

The ability of a company to actually carry out a plan to build a DBS system is therefore based primarily on the financing it will be able to apply or obtain for this purpose. A company's ability to obtain financing for a DBS system will be dependent first on whether it is able to raise sufficient capital solely through internal initiatives. Usually this will rest on the ability of the company to raise the capital through a large public issue of stock, and/or to use cash on hand for this purpose.

Corporations which lack the ability to raise several hundred million dollars solely through an issue of securities must seek the bulk of funding of this magnitude through overtures to banks. In all likelihood, a consortium of 10 to 12 banks will be necessary to supply this money, regardless of any funds the company raises through public securities issues, and by using cash on hand.

Venture capital is not a viable funding alternative for coverge of costs relating to construction and initial operation. Seldom do sources of venture capital supply more than $5 million--an inadequate sum for DBS ventures, except for seed money.

The 10 applicants to construct DBS systems can be divided into three categories based on these two funding distinctions:

1. Well established companies with corporate standing and internal financial resources capable of funding a DBS system. All had revenues of at least $1 billion in 1981, and through a combination of securities issues and cash on hand will be able to support the cost of a DBS system.

   - RCA
   - CBS
   - Western Union

2. Venture-oriented companies of lesser resources, but with significant financial resources (multi-million dollar operating revenues) and with significant experience in the operation of communications systems. All have had multi-million dollar operating revenues in recent years.

   - Oak
   - Graphic Scanning
   - USSB (Hubbard Broadcasting)
   - STC (Comsat)

3. Smaller corporations recently established, and/or whose financial resources are significantly less than those of the applicants listed in 2. The construction of a DBS system will be a major project or raison d'etre for Video Satellite Systems and DBSC. Syndicated Satellite Systems, operator of a STV systems totalling 25,000 subscribers, has had extensive experience in the cable programming and satellite transponder marketplace, but must be considered cash-poor. All three will have to rely heavily on borrowing from banks for the capital necessary to constuct their proposed systems.

   - Syndicated Satellite Systems
   - Video Satellite Systems
   - Direct-Broadcast Satellite Corp.

This analysis is concerned primarily with corporate and financial factors affecting the ability of the applicants to construct DBS systems. It is not concerned, at least to this point, with the ultimate wisdom of such actions as proved by the marketplace. On this basis, the three applicants in the first category, RCA, CBS, and Western Union, must be considered financially capable of constructing a working DBS system, if granted authority to do so.

Companies in the second and third categories will not have on hand the money needed to construct a DBS system. They will not be able to obtain the necessary balance required without turning to sizable loans. These include Oak, Graphic Scanning, USSB (Hubbard Broadcasting), STC (Comsat), Syndicated Satellite Systems, Video Satellite Systems, and Direct-Broadcast Satellite Corp.

Our research indicates that the present willingness of banks to support DBS ventures is based on the assumption that the probable size of the DBS marketplace is an ultimate determinant of the total capital that will be made available by banks to companies wishing to construct DBS systems.

This point of view has been voiced by Robert Smith of Chase Manhatten, who is Vice President responsible for lending in telecommunications, at a recent Satellite Users Conference in Denver, CO. It is likely that he voices major concerns of the banking community.

Smith feels the U.S. DBS market in 1990 will amount to between 15 and 20 million homes. A reasonable 30 per cent penetration rate provides a base of 6 million subscribers. At yearly subscriber fees amounting to $300 per household ($25/month), this provides gross revenues of $1.8 billion per year. This amount, divided among four operators, yields acceptable operating income of $200 million for each of the four DBS operators (after allowing for programming and promotion costs, and other variable costs of a total of $250 million for each operator).

This recent analysis closely follows Kalba Bowen's economic model of projected costs and revenues for a single DBS operator, in a study performed in 1980 for the National Association of Broadcasters.

Smith believes that there is room only for four DBS operators to conduct business profitably, given the evolution of the market according to these figures. He also believes that banks will be willing to support only the two strongest players in the market which come to them. Therefore, if banks believe RCA, CBS, and Western Union will build DBS systems, then it is likely there will be capital available for only one and at the most, two other potential operators who must seek financing from the banks. This translates into total capital availability of anywhere from three quarters to one and a half billion dollars for DBS operators under these conditions. The mere threat of entry into the DBS marketplace by RCA, CBS, and Western Union may act to severely restrict bank capital available to other companies.

Banks will also be reluctant to fund expensive (if all proposed DBS systems were built the cost would be over $4 billion), new, and untried satellite ventures, especially with current funding overhead for present satellite projects estimated to be about $6 billion.

For all the fuss created by the concept of DBS services, a working DBS market is still nonexistent. How will banks actually decide which of the potential players will actually attempt to create this market? Banks will not be as concerned with the sum of money sought by the potential DBS operator as much as they will care about the ultimate chances of a

given operator to become successful within the limits of a conservatively defined, four-operator market.

In order to judge how large a slice of this limited market they may safely fund, first the banks must decide which of the three major corporations with sufficient internal financial resources will actually enter the DBS market. Exhibits 4-4 to 4-5 provide an analysis of some of the major projects and plans which may impact negatively or positively on each company's willingness to actually construct DBS systems.

In addition to these factors, other circumstances more directly related to DBS service intended by each company will affect its ultimate willingness to actually construct and operate a system.

CBS, the only intended DBS broadcasters among the three, intends to operate its services exclusively on a high definition television (HDTV) basis. This high resolution service may be perceived as a special advantage over other standard DBS broadcasts, or as a disadvantage, depending upon the compatibility of HDTV broadcasts with existing user television sets.

RCA and Western Union, as common carriers, wish to consummate cash lease agreements with lessees as soon as possible in order to insure guaranteed cash flow and as a means of helping to defray construction and launch costs. Western Union has gone as far as to flatly state it will not launch DBS satellites unless it has obtained funding for the venture,

preferably through joint ventures with programming or program packaging interests.

Banks must also be convinced of the soundness of the general business plan of the DBS applicant seeking funds. Of course, all applicants have presented cash-flow statements in their filings which show the operating finances of their proposed DBS services in a favorable light. But it is possible that systematic market factors such as rapid increase in programming costs, or other inflationary factors, may radically affect these estimates. However, the banks' perception of the economic limits of the DBS market to about 1990, and the projected amount of capital required for initial construction and operation of DBS systems to serve this market, are the two most critical financial factors being considered.

One of the most vital factors in influencing any, or all, of the latter companies to build DBS systems may be the success or failure of interim DBS systems. This timing factor, whereupon early entry is made into the DBS marketplace through the route of the interim services discussed earlier will play a role in helping to influence banks to lend money to certain potential DBS operators which do not have the ability to raise money for this project solely through internal means.

An analysis of corporate and financial factors which will be applied by banks to those DBS applicants in categories 2) and 3) includes this timing element and other areas as well:

- timing (early entry into the market);
- financial risk (financial condition);
- technical competence; and
- managerial ability.

Comsat stands out as a strong candidate (as did Oak) when judged according to these factors. One of the most favorable elements for Comsat is the early entry proposed through the route of interim DBS services. (Financial risk regarding Comsat's standing as a possible recipient of loans will still be a concern because it may not be judged large enough to sustain inherently risky DBS ventures, even if it succeeds with interim DBS services.) But a joint DBS venture if Oak can be brought into it again would offer a complementarity of strengths (Oak's STV systems, converter and satellite scrambling technologies, as well as its linkages to program production married to Comsat's acknowledged expertise in satellite operation) that will convince banking institutions of its probable chances of success in a limited DBS marketplace. However, at this juncture such a joint venture exists only in the realm of speculation, though Oak had discussed the prospects with Comsat, RCA and Western Union.

The joint venture phenomenon in the U.S. among companies in the programming, telecommunications and broadcasting fields may permeate DBS developments beyond this imaginary marrying of Oak's and Comsat's DBS plans. Failing to obtain funds for their own DBS ventures, or unwilling to risk the large amounts such ventures would involve, CBS, Hubbard

Broadcasting, Video Satellite Systems, and Graphic Scanning, broadcaster-operators in their filings, may settle for up-front cash ventures with common carriers RCA and Western Union which would allow them access as transborder lessees to DBS subscribers.

A consideration of financial and corporate factors of the projected DBS marketplace is not complete without a mention of the possibility of foreign financing of DBS ventures. Specifically, the European Ariane project presents another alternative of funding, if not actual satellite delivery for U.S. DBS ventures--though the latter is not as much of a likelihood due to the extreme weight (hence, expense) of high-powered broadcasting satellites.

6.0 U.S. DBS SCENARIOS: APPEAL TO CANADIAN AUDIENCES

In this section we describe four alternative scenarios for the development of U.S. DBS services. For each scenario, the intrinsic appeal of U.S. DBS services is estimated in terms of the number of Canadian television households that would acquire these services if they were offered.

6.1 U.S. DBS Scenarios

Scenarios are for the post 1986 period. They are based on varying assumptions regarding short-term DBS developments, as well as the preceding analysis of regulatory, technical, economic, market, corporate and financial factors. The scenarios also take into account existing projections of U.S. DBS services, specifically those developed by the DBS applicants themselves, independent industry analysts, and government agencies.

It would be impossible to examine all possible variables regarding DBS development. Our intent here is to describe a set of scenarios which represent the range of U.S. DBS system and service configurations which have a reasonable chance of coming into being. The four scenarios described focus on issues which are critical to assessment of potential impact on the Canadian broadcasting/telecommunications systems:

- the corporate character and number of competing interim and post 1986 DBS systems established;
- the character and quality of programming and services offered;

- timing of entry and how markets for DBS develop;
- the type of services offered (pay or advertising supported) and the price level for the consumer;
- assumptions as to price and technical features of earth stations;
- projections of future DBS subscribership in the U.S.;
- the technical availability and general nature of appeal of U.S. DBS spillover to Canadian audiences.

The four scenarios range from the rapid and full development of competitive DBS services to a much slower start-up for both interim services and direct-to-home services. Briefly (see Exhibits 6-1 and 6-2 for summary schematic treatment), the four scenarios are:

1. rapid development of interim services with two million subscribers by 1985-86 and four full DBS services introduced with a collective subscriber base of ten million by 1990.
2. rapid development of interim DBS services which, together with other delivery technologies, depress and thus delay the start-up of full DBS services, which achieve a subscriber base of only two million by 1990.
3. development of interim DBS services primarily for delivery via terrestrial redistribution services; slow development of full DBS services, relying on high definition television (HDTV) value-added video services, reaching two million subs by 1990.

Exhibit 6-1

Characteristics of Scenarios 1 and 2

	1. Interim/Full DBS highly competitive	2. Interim DBS only highly competitive
interim DBS	• rapid development of 4 interim to SMATV and direct-to-home	• rapid development of 4-6 interim to SMATV and direct-to-home
full DBS	• 4 get financing, at least one offering common carrier services	• market barriers result in only 1-2 DBS services
programming	same as current pay, satellite to cable services; non-video and HDTV experimental services	• HDTV forced to be the major factor for full DBS
timing	develop an interim base; start-up in 1986	• interim services, others gain large part of DBS market niche; ally with SMATV; • full DBS left with small market
service price	• $20-30/mo/DBS package (3-4 channels each) for interim and full DBS servies	• $30-40/mo/full DBS package, which price is undercut by interim DBS
terminal price	• standardized addressable descrambler at rapidly declining prices	• terminal price/ convenience differential between interim and full DBS not significant
penetration	• 2 mm tv hh by 1985 • 10 mm tv hh by 1990	• 2 mm tv hh for interim DBS by 1985 • only 2 mm tv hh for full DBS by 1990

Exhibit 6-2

Characteristics of Scenarios 3 and 4

	3. Sluggish development of direct-to-home DBS	4. DBS highly competitive in pay-TV
interim DBS	• serve mainly terrest. systems few direct-to-home customers	• allies with SMATV and makes inroads to cable market
full DBS	• 1-2 only, after seeing weakness of interim DBS direct-to-home	• 2-3 full DBS carrying HBO and other established pay-TV services as least expensive delivery mode
programming	• mix of existing pay-TV/cable services and HDTV	• pay services are paramount "commodity" with lowest cost most important factor
timing	• full DBS delayed to 87-88 until economics improve and HDTV believed to be closer	• full DBS starts in 1986
service price	• interim at $20-30/mo.	• full DBS priced low to gain access to market
terminal price	• TVRO's not drop below $800 before '86	• heavy competition among earth sta. manuf. who price low to establish market share
penetration	• interim DBS 500 m subs. by 85-86; full DBS, 2 mm by 1990	• interim DBS gains 3 mm subs. by 1985 • full DBS gains 15 mm subs, a third at expense of cable by 1990

4. rapid development of interim and full DBS services, particularly for pay-tv; because of lower price/higher quality combination, significant inroads are made in cable markets; results in three million interim DBS subs and 15 million by 1990.

6.1.1 Scenario One

This scenario assumes a synergistic relationship between short and mid-term DBS developments...in a market environment free of serious economic, regulatory, technical or competitive constraints. This scenario begins with the assumption that the Federal Communications Commission (FCC) maintains its open-skies approach to satellite regulation by providing interim authorization and construction permits to all of the DBS applicants by the end of 1982. Economic conditions in the U.S. are assumed to improve; DBS licensees are able to obtain the financing necessary to begin construction.

A further assumption is that USTV, Focus and Comsat all* gain significant experience by initiating interim DBS services by the end of 1983, using Ku-band transponders on Canadian and U.S. domestic fixed satellites. These companies will exploit a variety of terrestrial television distribution technologies, such as over the air subscription television (STV), multi-point distribution systems (MDS) and satellite master antenna television (SMATV). They will also successfully foster the production and acquisition of ground stations.

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* Oak has recently advised Telesat of its decision not to lease Anik C transponder capacity; recent experience of unexpected slow growth in the American subscription television market has persuaded Oak to postpone entry into the direct-to-home satellite business.

By the end of 1983, basic cable penetration in the U.S. will remain under 35 per cent of households, while over 60 per cent of television households will have access to cable service. Interim DBS services will combine with multi-channel MDS and STV systems to satisfy the demand for pay television services. The programming provided in the interim services will be similar to that currently offered on STV systems, with multi-channel capacity to expand each aspect of the service to a full channel. Many of the existing basic cable services will also turn to DBS as a means to increase the audience for their advertiser-supported programs. These services will be bundled together and marketed as a single satellite-delivered pay television package. Overall, interim DBS services will provide up to four individual channels offering feature films, sports, news and cultural programming on a subscription basis.

This scenario further assumes that Canadian manufacturers such as SED Systems will play a larger role in supplying the 1.2 meter or larger earth stations needed to capture the weaker-than-DBS signals from 12/14 Ghz fixed satellites. Spurred on by demand for earth stations in Canada, for the purpose of receiving pay television signals from Anik C, these companies will be in a good position to increase production, rapidly dropping unit costs. This early success will also allow these Canadian companies to position themselves to meet the growing demand in the U.S. for equipment to receive USTV's signals from Anik C-2 and Comsat's and Focus' programming off U.S. Ku-band satellites. A few of the existing U.S. satellite earth station manufacturers will also enter this market, with Japanese companies waiting until a larger demand justifies volume production. Many technical problems will also be solved in this

interim period, and such features as satellite addressability and tunable/steerable antennas will be developed and refined.

In this scenario, we further assume that the U.S. emerges from the 1983 RARC without any serious constraints on availability of frequencies or orbital positions to implement proposed services. The U.S. DBS licensees are therefore free to launch their satellites as scheduled, and to begin operations by the end of 1986. These full DBS services will begin by building on the base of the existing pool of two meter earth stations, which have been equipped to receive signals in the Ku-band. Subscriber equipment will be converted for reception of the new services over a short period of time, increasing the number of program channels each subscriber will have available.

The technical problem of reception from separate satellites will have been solved by this time, and therefore most DBS subscribers will have the option of paying monthly fees to a number of operators providing services independently offered through a single standardized addressable descrambler unit. Resolution of the technical problem will also increase the likelihood that a number of separate DBS operations will be financially viable, and that a large number of DBS channels will become available.

The 'output' of this scenario is four or more separate DBS systems becoming operational by the end of 1986, offering subscribers twelve or more channels of television service. At least one of these systems will be operated on a common carrier basis, offering transponder capacity

to programmers on a lease basis. (Overall, the programming provided on these services will be delivered via satellite to cable system headends.) In addition, experiments with non-video and HDTV services will be initiated by some of these operators to enhance the appeal of their services. Most program services will be scrambled, and offered on a subscription basis through common addressable descrambler units. The price for the services will be comparable to that charged for STV services offered today ($20-30 per month for up to four channels of pay television service).

The major competition for the DBS services will be the cable industry, which will have reached a 40 per cent penetration level by the end of 1986. Cable systems in many urban areas will still be under construction by this time, and many rural areas will still be without access to any form of pay television service. In this environment, overall DBS subscribership will reach 10 million television households by the end of the decade. As these services attract a large enough pool of viewers, the prospects for advertiser support will increase. These DBS services will also become a more significant force in the program acquisition marketplace, eventually providing a large enough base to support the original production of programming.

In terms of spillover, this scenario assumes that little emphasis will be placed by DBS operators on containing their signals within national boundaries. While initially the DBS services concentrate their marketing efforts on the U.S., both Canada and Mexico will be recognized as potential sources of additional subscriber revenues. The programming

offered will be particularly attractive to households without access to cable service, or to households served by systems that have yet to expand into satellite and pay television programming. The DBS companies will seek to use the inter-governmental agreements reached in 1982 as precedents for another exchange of letters authorizing them to market their services in Canada. They will also attempt to establish agreements with Canadian cable operators to carry the DBS-delivered program services.

To the extent that subscribers are obtained in Canada and Mexico, a multi-national market for advertising will develop, which will be of particular interest to major advertisers distributing their product lines throughout North America. Companies such as Proctor and Gamble or General Motors, which currently place common advertisements on both U.S. and Canadian television stations, may find economies in using DBS services with subscribers in both countries as a multi-national advertising medium.

6.1.2 Scenario Two

This scenario assumes that, in the short-term, interim DBS services are highly successful at capturing non-cabled markets and that this results in a proliferation of home earth stations capable of receiving the weaker Ku band signals. Other competing terrestrial pay television delivery systems are also assumed to continue their rapid growth, with the cable industry able to reach most of the major markets with a comprehensive service package by 1986. While no significant regulatory or technical barriers to DBS development emerge under this scenario, a combination of continuing poor business conditions and the high cost of programming, servicing and billing persuade non-diversified corporate interests to vacate the DBS arena.

The U.S./Canadian joint venture, USTV, is assumed to be able to successfully launch its interim service using Anik C, largely in the interest of stimulating demand for hardware. Development of ground stations by Canadian earth station manufacturers does lead to a somewhat sparse, but fairly uniform hardware base in the U.S. and Canada. STC is also assumed to successfully launch an interim version of its DBS service, using lower power Ku-band transponders.

The Ku-band operators will ally themselves with the SMATV business; SMATV service with multi-pay becomes feasible in complexes as small as 10 units. Interim DBS and its SMATV ally develop a pay television subscriber base of two million by the end of 1985.

This scenario is also based on the assumption that terrestrial pay television delivery systems, including cable, STV, MDS, and low power television will have had the opportunity to establish firm positions in the markets they are able to serve. High-power DBS will be unable to dislodge any of them when it becomes operational.

Cable availability and subscribership will continue to grow at the rapid pace projected by Paul Kagan in September 1981:

Year End Counts (millions)	1984	1987	1990
Total tv households	87	92	98
Passed by Cable	66	78	82
Basic Subscribers	38	49	54

Terrestrial over-the-air (OTA) pay television services increase from their present two million household level to a peak of some three million in 1984, after which they hold steady as cable growth offsets the benefits of multi-channel services via MDS and, to a lesser extent, STV. There is little overlap between cable and OTA subscribership. ABC's HomeView service linking broadcasts of pay television programming to home video recorders is also assumed to be successful under this scenario, thus increasing OTA subscriber counts.

The 'output' of this scenario is that one or more of the interim DBS operators concludes that the additional reach of the high-power transponders does not justify their additional cost. Service is maintained with 30-watt transponders and efforts are made to undercut the price at which 200-watt services are being offered. The full-service DBS systems are forced to develop programming which is significantly different from that available through other pay television modes. High definition television becomes a major factor as the high powered systems seek to differentiate themselves in the competitive marketplace. The high cost of this original programming results in only the largest of the DBS applicants entering the market.

High-power DBS is, therefore, left with only those Ku-band customers who can be transferred to it, plus those single-family and less-then-ten-unit dwellings that have not been reached by one of the earlier technologies. This leaves a market of less than ten million homes, perhaps significantly less depending upon how far the price of Ku-band receiving equipment can be brought down. High-power DBS will penetrate some 20 per cent of this market by 1990, perhaps up to two million homes.

6.1.3 Scenario Three

This scenario assumes that the development of terrestrial television broadcast modes, such as MDS and STV and SMATV systems, becomes a priority, as companies race to utilize the least costly means of offering pay services to uncabled markets and to those markets served by 12-channel systems. The continued deregulation of terrestrial pay systems also spurs growth. In the short-term, Ku-transponders receive a small degree of use by programmers, but only by those companies taking advantage of terrestrial modes of redistribution. In consequence, the market for household ground stations never actually benefits from interim DBS developments.

Most estimates of DBS receiver costs have been derived from the nine DBS filings made last year with the FCC; the estimates vary from $350 to $500. However, these costs are for stations with dishes of one meter or less in diameter, and they assume some advance in technology at the approximate time of service start-up, probably after 1985. It must not be forgotten that the group of satellites identified in section 4-- are not true DBS satellites. With the exception of the higher-power Advanced Westar all are capable of EIRPs (Effective Isotropic Radiating Power) in the mid to upper 40 dBW range. This would necessitate costs associated with the construction of home receiver stations in excess of what most households would be willing to pay for three channels of television.

This argues that the costs of 14/12 Ghz earth stations will drop below $800 during the 1982-85 time period. The resulting market of several million people in uncabled areas, households who are unable to receive

clear television signals or to receive signals at all, who make up the primary market for DBS, will be scattered very widely. The high costs of installation and maintenance will discourage marketing efforts by anyone other than a DBS operator.

It will be difficult for a company offering a new form of television technology to absorb high multiple entry costs, especially when a profit is not likely for several years and when it must compete against established entities such as cable and STV operators. Costs of programming will also continue to rise as a result of higher production costs and because of increased competition for it among pay services. Prospective operators of interim DBS services will be plagued by a sense of insecurity relative to the unresolved picture of real-DBS entrants after 1985. The possibility of new and fierce competition after a few years of operating without a profit should be a last, strong deterrent to many companies, even to those who filed to construct DBS satellites themselves. GTE, Western Union, STC, RCA and others will keep their motives concealed until the last minute. Only a few of these will enter their "true," high-powered DBS services into the jungle of competing television services, after witnessing a bleak reception of quasi DBS services through mid-decade.

6.1.4 Scenario Four

This scenario assumes that cable is burdened with significant non-productive costs for local origination, institutional services, etc. Further, it is assumed that regulatory constraints prevent cable from competing aggressively in the pure pay television arena, which continues

to be the only major attraction among all the new video services. The cable delivery mode for pay services, in other words, will be used to subsidize a number of capabilities and services for which there is little current demand and for which demand may not develop. Competitors not carrying such burdens may be in a position to undercut cable's price, especially in multiple unit dwellings, and cable's share of the overall pay television subscriber-base falls.

The consequences are that Cable systems make desired pay services available only in combination with less desired services (either pay or super-basic), and total costs rise to a level that is considered unreasonable by subscribers who just want pay television. This pricing problem becomes most acute in multiple-unit dwellings, where alternative pay delivery systems share significant revenues with multiple-unit landlords.

With cable weakened in this way, interim Ku-band DBS services begin in 1983 and quickly form alliances with the SMATV business. Together they pick off multiple-unit complexes not yet reached by cable and begin to take away some complexes from cable on the basis of price. Exclusive access agreements turn out to be uneconomic to enforce, so the competition is generally settled by who offers the best financial deal to the landlord or managing agent. The lean, flexible Ku/SMATV operator generally wins. Multichannel MDS is competitive in this scenario and well-entrenched STV services can also hold their own in this free-market competition for multiple-unit subscribers.

A wide-open commodity-type market develops in pay television distribution, and price assumes paramount importance. DBS companies demonstrates deep pockets, and HBO decides to permit its service to be carried on DBS, thus grafting HBO's buying power onto DBS (This may follow some legal battle to force HBO to make the step). The result is three million interim DBS subscribers by 1985-86 and 15 million byu 1990.

Cable slims down and sheds some deficit services after long wrangles with its franchising authorities, but it does not regain its earlier momentum. The other distribution technolgoies position themselves as pure pay television, and burden cable with an image as a hodgepodge with limited, unique capabilities. By this time, the telcos have begun to compete effectively with cable on security and transaction services, and the cable industry begins a battle for survival.

7.0 ECONOMIC IMPACT OF U.S. DBS SCENARIOS

Relative to each of the scenarios reviewed in Section 6, the economic impact of American DBS services can now be projected. In this section, then, we set out assumptions that underlie our analysis of how the U.S. services will actually be introduced in Canada, relate these to the four U.S. DBS scenarios, and project specific impacts based on the 1987 broadcasting environment assumptions developed in Section 3.

7.1 Assumptions re U.S. DBS Entry

In order to relate U.S. DBS scenarios to development of the Canadian market, assumptions in the following categories must be developed:

- regulatory/legal barriers to the entry of U.S. DBS services;
- timing of full powered Canadian DBS service market entry;
- most likely market segments affected by U.S. DBS;
- most likely classes of services affected.

7.1.1 Regulatory/Legal Barriers

In order to project the relative "worst case" scenarios for the Canadian broadcasting/telecommunications environment, the constraints to U.S. DBS services in Canada are those that relate to the marketplace factors, and not to regulation. The only major exception to this is assumed denial of any cable application to carry U.S. pay television or subscription based American DBS services that contain pay television services. This single restriction is assumed, since access to cable by existing U.S. pay services (like HBO) would have such a major,

potentially detrimental impact on Canadian pay television services that the recently licensed Canadian services might not even be able to establish themselves domestically at all.

More specifically, it is assumed that interim and full DBS services will be permitted to be sold on a subscription basis to Canadian subscribers either on a direct-to-home basis or direct-to-mini terrestrial (non-licensed) cable systems* and SMATV. In the latter case, it is assumed that a legal form of MATV is developed which enables it to carry and retail American DBS subscription services, while, as stated above, cable operators are not. Correspondingly, it is assumed that MATV operators and mini terrestrial cable systems are permitted to carry the U.S. DBS services that are unscrambled. This division between cable and MATV operators is arbitrary, since both are subject to CRTC regulation. However, these assumptions permit maximum DBS impact to be estimated without assuming complete deregulation of cable.

7.1.2 Canadian DBS Entry

One critical assumption affecting the penetration of U.S. DBS services in Canadian markets concerns the likely Canadian DBS competition that will face U.S. DBS services. We assume that Anik C provides Canadian program packagers with an interim DBS vehicle via a half transponder at first, graduating to a full transponder in 2-3 years. However, our U.S. DBS projections are based on a full Canadian DBS system being introduced only as a replacement to Anik C--i.e., in the post 1990 period. In effect, then, this leaves the Canadian market open for full DBS services from American sources for a three to five year period after 1986.

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* These mini terrestrial systems are those which small clusters of neighbours (single family or multiple unit dwellings in close proximity to each other) organize around a common single receiver with descramblers located in the individual households.

7.1.3 Market Segments Affected

The Canadian broadcasting and program packaging services affected will parallel American services that find themselves in competition with U.S. DBS. If U.S. DBS services can effectively compete against the weaker elements of the cable system in America, for example, then the same U.S. DBS services will also compete successfully in the Canadian market. DBS is, however, likely to have its severest impact in the 1.5 to 1.6 million television households presently underserved. These markets will be prime direct-to-home or direct-to-small community distribution, for which DBS is specifically designed.

Five market segments are postulated for analysis, three to cover this underserved market, and two to categorize the cable subscriber and "passed but not subscribing" markets. The market segments have been defined so that the relative competitiveness of DBS should decline in the order of the following five market segments:

1. rural remote (direct reception);
2. mini terrestrial (unlicensed) cable;
3. served by newly licensed cable systems, or rebroadcast;
4. passed but not cabled and receiving DBS directly or via SMATV;
5. cable subscribers.

Exhibit 7-1 shows how many television households there are in these market segments in 1982, and projects them to 1987. The underserved market diminishes over time as the smaller communities are cabled.

Exhibit 7-1

Projection for Canadian Market Segments Re: DBS Services

Market Segment	TV Households(000) 1982	1985	1987	1990
1. Rural remote (direct reception)	410	397	390	310
2. Mini-terrestrial (unlicensed) cable	550	525	510	410
3. Served by newly licensed cable systems, or rebroadcast	700	667	650	530
4. Passed but not cabled and receiving DBS directly or via SMATV	1768	1770	1680	1020
5. Cable subscribers (% of total households)	4548(57)	5040(60)	5420(63)	6810(75)
TV Households	7976	8400	8650	9080
Underserved market total	1660	1590	1550	1250

Notes:

1. Previous studies (eg., Telesat, Study of the Use of Anik C for Direct-to-home and Community Television Distribution Services) have used a figure of 72,000 as the number of tv households with no broadcasting alternative. However, the number of tv households that may have one or even two off-air services, but who can only be served economically on a direct-to-home basis, is a few hundred thousand. The specific number is a residual of the total underserved market less categories No. 1 and No. 2. The decline over the years is a projected long term trend toward urbanisation.

2. Derived from estimates from CRTC Statistics on Service Availability to Communities in Remote and Rural Areas--i.e., 21 to 300 households. Households in the communities in the second category can potentially be served by use of small community reception systems with distribution among households done privately on a non-commercial basis. The number declines over the years because some community systems switch to commercial operations but fall into category No. 3.

3. This market basically represents the Cancom market as discussed in Section 3. This market shrinks as more conventionally cabled franchises expand to incorporate nearby rural areas.

7.1.4 Classes of Service Affected

The leading service category affected is assumed to be the pay television premium channel services, which have just been licensed in Canada. DBS will offer entertainment oriented, subscription based video services. U.S. DBS service packages are likely to include two to three pay like services and two to three advertising based services. Despite the existence of television commercials on some of the programming offered, the DBS package will be marketed for a monthly subscription fee in the same manner as the now conventional U.S. pay services.

Because DBS services will come in packages, it is assumed that there will be no "basic" service consisting of advertising and publicly sponsored channels only. This will sharply differentiate DBS from cable television or even Cancom, which must provide a basic service package to which other tiers of subscription and advertising supported services may be added, with each tier involving an incremental cost to subscribers. Clearly, assuming price competitiveness, DBS will thus be nicely positioned to sell against existing distribution modes.

There will be Canadian television viewers equipped with earth stations who will not be DBS package subscribers, but who will be able to pick up the advertising-based channels that are unscrambled. At present there are dozens of U.S. television services on the C band, including unscrambled pay television services, that are being received by owners of suitable 6/4 Ghz TVROs. Thus, any further advertising supported services that are distributed by a DBS in unscrambled form would be available to this market, provided viewers added suitable frequency adapters to their 6/4 earth station.

7.2 Assumptions re Analysis of U.S. DBS Impact

In order to anticipate the economic impact of projections for each of the American DBS scenarios, we developed assumptions relative to relationships between

- new DBS services and shifts in viewing share from existing (or projected) services;
- viewing shares and advertising revenues;
- broadcaster revenues and television production expenditures;
- Canadian pay television services and program expenditures;

7.2.1 Shifts in Viewing Share

It is assumed that Canadian households subscribing to American DBS will exhibit viewing habits comparable to U.S. homes with pay cable. In these homes (see Section 3), pay television attracts an average annual viewing share of 13 per cent over the full broadcasting day (7:00 to 1:00 a.m.), although there are important seasonal variations as described in Section 2. Thus, it is estimated that the pay television channels in a U.S. DBS package would divert about 13 per cent of the viewing of the subscribing audience in Canada from other channels.

The viewing diversion in homes subscribing to U.S. DBS is somewhat increased by other, advertising supported satellite services, also presumably available in the DBS packages. Given the U.S. viewing patterns for the satellite to cable advertising supported services discussed in Section 3, it is estimated that the diversion factor for the advertising supported channels in the DBS package is about only one per cent. This means that a total of 14 per cent of viewer diversion from other services would be caused by subscription to a DBS package.

7.2.2 Viewing Shares/Advertising Revenues

Despite the relative sustained strength of broadcaster revenues in the recently experienced period of viewing fragmentation, it cannot be assumed that rate increases will continue to make up for audience losses. Advertising supported broadcasters will become less efficient for all media buyers and some, like the multi-nationals, will be more favourably disposed to rely on spillover advertising that is encouraged by global marketing approaches.

It is therefore assumed that each percentage point of viewing loss generated by American DBS services will lead to a half a percentage drop in advertising revenue. This is an arbitrary assumption, but is derived from two judgements: first, there will be some advertising loss; second, the loss will not be directly proportional to audience share loss.

7.2.3 Broadcaster Revenues/Television Programming Expenditures

Although broadcasters have recently reduced the proportionate size of their expenditures on Canadian versus foreign programming, expenditures on Canadian programming have remained constant over the last few years when expressed as a proportion of advertising revenues. In 1977, 1978, 1979, this amounted to approximately 30 per cent of $331 million, $403 million, and $472 million, respectively. For the purposes of this analysis, rising costs of procured programming (accruing to competition from pay television operators) and other factors are assumed to lead to a slight, say two per cent, reduction in this proportion by 1986-87--i.e., 28 per cent of advertising revenues.

7.2.4 Pay Television Revenues/Programming Expenditures

Since the DBS multi-pay package represents an essentially exclusive option to Canadian consumers, they will not likely subscribe to CRTC licensed pay television as well as the U.S. DBS services. Therefore, it is assumed that every U.S. DBS subscriber lowers the number of Canadian pay television subscribers proportionately. Taking multi-pay television households into account (see Section 3 for multi-pay penetration), each U.S. DBS subscriber represents a projected loss of 1.15 Canadian pay television service subscriptions.

For every U.S. DBS subscriber in Canada, then, the total subscription fees lost would total $17.05/mo. The Canadian program production industry will lose about $4.20/sub/month of funding from the pay television operator's average per subscriber per month revenue of $10.40. Diversion of Canadian pay television subscribers also means that cable companies, Cancom, or other pay television retailer/wholesaler would lose revenues at an average of $6.50 per subscriber per month.*

For the purpose of this study we are assuming that a subscriber to Cancom's "basic" service will not disconnect to subscribe to U.S. DBS services. Cancom will be providing a set of conventional U.S. and Canadian services which have a strong programming appeal to Canadian television viewers. However, as a wholesaler of Canadian pay television services, Cancom would lose potential revenue in proportion to the number of U.S. DBS subscribers in Cancom's market.

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* These are composite figures based on the pay operators's revenue from the subscription fee structure planned for 1983 in Canada (see Section 3), as well as assumptions about multi pay television households.

7.3 Impact for Each U.S. DBS Scenario

The impact for each U.S. DBS scenario on the Canadian broadcasting environment was determined in two stages, to cover the interim and full DBS periods. The analytical steps are as follows:

1. begin by applying the "10 per cent rule" to the projected market penetration of U.S. interim and full DBS services for each DBS scenario--e.g., 10 million DBS subscribers in U.S. means one million in Canada;

2. distribute the presumed Canadian market penetration among the five market segments identified above, taking into account the expected competition from Canadian service providers and distribution systems;

3. determine audience viewership diversion, advertising loss, and decrease in Canadian pay television revenue according to the relationship described in 7.2.

This procedure is relatively crude and specific figures should be interpreted with considerable caution, particularly since DOC's urban demand study has not yet been completed. The underserved demand information that is now available was assessed against the estimates of the market penetration of U.S. DBS services. However, the rural demand survey conclusions do not estimate the rate or level of subscription based service penetration when added to the cost of acquiring a TVRO. The conclusions regarding the high penetration of television services in underserved markets, as shown in Exhibit 7-2, are founded on basic cable services and rates or different costs of the TVRO, but not both together. Nor are they estimates of the penetration of pay television like services. Therefore, these conclusions tempered with existing knowledge about premium, subscription-based services in the U.S. and as projected for Canada.

We have relied on the four estimates of U.S. DBS success---as depicted by the four scenarios of Section 5--to establish parameters for

Exhibit 7-2

Market Penetration Estimates: Rural Demand Survey

Year following service introduction	Projected No. of rural HHs Subscribing* Under Alternative Assumptions (000)		
	$20/Sub/Mo.	$400 TVRO	$800 TVRO
Year 1	192	298	151
Year 2	218	360	210
Year 3	184	323	220
Year 4	120	220	171
Year 5	65	124	105
Years 6-11	59	116	104
	838	1,441	961

Source: Tables 34 and 35 of Demand Research Consultants Report, op. cit.

*No projection was made of the number of subs willing to pay $20.00/mo. and pay for the cost of a TVRO (whether at $400 or $800).

potential penetration into Canadian markets. Pay television penetration results in the U.S. and as projected in Canada, form an additional governor on the estimate of demand for U.S. DBS services in each market segment addressed.

A summary of the results of the market penetration calculations for each U.S. DBS scenario is shown on Exhibit 7-3 (interim DBS) and Exhibit 7-4 (full DBS). The impacts on pay television and program production revenues are projected in Exhibit 7-5. Each scenario is discussed in turn below.

7.3.1 Scenario One: Rapid Development of Interim and Full DBS (see Exhibit 7-6)

This scenario would mean early competition from U.S. interim DBS in Canadian markets. Canadian pay television services via Anik C and the Cancom package are also able to establish themselves over the next three to four years in the rural/remote markets. Because of the $1,000 plus cost of terminals, strictly direct-to-home market penetration is still quite low; unlicensed, small community cabling and the Cancom market develop quite rapidly.

Interim U.S. DBS services gain a good foothold in the underserved Canadian market. Their combined interim DBS sales are 275,000 subscribers by 1985, of which 125,000 are in the rural and remote markets. Their penetration of those markets is less than proportional to the U.S. market (i.e. about 8 per cent rather than 10 per cent) because of three factors: first, they are concentrating sales efforts in their own home markets (the U.S.); second, Canadian services have a higher overall visibility in the Canadian market, a consideration which also bears on rural/remote markets; third, Cancom has an 18 month head start in the marketing of its new services to the underserved communities, including one Canadian pay television service.

Exhibit 7-3

Estimated Market Penetration of Interim U.S. DBS
in Five Canadian Market Segments
(000)

Market Segment[1] (000)	Scenario One: Subs	%	Scenario Two: Subs	%	Scenario Three: Subs	%	Scenario Four: Subs	%
1. rural/remote (direct reception) 397 HHs	25	6	25	6	10	3	25	6
2. unlicensed mini terrestrial 525 HHs	50	10	50	10	25	5	50	10
3. licensed small cable systems or SMATV 667 HHs	50	7	50	7	15	2	50	10
4. HHS passed by cable but not subscribing-- receiving DBS directly or via SMATV 1,770 HHs	50	3	50	3	-	0	50	3
5. cable subs. 5,040 HHs	100	2	100	2	-	-	200	4
Totals	275		275		50		375	

1. Market segment figures are derived from 1985 projections itemized on Exhibit 7-1.

Exhibit 7-4

Estimated Market Penetration of Full U.S. DBS
in Five Canadian Market Segments

Market Segment (000)	Scenario One		Scenario Two		Scenario Three		Scenario Four	
	Subs	%	Subs	%	Subs	%	Subs	%
1. rural/remote (direct reception) 310 HHs	180	58	50	16	25	8	180	58
2. unlicensed mini terrestrial 410 HHs	150	37	50	12	35	9	160	39
3. licensed small cable systems or SMATV 530 HHs	200	38	65	12	45	8	210	40
4. HHS passed by cable but not subscribing-- receiving DBS directly or via SMATV 1,017 HHs	200	20	75	7	25	2	200	20
5. cable subs. 6,810 HHs	370	5	160	2	75	1	800	12
Totals	1,100		400		200		1,550	

Exhibit 7-5

Annual Impact of Interim and Full DBS on
Pay Revenues and Canadian Program Production Expenditures

	U.S. DBS Scenarios			
Potential Revenue Loss by Component of pay-tv industry [1]	Scenario #1	Scenario #2	Scenario #3	Scenario #4
Interim DBS (subs.) (1985-86)	275,000	275,000	50,000	375,000
		($000,000)		
Program suppliers	$13.9	13.9	2.5	18.9
Pay television operators	20.3	20.3	3.7	27.7
Cable/Cancom retailer/ wholesaler	21.5	21.5	3.9	29.3
Total	55.7	55.7	10.1	75.9
Full DBS (subs.) (1990)	1,100,000	400,000	200,000	1,550,000
		($000,000)		
Program suppliers	$55.4	20.2	10.1	78.1
Pay television operators	81.2	29.5	14.8	114.4
Cable/Cancom retailer wholesaler	85.8	31.2	15.6	120.9
Total	222.4	80.9	40.5	313.4

1. Based on the following allocation

- program suppliers: $4.20/sub/mo
- pay television operators: $6.15/sub/mo
- cable/Cancom retailer/wholesaler: $6.50/sub/mo

Total: $16.85

Exhibit 7-6

U.S. DBS Market Penetration: Scenario #1

	Interim DBS - 1985 (000)			Full DBS - 1990 (000)	
Market Segments	U.S. DBS subscriptions	Pay-tv via Anik C, Cancom or cable	Market Segments	U.S. DBS subscriptions	Pay-tv via Anik C or Cancom or cable
1. Rural/remote (397 HHs)	25	25	310 HHs [1]	180	5
2. Mini terrestrial (525 HHs)	50	50	410 HHs [2]	150	35
3. Licensed small cable/rebroad/ SMATV (667 HHs)	50	50	530 HHs [2]	200	40
4. HHs passed but not subscribing (1,770 HHs)	50	-	1,017 HHs	200	-
5. Cable subs (5,040 HHs)	100	2	6,810 HHs	370	2,695
Total Subscribers	275	2,293		1,100	2,775

Notes:
1. Expected subscription-based service penetration at saturation is 60 per cent of total number of potential households, which is higher than the expected pay television via cable saturating level of cable subscriber households only.
2. Expected potential saturation is 45 per cent, i.e., equivalent to the pay television saturation level of cable subscribers.

Because of the growing popularity of 'unauthorized' MATV carriage of existing U.S. satellite services, it is assumed that interim U.S. DBS services will sell into Canadian cable markets (cable subscribers and non subscribing households passed by cable). The number of subscribers would probably be in the low six figure range, estimated here at 100 thousand (two per cent) among cable subscribers and 50 thousand (2-3 per cent) in the homes--passed-but-not-subscribing market.

U.S. DBS' 275,000 interim DBS Canadian subscribers will mean that a relatively minor diversion of viewership will occur. On the pay television front the situation could be rather more serious, since it is assumed that there would be 275,000 fewer pay television subscribers.

These projections have a total economic impact of $56 million. Pay television operator revenues would decline by $34.2 million, which translates into an approximate loss of funds for program production of $13.9 million. Cable operators would lose 150,000 pay subscribers or about $9.75 million per annum in revenues as their proportion of the pay television subscription fee. This potential loss includes the 50,000 non-cable subscribers, who lie in the homes passed-but-not-cabled market segment. These television viewers would have had to subscribe to cable to get pay television; thus cable would lose potential revenue on both counts (although only the pay television part is counted in this analysis). In the underserved markets, new mini pay television operators, Cancom, and earth station distributers/installers would lose their share of pay television revenue--i.e. $8.1. million.

The Scenario One depiction of the situation in eight to ten years is still less happy. By 1990, when the full U.S. DBS services have been in operation for three to four years, they will have expanded the subscriber base in Canada to over a million homes--i.e., over 10 per cent of their projected U.S. market. Given that the only Canadian competition remains Cancom and Anik C delivered pay services the full U.S. DBS services would dominate the remote/rural direct-to-home market, in Canada, perhaps causing many of the pay television subscribers to interim Canadian DBS services to switch to full U.S. DBS services. Canadian pay services would lose market share to the full U.S. DBS services in communities served by unlicensed, mini terrestrial systems. Further, the viability of these mini terrestrial systems, as well as small operations re-broadcasting Cancom signals, may be severely undermined by the loss of pay television revenue.

A major portion of the U.S. DBS service market, however, would be cabled areas, relative to both direct-to-home and direct-to-MATV markets. The result would be the loss of several kinds of pay television and even basic cable subscribers and potential subscribers: those that would simply prefer U.S. DBS services even if they had to install their own roof top dish; apartment building managers and other MATV system operators who could amortize the cost of satellite reception equipment; cable subscribers in areas where new service offerings and marketing were not competitive, particularly areas served by small operators.

In 1990, the impact on viewing share is expected to be diversion of only 1.5 per cent, which means $2.1 million fewer expenditures on Canadian programming than would be if there were no U.S. DBS penetration. However, pay television remains the component of the Canadian broadcasting system that is most critically affected. The pay television impact could be about $222 million in lost revenues, assuming there would be approximately 1.1 million fewer pay television subscribers, or $55 million lost to Canadian production per year.

7.3.2 Scenario Two: Interim DBS Highly Competitive, Limited Success for U.S. Full DBS Services (see Exhibit 7-7)

In this scenario, interim DBS services achieve penetration levels similar to what they would have in Scenario One by the time full DBS services are launched. However, subsequent to the latter's entry into the market, the interim services sustain and even enhance their overall market position. For Canada, this means that U.S. DBS services are not able to increase their market share in Canada significantly after reaching a peak level of interim DBS penetration.

By 1990, then, the economic impact of U.S. DBS will not be comparable with the impact in Scenario One. If the overall Canadian market does not exceed 10 per cent of the U.S. market, then there could be about 200,000 subscribers in Canada who are additional to the 200,000 already subscribing to the interim DBS services from the U.S. Those new subscribers would likely be accessing an HDTV service distributed via DBS, for which there may not be any direct Canadian competition. Again, the impact will mainly be felt by Canadian pay television; 400,000 U.S.

Exhibit 7-7

U.S. DBS Market Penetration: Scenario #2

Market Segments	Interim DBS - 1985 (000) U.S. DBS subscriptions	Pay-tv via Anik C, Cancom or cable	Market Segments	Full DBS - 1990 (000) U.S. DBS subscriptions	Pay-tv via Anik C, Cancom or cable
1. Rural/remote (397 HHs)	25	25	310 HHs [1]	50	25
2. Mini terrestrial (525 HHs)	50	50	410 HHs [2]	50	50
3. Licensed small cable/rebroad/ SMATV (667 HHs)	50	-	530 HHs [2]	65	65
4. HHs passed but not subscribing (1,770 HHs)	50	-	1,017 HHs [3]	175	-
5. Cable subs (5,040 HHs)	100	2,168	6,810 HHs [3]	160	2,905
Total Subscribers	275	2,293		400	3,045

Notes:
1. Saturation of subscription-based services is about 24 per cent of television households, about half that projected for pay television as a discretionary cable service.
2. Expected saturation is 25 per cent equivalent to the projected maturity (45 per cent) penetration of pay on the projected maturity (55 per cent) market penetration of Cancom.
3. Would likely be primarily HDTV subscribers.

DBS subscribers equates to a potential reduction in gross revenues of $81 mm and a loss to the Canadian program production industry of $20 million.

Qualitatively, this scenario means that Canadian services share the market about equally in the underserved rural/remote market segments, which will have reached a maturity by 1990. While such Canadian services hold their own, these markets could become a real battle ground between the Canadian pay television and Cancom packages and the U.S. DBS services.

7.3.3 Scenario Three: Slow Development of Direct-to-Home DBS (see Exhibit 7-8)

Limited penetration of the direct-to-home market on both sides of the border is caused by subscriber resistance to high TVRO costs, and by difficulties experienced in marketing and installing in geographically dispersed households. By 1990, the one or two U.S. DBS services in operation will reach a greater number of households that can be feasibly served only on a direct-to-home basis than will be reached by Canadian pay television companies. The total number of U.S. DBS subscribers in Canada would be about 225,000--that is, just over 10 per cent of what their numbers would be in the U.S. Therefore, U.S. DBS delivered advertising supported services will make only a small dent in the

Exhibit 7-8

U.S. DBS Market Penetration: Scenario #3

	Interim DBS - 1985 (000)			Full DBS - 1990 (000)	
Market Segments	U.S. DBS subscriptions	Pay-tv via Anik C, Cancom or cable	Market Segments	U.S. DBS subscriptions	Pay-tv via Anik C, Cancom or cable
1. Rural/remote	10	20	310 HHs[1]	25	10
2. Mini terrestrial (525 HHs)	25	25	410 HHs[1]	35	35
3. Licensed small cable/rebroad/ SMATV (667 HHs)	15	50	530 HHs[1]	40	90
4. HHs passed but not subscribing (1,770 HHs)	-	-	1,017 HHs[2]	25	-
5. Cable subs (5,040 HHs)	-	2,268	6,810 HHs[2]	75	2,990
Total Subscribers	50	2,353		200	3,125

Notes: 1. Expected saturation as 11 per cent, 17 percent, and 25 per cent for each market segment consecutively; the greater the potential for community based distribution systems, the higher the expected penetration levels.

2. Primarily HDTV subscribers.

Canadian marketplace. The loss of pay subscribers to U.S. services means a reduced commitment of funds to this sector by approximately $40 mm in 1990.

While the U.S. DBS services achieve no major breakthrough on either side of the border, this means that Canadian interim/long term DBS services encounter the same market/economic barriers. Thus, while Cancom and pay television delivered by Anik C can survive U.S. DBS, the relatively small market for DBS forces these services to lower their expectations relative to the number of subscription-based services that can be sold, which could even have an impact on Cancom's basic package of conventional tv services.

7.3.4 Scenario Four: DBS Highly Competitive with Cable Television (see Exhibit 7-9)

In this scenario, Canadian regulatory burdens on cable television expose this sector to very serious competition from direct-to-home satellite services. The interim DBS services, in this scenario, penetrate the Canadian market more effectively than in other scenarios. This is because, in this scenario, DBS becomes the least expensive means of delivering pay television services. By 1990, following the introduction of the full DBS systems in the U.S., the inroads into the Canadian market are quite severe. It is anticipated that cable operators could lose close to two million pay television subscribers to U.S. DBS services.

Exhibit 7-9

U.S. DBS Market Penetration: Scenario #4

	Interim DBS - 1985 (000)			Full DBS - 1990 (000)	
Market Segments	U.S. DBS subscriptions	Pay-tv via Anik C, Cancom or cable	Market Segments	U.S. DBS subscriptions	Pay-tv via Anik C, Cancom or cable
1. Rural/remote	25	20	310 HHs [1]	180	5
2. Mini terrestrial (525 HHs)	50	40	410 HHs [2]	160	25
3. Licensed small cable/rebroad/ SMATV (667 HHs)	50	40	530 HHs [2]	210	30
4. HHs passed but not subscribing (1,770 HHs)	50	-	1,017 HHs [3]	200	-
5. Cable subs (5,040 HHs)	200	2,268	6,810 [3]	800	2,265
Total Subscribers	375	2,368		1,550	2,325

Notes:
1. Expected saturation: 60 percent as per scenario #1.
2. Expected saturation: 45 per cent as per scenario #1.
3. Primarily from U.S. DBS services undercutting Canadian pay television prices to capture a 30 per cent share of the Canadian pay television market of those subscribing within the homes passed by cable.

U.S. DBS services are able to offer a qualitatively superior package of four to five channels, led by the HBO-Cinemax pay television combination, for a $20-25 per month price following the installation of a $250 to $400 roof top dish. The market power of HBO and the lack of Canadian content provisions enable the U.S. DBS services to offer the subscription component of their packages for about half the price of an equivalent Canadian combination. Mass produced earth terminals can be made available to the cable subscriber for about the same price as it takes a cable operator to upgrade an old system to provide a fully addressable scrambled set of discretionary services.

Canadian pay-television operators have to consolidate to survive, while the fate of Cancom becomes precarious if it manages to stay in business at all. The loss of a potential 2.7 million pay-television subscribers takes an enormous toll on cable, pay-television, and program production, over $300 million in all.

7.3.5 Overview of Canadian Viewing

The assumption that Canada's market is essentially open to U.S. DBS means a severe impact on the performance of Canadian suppliers to the domestic rural/remote market, relative to all U.S. DBS scenarios. U.S. DBS could put Cancom in jeopardy, and thus the economic underpinning extension of services. In two of the four scenarios, underserved households will be receiving primarily U.S. fare in terms of pay-television type service by the end of the decade, if there is no competitive Canadian alternative.

With access to MATV, U.S. DBS services begin to compete with Canadian pay services and their cable distributors. In the last scenario, the impact on cable is even more severe, and could mean a perceived requirement by operators here to lobby for the right to exhibit U.S. DBS services to protect their own subscriber base. Evidently, Canadian authorities would resist such a lobby only with great difficulty, and could face sacrificing Canadian content stipulations simply to enable pay-television operators to remain competitive.

With respect to the advertising supported services, any new advertising supported services delivered by DBS would exist in the same marketplace as additionally authorized satellite-to-cable services from U.S. and Canadian sources. The procedures outined in 7.2.1, 7.2.2, and 7.2.4 were followed to determine the impact on audience share and advertising diversion/production loss. However, the results are too minor to warrant extensive treatment here, for the impact in all U.S. DBS scenarios is less significant than the effects of extension of the three plus one principle to underserved areas.

8.0 CANADIAN DBS DESIGN OBJECTIVES

In this section U.S. DBS scenarios are interpreted relative to technical design options for a Canadian DBS system. This section concentrates on the issues and implications involved in technical trade-offs (number of channels, coverage, transmission power), rather than identifying and assessing the trade-offs themselves.

8.1 Basic Design Alternatives

All DBS technical alternatives imply cost, quality, features, and convenience trade-offs at the consumer level. The key technical issue is the relative cost and compatibility of direct-to-home (or direct-to-neighbourhood) TVRO antennas that are capable of receiving television signals at standards acceptable to the viewer. The essential question is whether the Canadian DBS system will be designed so that the viewer can use the same antenna to receive both U.S. and Canadian DBS services or whether he will have to make some cost/convenience compromises in order to receive both U.S. and Canadian services.

The technical trade-off does not simply bear on how much transmission power is designed into the satellite. EIRP contours number of channels, and security systems are all design factors which ultimately affect transmission power and the size and cost of the TVRO, including its tunability to receive signals from more than one satellite.

8.2 The Market Barriers of Different Standards

Different TVRO standards mean marketing barriers to service providers--i.e., the DBS system which involves a higher cost (price and convenience) to the consumer will be part of a competitive disadvantage. There are other important factors, of course, and they include number of channels available, quality of programming services, monthly subscription costs, and installation/maintenance services.

Viewer preferences relative to mode of reception are also critical. The direct-to-home market in this context would seem to be the only one where differences in TVRO standard would disadvantage the higher cost/lower convenience TVRO. However, despite the relative unimportance of cost factors in a community system, different standards could present a handicap to the entry of DBS services in markets which are already served by DBS (or simply satellite delivered) services with another set of TVRO specifications. In the U.S. service, providers attempt even to lease transponder space on the same satellite as most other services are located, which they regard as a market advantage over using a different satellite of the same class.

Developments in the interim DBS era will be important to ultimate resolution of DBS design questions. Cancom purportedly plans its service on a direct-to-home and small community basis on the 6/4 Ghz band, even if the TVRO cost and size is substantially larger than that projected for the Anik C 14/12 Ghz fixed service. Cancom's commercial advantages are the number of services it can offer and its first-into-the-marketplace position. Whatever the outcome, the fact

that a Cancom exists on 6/4 Ghz as a competitor in the DBS market demonstrates that substantial cost and convenience compromises at the ground level can be seriously contemplated.

8.3 U.S. DBS Standards

At present, potential U.S. DBS competitors are developing their systems on the basis of incompatible security systems. The earth station size seems less of a factor, as it is simply assumed that dishes in the .6 and .7 meter diameter range will be made available. Lack of compatibility, then, is a function of the security system designed to ensure the effectiveness of subscription based services.

But what is the likely outcome in terms of different security system standards? It is probably that either one DBS services system will dominate the others, thus forcing the adoption of one standard by all, or that standards will become compatible to enlarge the market for all. DBS services providers, after all, want to be able to market their services to the total potential customer universe, rather than to force the viewer to add another black box to receive a second DBS service. Once the marketplace determines the standard, prices for the complete package of reception and security hardware will likely drop...in consequence of productivity gains from increased production volume.

The same marketplace phenomenon could be envisaged with respect to antenna size. Serious DBS service providers would require access to the universe of TVRO owners already established in the market, and would thus have to conform to the standard dish size, rather than seek to

encourage the customer to acquire a second dish or to replace his existing one.

The implication for the design of the Canadian DBS system is that either a Canadian DBS system must enter the standard setting race, or it must conform to standards imposed by the U.S. market. The question is whether the interim Anik C service will set de facto TVRO standards for at least community redistribution systems--i.e., establish itself in the marketplace as argued by Telesat in its report on DBS potential.

If this does not happen, the 1986 launch dates of DBS services will effectively establish earth station size standards. Canadian DBS services, to compete in the new markets established by the new U.S. DBS would have to be designed to be compatible with the American standards.

8.4 Compatibility Issues

It is not yet clear whether American DBS services will operate at the 57-59 dBW levels proposed in FCC applications. Assuming the U.S. services do operate at these levels, to what extent will prospective Canadian services be incompatible? There are two design options now being considered for Canada by DOC, one at 50 dBW and the other at 54 dBW. Technical and cost specifications for these two alternatives are indicated in the following table:

SATELLITE PARAMETERS

	6 BEAM MODEL		4 BEAM MODEL	
EIRP (Edge of coverage)	54 dBW	50 dBW	54 dBW	50 dBW
TWT ouput power	126 W	50 W	166 W	66 W
Total Satellite power	6 kW	2.3 kW	7.4 kW	2.9 kW
Bus type	L-SAT	RCA	L-SAT	RCA
Transfer orbit weight		2162 kg	3145 kg	2336 kg
Launch Vehicle	STS/IUS or Ariane 4	STS/PAM A Ariane 4	STS/IUS Ariane 4	STS/PAM A Ariane 4
Beams/Satellite	2		2	
Polarization	Dual Circular		Dual Circular	
Channels/Beams	8		8	
Channel Bandwidth	18 MHz		18 MHz	
Payload Redundancy	16/20		16/20	
Satellite Design Life	7 years		7 years	

The main difference between the two options in terms of positioning Canadian broadcasting and program packaging services vis-a-vis U.S. DBS is TVRO cost and size differential. According to the TAMEC cost analysis of alternative delivery arrangements, TVRO costs at different sizes are:*

Antenna Size (meter)	Antenna Production (annual)	Antenna Per Unit Cost ($)	LNA NF 4dBW ($)	Transp./ Install-ation ($)	Total $
.8	100,000	75	200	100	375
1.0	100,000	100	200	150	450
1.2	25,000	300	200	250	750

* Tamec, op. cit. p.42 The report argues that lower production volumes will ensue for the 1.2 meter dish because of its smaller market.

On the basis of this analysis the TVRO cost for 50 dBW system would be roughly $750 compared to $350 for the 54 dBW system. It is not clear as yet, of course, whether this correlation of dish size to transmission power will work out as clearly as the above analysis assumes. If the estimates are accurate, however, the resulting disparity is quite important: U.S. DBS services with higher dBWs would then involve consumers in significantly smaller outlays for reception equipment. The much higher price for a TVRO to pick up a Canadian DBS service at 50 dBW would create an important marketing barrier relative to competition with U.S. services.

Our own analysis of TVRO costs has produced a rather less clear-cut conclusion. First, production volume productivity gains may be directly translated from one antenna size to another, with the residual difference only a function of pounds of fibre glass (or other material) in the antenna. Thus, the price differential may be mostly due to transportation/installation, and not antenna costs as such. Second, acceptable antenna size may vary from consumer to consumer and will certainly vary according to site, relative to the EIRP contours. Therefore, there may not be precisely standardized antenna sizes. The result is that dish price as a market barrier may not be as large a gap between the alternative DBS systems proposed as is indicated by the Tamec study.

This type of analysis, one would assume, has been undertaken by American DDS service entrepreneurs. However, Canada has had real practical experience with Anik B as well as with the exigencies small market size--i.e., factors that force greater consideration of means to lower

space segment costs. U.S. DBS service providers may well conclude that relatively high powered DBS systems are necessary. And this conclusion would force a similar response by a Canadian DBS system, no matter how low the marginal costs to the consumer to equip himself to receive weaker Canadian signals.

A Canadian DBS design strategy might be to attempt as large a penetration as possible on the interim DBS service, and postpone launching a DBS system equivalent to the standards imposed by the U.S. until the market justified it. In this way, Canada could wait to determine the success of U.S. DBS before committing itself to a high cost DBS system.

Compatibility at the level of the ground segment is not the only issue, as the above discussion of market barriers indicates. If Canadian DBS services are to compete in the U.S. market, content and subscription costs to the viewer will be major competitive features. It will be critical to integrate the design of the Canadian DBS space facilities with these features in mind--i.e., number of channels, power levels, and coverage at adequate EIRP levels of key American markets--if the goal is competition in the U.S.

8.5 EIRP Compatibility

A technical option now presently being planned by DOC is a dedicated DBS system with power levels which equal proposed U.S. DBS satellites. Assuming that appropriate bilateral arrangements can be made following the conclusions of the RARC negotiations, this option would mean adequate EIRP levels in a major portion if not most of the U.S. potential market. Such a DBS system could be designed in effect

with a southward tilt, such as anticipated for the Anik C satellite serving U.S. markets on an interim basis.

This option means head on competition with U.S. services in the American market. It assumes that some market share South of the border, as well as in Canada, will be needed for a Canadian DBS system to finance the very high space segment costs accruing to high power satellites, as well as the investment that must be made in program acquisition and production and, of course, marketing. The U.S. market (between 15 and 25 million television households) might deliver the bulk of the subscriber base for such a proposed DBS service.

In some ways this option can be compared with the proposed USTV approach. That DBS service has some Canadian ownership participation; there is also a Canadian earth station supplier component; Telesat facilities will be used, and some of the planned programming will likely be acquired in Canada because of the favourable domestic tax and labour climate here. While USTV is far from being a genuine Canadian operation, it represents a possible formulation of a DBS service that is designed to compete directly with the dedicated DBS services being planned in the U.S.

8.6 DBS As Transmission Vehicle for HDTV

The Canadian DBS design could be developed with a view to long term enhanced or high definition television services, both of which require considerable bandwidth. Demonstration services are on the

proposed agenda of at least three of the U.S. DBS services. However, because of anticipated lower demand for DBS channels here, Canada could make use of its allocated spectrum to design and put into service an HDTV-based DBS system.

Without prior establishment of standards for HDTV, this would be a commercially risky option. HDTV standards for production, transmission, and display are not imminent, even though they are being proposed by the Japanese in part, because of the potential long term viability of "intermediate" enhanced television. However, one could develop a scenario of a Japanese-Canadian alliance in the design of a DBS system, for HDTV using Japanese standards and with a view to eventual access to the U.S. market. This would involve an enormous commitment in Canada to high definition production technology, to HDTV transmission system design for DBS, and to television set manufacturing (of strong interest to the Japanese).

The HDTV implications would have to be considered in industrial strategy terms, for this option would likely entail substantial public funding. The timeframe for HDTV is also difficult to anticipate. Kalba Bowen Associates estimate (for CBS) that the number of HDTV sets that <u>might</u> be available by 1990 would not exceed about one million, even under favourable development conditions. Only about a third of these were assumed to be designed for DBS reception, and the rest for cable transmission and to be associated with VCR/videodisc operations. Given the historical lag in Canadian consumer electronics consumption vis-a-vis the U.S., Canada could expect to have a HDTV set population of a few tens of thousands only by 1990, assuming the same favourable

conditions. Therefore, while this technical option requires further exploration and attention, it must be viewed as a relatively long term development relative to potential U.S. DBS spillover impact.

8.7 Conclusions

As noted in treatment of U.S. DBS Scenarios Two and Three (see Section 6), the fate of DBS could be largely decided by interim DBS developments. In Scenario Two the interim DBS system is successful in establishing a market base which it never really gives up to a high power, dedicated DBS service. In Scenario Three direct-to-home services occupy a very minor place in the delivery spectrum relative to various forms of terrestrial redistribution system. However, in Scenario One, which envisages a rapid development of an interim and full DBS servies in the U.S., a Canadian DBS system that is technically compatible and market competitive is imperative. Whether such compatibility lies with a 54 dBW service or even a 50 dBW level is difficult to determine at this time. Design trade-offs would have to be examined more closely to determine whether DBS systems with different power levels could co-exist in the same markets on a compatible basis.

As stated earlier, technical compatibility is only a beginning. If the timing, packaging and pricing, as well as the technical features, are competitive, the displacement of Canadian subscription-based systems by American DBS, estimated in Section 6, will be less severe. The lone exception is Scenario Four, where subscription-based services depend for their market on lowest price to the consumer. Technical compatibility between U.S. and Canadian DBS services would not suffice in this

scenario, for the market quality of the offering and the comparatively higher cost of acquiring rights would put Canadian DBS services out of competition. The only feasible alternative to retain some Canadian share in the Canadian market would lie with the development of a dedicated DBS system designed to serve U.S. as well as Canadian markets. This approach, as indicated earlier, has the disadvantages in terms of Canadian broadcasters' goals of offering programming that is essentially designed for the American market rather than in response to Canadian cultural/content objectives.

9.0 BROADCASTING POLICY: GOALS AND REGULATORY CHANGES

The previous sections of this report have put forward scenarios of potential market penetration by U.S. DBS services in the Canadian broadcasting system. This section concerns itself with the economic protection of the broadcasting industry and assesses how direct reception of U.S. DBS services will affect the current capacity of the federal government to continue this level of protection. It then discusses the potential for and desirability of change to the present Canadian regulatory environment which may be occasioned by the availability of U.S. DBS signals in Canada.

9.1 Potential Implications for the National Goals of the Canadian Broadcasting System

The extent of potential American spillover is the key question of fact which this report has attempted to estimate. The implications for broadcasting policy are more or less serious depending on the extent of the spillover and the capacity of the Canadian broadcasting system to respond. This response will be largely dictated by government, which sets the parameters within which broadcasters and service providers operate, and the Canadian viewing public, which watches what it wants, broadcasting policy notwithstanding.

9.1.1 Economic Protection as Major Policy Goal

The direct reception of U.S. DBS signals by Canadian viewers is a threat to the goals of the Broadcasting Act in the sense that the revenues generated by this activity are likely not to pass through the

hands of Canadian broadcasters. Whether the revenues arise directly through subscription or indirectly through advertising is immaterial as an issue, but the relative consequences are important. Audiences are more fragmented, subscription revenues flow out of the country, and licensed Canadian undertakings are left with less revenue to carry out the non-market goals of the Broadcasting Act.

The Broadcasting Act is frequently discussed in terms of cultural policy but its roots are planted in the realities of production economics. The Act does not directly cause programming output; it shapes and directs the entities which produce programming. As the broadcasting policy indicates, the licensee is responsible for the programs he broadcasts, and the right to freedom of expression and the right of persons to receive programs, subject to generally applicable statutes and regulations, is unquestioned.

The importance of a healthy economic structure can be illustrated by reference to the style and goals of television broadcasting regulation in Canada and the United States. In both countries, television broadcasters have traditionally been granted considerable protection from competition. Audience fragmentation is a matter of concern to the FCC as well as the CRTC, although in Canada it has an added dimension of cultural policy because the fragmentation is so frequently the result of foreign signals.

The natural result of allocating scarce frequency through licensing procedures is to limit competition and protect broadcasting undertakings.

By way of illustration, a 1981 Congressional report - Telecommunications in Transition: The Status of Competition in the Telecommunications Industry* - noted the protectionist policies the U.S. had followed. The FCC, said the report, designed the television spectrum allocation to protect the investments of existing VHF broadcasters, rather than to promote the most efficient spectrum use, with the result that most communities cannot receive more than a handful of over-the-air television signals.

The FCC asserted authority over cable television and imposed restrictions on the importation of distant signals and thereby "protected the existing economic order and inhibited the newer technology from realizing its potential". Similarly, the FCC impeded the development of subscription television and pay cable networks through the imposition of rules designed to prevent the siphoning of programming from 'free' television. To Canadians concerned with broadcasting policy, these measures are strikingly familiar. They were derived without benefit of an explicit broadcasting policy asserting non-market goals for the system. In this sense it can be said that economic protection, which flows from the allocation of scarce spectrum, precedes policy goals and to a great degree is independent of them. Regardless of concerns for Canadian identity, the American DBS spillover represents an economic challenge which must be confronted; it is a new turn in the continuing battle for market share.

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* op. cit. A Report by the Majority Staff of the Subcommittee on Telecommunications, Consumer Protection and Finance of the Committee on Energy and Commerce, U.S. House of Representatives, Nov. 3, 1981 (USGPO, Washington) 97th Congress, 1st Session, page 3.

The importance of the economic aspects of cultural policy were emphasized in a recent statement of the Minister of Communications in respect of the illegal use of television receive-only earth stations.

> "In the very near future, we expect to enhance significantly viewers' diversity of choice in a new broadcasting environment which will include more and better Canadian programming and a range of foreign programming. But, in the meantime, we must protect licensed Canadian broadcast undertakings because they are the foundations on which we must build.
>
> "I am taking this action, in part, to protect the 30,000 jobs in our broadcasting and cable industries, the 30,000 jobs in our independent film and television industry, and the incomes of the 10,000 self-employed Canadians working on film and video productions as performers, writers and technicians."*

9.1.2 Previous Measures of Economic Protection from U.S. Signals

The protection of the Canadian broadcasting industry has required supplementary measures besides the allocation of frequencies to markets and preventing the import of distant domestic signals. These measures have aimed at reducing the revenue losses caused by Canadians watching U.S. stations. The introduction of subscription-supported services via DBS introduces a fundamentally new dimension. Previous measures designed for conventional off-air and cable signals, will not necessarily be effective.

Bill C-58 addressed the problem of Canadian businesses advertising on American stations in order to reach a Canadian audience. The cost of advertising in U.S. media was disallowed as a legitimate business deduction for income tax purposes.

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* DOC News Release Oct 7, 1982, "Fox takes steps to reinforce Canadian broadcasting system".

The same tool would have no effect in the case of subscriptions to American DBS services. Since the average Canadian could never deduct a subscription from his income, and the expenditure is relatively small anyway, an income tax change would not affect consumer behaviour.

Cable television regulations* establish the priority of carriage of domestic and foreign signals and require any cable licensee with 6,000 or more subscribers to delete the signal of a lower-priority broadcaster in favour of a higher priority broadcaster, when the signals are identical and compete in the same time period. The effect of this rule is to preserve the advertising penetration of Canadian off-air broadcasters at the expense of inroads made by identical U.S. programs with a different advertising content. The thrust of these policies is to repatriate revenues lost to U.S. television stations and networks, and to restore to Canadian broadcasters their monopoly position with respect to the importation of most U.S. programs into Canada.

Cable television regulations will not suffice for that portion of the domestic market not passed by cable. In addition, U.S. subscription services arriving via satellite will challenge the existing monopoly of cable distribution. Cable undertakings will have every incentive to carry these signals rather than lose the revenues accruing directly to U.S. DBS programmers. Just as Canadian off-air broadcasters have sought

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* ch. 374, Consolidated Regulations of Canada, as amended by SOR/81-944, 18 Nov. 1982

a monopoly on advertising revenue caused by the import of American programming into their markets, so will cable seek to protect itself from competition by carrying DBS signals for profit. For economic reasons the cable industry may be reluctant to act as a bulwark against direct American penetration via DBS.

In the sections which follow we consider what remedies may be available under existing legislation.

9.2 Response to American DBS Signal Spillover

It would be consistent with Canadian broadcasting policy to seek to protect the economic viability of the broadcasting system from the effects of directly-imported programming. The recently announced crack-down on illegal satellite receivers operated for profit illustrates the continuation of this policy. What, then, is the effectiveness of the Radio Act and the Broadcasting Act protecting the Canadian broadcasting system against U.S. DBS?

Defects in the current laws do not affect the federal government's residual authority in the constitution in respect of 'radiocommunication', from which the current jurisdiction of the CRTC and DOC derive. A gap in the current legislation can be rectified by the federal government acting under its residual jurisdiction over radiocommunication.*

*See discussion in In re Regulation and Control of RadioCommunication (1932AC304)

Since the prerequisite of broadcasting policy is revenue in the hands of licensed undertakings, the gaps or weaknesses in federal jurisdiction will manifest themselves in revenue losses to licensed Canadian broadcast undertakings, caused by reductions in subscription and advertising revenues which would otherwise have been earned.

These losses will arise because viewers would be able to subscribe to U.S. DBS signals at an affordable price. Reception at affordable price is obviously affected by federal power to prohibit, licence or tax the devices which enable one to receive the signal. These include individual satellite receivers, MATV systems, and cable, and are collectively referred to here as "reception devices". The ability to subscribe is affected by federal power to prohibit, license, or tax the service contracts between Canadian subscribers and U.S. DBS signal providers. Each of these potential federal initiatives is discussed in turn, followed by the treatment of possible bilateral treaty negotiations with the U.S. to govern DBS reception from foreign sources.

9.2.1 Controlling Reception Devices

The Canadian broadcasting policy asserts a general right to receive programs, subject only to generally applicable statutes and regulations. There would be a strong bias in any court of law to defend this right against federal attempts to control access to American DBS services. The ability of the government to require a person to hold a license and pay a fee associated with a reception device of any kind would have to be unequivocal. In this regard, the Radio Act (1970 RSC; R-1) is the key document.

An unscrambled DBS signal has no different status than a signal delivered across the border from a broadcast tower. Licensing satellite receiver dishes is therefore only a means of capturing revenue for the Canadian broadcasting system that would otherwise escape from it. Control in this context refers to the ability to set up financial or regulatory barriers that tend to make most consumers channel their viewing through licensed Canadian undertakings. Since reception devices may be substituted for one another, there are limits to the restrictions or conditions which may be attached before consumers switch from one kind of device to another.

The Radio Act establishes a general prohibition against operating or owning a radio apparatus without a licence, and if a broadcasting receiving undertaking is involved, it also needs a technical construction and operating certificate (s 3(1)).

Two exceptions are contemplated. The first is for radio stations or apparatus capable only of receiving radiocommunications intended for the reception of broadcasting which are not broadcasting receiving undertakings. The second is for broadcasting receiving undertakings of a class not required to be licensed under the Broadcasting Act. (See sub-sections 3(2) and 3(3) of the Radio Act). No act or regulation defines what a broadcasting receiving undertaking is. Therefore it would be a matter of fact for the courts to determine, if a regulation or licensing decision were challenged.

Two other provisions should be noted. The Radio Act permits the Governor in Council to "prescribe the tariff of fees to be paid for licences" (s. 6(1))a) and the Broadcasting Act permits the CRTC, with the approval of

the Treasury Board, to establish licence fees for broadcasters, including broadcasting receiving undertakings (3.16(1)b(vii)). The authority to collect fees is relevant to the capacity of the government to recoup revenues 'lost' to the system by the direct import of DBS signals.

Our conclusions about the adequacy of the government's licensing authority are as follows.

The Canadian broadcasting system cannot be protected from DBS market penetration by the authority of DOC under the Radio Act to licence broadcast satellite receiving dishes. The powers available are not sufficient to prevent the operation by consumers of satellite receiver dishes when they are intended for the reception of broadcast programming.

Cable television and MATV systems could also receive DBS signals. Federal jurisdiction over cable systems is secure, as long as they carry at least one off-air Canadian signal. MATV systems may not be broadcasting receiving undertakings, or they may receive signals in such a way as to escape federal regulation. We shall look first at receiver dishes and then at MATV systems.

a) Satellite Receivers

The individual satellite receiver dish operated for private use without pecuniary gain is exempt from licensing. Only when the device is used to receive non-broadcast signals, or as part of a broadcasting receiving undertaking, would it be subject to licensing requirements.

The current legal justification for prosecuting TVRO operators and others receiving satellite signals is that they are receiving point-to-multi-point telecommunications signals, private transmissions whose reception by unauthorized persons would be a cause of action in the country of origin. They are not intended for direct reception by the general public, but only for intermediary suppliers like cable companies. Numerous cases have arisen in the United States under the Communications Act of 1934 concerning the illegal reception of 'private' non-broadcast signals. Canadian law is not alone in insisting, as a general rule, on the privacy of telecommunications other than broadcasting.

Consequently, with respect to broadcast signals, that are intended for general reception, individual satellite receiver owners would not be subject to prosecution under s.11 of the Radio Act for failure to hold a licence or a technical construction and operating certificate. Likewise they would not be subject to prosecution under s. 29 of the Broadcasting Act for carrying on a broadcasting undertaking without a valid and subsisting licence. They would not be subject to licence fees under either of the statutes. Accordingly, the federal government could not prevent revenue leakage from the Canadian broadcasting system by licensing DBS receivers to individuals. Nor is it probable that TVRO

systems operated cooperatively on a non-commercial basis would be considered licensable operations, for the same reasons as apply to individual reception of DBS. This brings us to the consideration of MATV systems.

b) MATV systems

The second major source of revenue erosion would likely be Master Antenna TV systems. By an order of the CRTC, announced on March 16, 1977, MATV systems were declared exempt from the requirement to hold broadcasting licenses.* The criteria required that they carry all available local Canadian signals, not be operated for commercial gain, and not to carry satellite signals, distant microwave signals, or movies. In exchange they are exempted from cable undertaking regulation.

The exemption order could be revoked at any time and all MATV would require a licence under the Broadcasting Act. Or the exemption could continue and those MATV operations which do not conform to the criteria for exemption would require a broadcasting receiving undertaking licence.

But there is some question whether MATV operations are properly called broadcasting receiving undertakings (BRU). For every BRU not required to be licensed under the Broadcasting Act, the Minister of Communications

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* CRTC Public Announcement, March 16, 1977 MATV Licensing and Exemption

may exempt it from the requirement to hold a licence and a technical construction and operating certificate. No such exemption regulation has ever been passed. This could be an oversight, or it could mean that he Department of Communications does not consider MATV systems to be broadcasting receiving undertakings. If they are not in fact brodcasting receiving undertakings, they would not require a licence. Since something like a quarter of Canada's population lives in multi-unit dwellings, unlicensed MATV operations would cause a significant revenue loss to the Canadian broadcasting system.

There are also possible weaknesses in the current definitions of 'broadcasting' and 'radiocommunication' which could weaken the hold of the federal government over MATV systems, as well as other segments of the system.

The jurisprudence is clear that federal authority attaches to the whole of an undertaking if it carries a single off-air signal (Ref. Capital Cities Communications vs CRTC, (1978) 81 DLR (3d) 608 and Re Public Service Board et al vs Dionne (1978) 83 DLR (3d) 178). However, if an undertaking of some kind received no off-air Canadian signal and carried only scrambled U.S. signals, there could be a challenge to federal attempts to regulate the undertaking. It could be argued that the signals concerned were not "broadcast" within the ambit of the current definition, because scrambling means they are not intended for direct reception by the general public, and that they are not 'radiocommunication' because the signal was propagated in space by an artificial guide, the satellite. These questions will need to be

carefully considered in the context of the legal study on DBS issues.

An MATV system might receive no over-the-air Canadian signal and distribute only American DBS signals. In that case, the operation might escape federal regulation entirely, depending on the courts' interpretation of the DOC and CRTC's jurisdiction under the current laws. If that occurred, the cable industry would be put under great pressure to follow suit. Remedial legislation would be needed to confirm federal authority over these particular receiving arrangements.

Whether MATV systems are licensable or not, as a matter of fact or law, takes on importance in relation to the revenue leakage from the Canadian broadcasting system that would occur in the future. Licensing MATV systems may prove to be ineffective when individuals are entitled to receive DBS signals directly without licences.

9.2.2 Controlling Subscriptions

Nothing indicates that the CRTC's authority over broadcasting receiving undertakings will be challenged by foreseeable technical developments as long as it carries one over-the-air Canadian signal. Accordingly, it is reasonable to expect the CRTC could control the reception by cable subscribers of American DBS signals by channel priority-setting and tiering which put them beyond the economic reach of most Canadians.

The most obvious method would be to require all Canadian pay television channels to be subscribed to before the U.S. DBS tier or tiers. This approach could be difficult since such services are considered to be discretionary and thus subject to a minimum of regulation in terms of how they are priced and marketed. Nevertheless, access to U.S. DBS services could be made more expensive through tiering regulations.

The disadvantage of restrictive tiering policies would be to take people off cable and to make unlicensed operations or true direct-to-home reception economically attractive. Consumers may surpass the trade-off point beyond which they are not deterred by capital cost of a DBS system, the quality of reception, and the continuing subscription cost to a narrower choice of services.

A competitive video entertainment marketplace means that there are limits on the ability of the government, whether through pricing mechanisms expressed in tiering policies, or through direct taxation of subscription contracts, to prevent Canadians from getting American programming. A form of tax on subscriptions to U.S. services may raise the cost of DBS reception, but its effect will be limited. Tariffs will only give some protection to Canadian broadcasters and program producers in terms of cost or timing. The cost to consumers will be very visible.

In any case, the Broadcasting Act does not permit the collection by the CRTC of taxes. It is immaterial whether or not a transfer payment from cable and DBS subscribers to program production furthers the objects of the Broadcasting Act. Nowhere in the Broadcasting Act is an express

power given to the Commission to tax its licensees or to take the property of licensees without compensation. The Courts continue to be reluctant to infer a power to tax in the absence of explicit statutory language to that effect.* Fees may be collected from broadcasting licensees. However it is difficult to conceive the circumstances in which individuals subscribing to American DBS would need a broadcasting receiving licence. Finally, the power to collect fees has been generally interpreted to be limited to covering the cost of regulation or to meet the outlay incurred for some improvement of special advantage to the licensee.** Since the CRTC is aleady almost completely self-financing, only a very small amount of fees could be collected before it appeared that a licence fee scheme was a device to collect net revenue, and therefore a tax. The same reasoning applies with equal force to the fee collection power of the Governor in Council under s.7 of the Radio Act.

Another possibility which may bear further thought is to impose a tax or customs duty of DBS subscriptions under the general federal taxing authority found in the constitution. Since the matter of radiocommunication falls into federal jurisdiction, Parliament could combine a revenue raising scheme with a revenue spending scheme in this subject-matter. Indeed, this proposal is implicit in the collection of a

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* Ref. A.G. v Wilts United Dairies (1922) 91 LJKB 87, 127LT 822, 38 TLR781, Gruen Watch Co v AG Canada, (1950) 4DLR156, 1950 OWN 396.

** King v National Fish Co. Ltd. (1931) Ex CR 75

program production levy discussed in the DOC's paper on a national broadcasting strategy.

9.2.3 Bilateral Trade Agreements on DBS

The Radio Act gives the Minister of Communications the authority to make effective the terms of a convention respecting telecommunications. Such a power could be used in the case of a bilateral treaty between the United States and Canada respecting direct broadcast satellite service. The treaty could deal with the terms upon which citizens of one country to subscribe to the services of a foreign broadcasting supplier.

The American DBS services will cover the great bulk of the Canadian market, and will inevitably exert pressure on the Canadian broadcasting system. One of the possible responses is to sell Canadian DBS services in the United States. Even if they attracted only a small portion of the total American DBS market, that portion would significantly expand the subscriber base available to Canadian services, and thus lower per capita costs of reaching an audience via satellite.

DBS signals will be available for the taking with dishes and the right descrambling equipment. To the extent consumers require descrambling equipment there may be some possibility of limiting subscriber access. Another approach, more in keeping with consumer demand, would be to engage in market sharing agreements of the kind recently entered into with respect to fixed satellite services. The most recent exchange of diplomatic letters does not deal with DBS services. Ambassador Gotlieb said, in respect of the market-sharing principles, that:

> "These principles shall not derogate from the authority of our respective governments and regulatory authorities to authorize and regulate the reception and distribution in their own country of radio and television programming and carried on a fixed satellite service."*

There is no U.S.-Canadian plan governing DBS reception or market sharing. The relevant international agreement of DBS signals is the provision in the ITU Radio Regulations which limits broadcast coverage by the satellites of a foreign state to 'unavoidable spillover'.

Canada and the United States are beginning to negotiate for orbital slots, coverage areas, and power levels in Region 2. The basis of the Region 2 plan is that interference between competing signals in the next orbital slot be kept below a certain level. This plan will deal with the characteristics of Canadian DBS coverage of U.S. markets. American coverage of the Canadian population will be nearly complete in any case; at stake is the extent of Canadian coverage of U.S. markets.

In the absence of an agreement on the rights of broadcasters to market DBS services in each other's country, Canadian and American entrepreneurs have no rules governing the legality of transborder operations. This may work to the disadvantage of Canada. Early agreement would assist the Canadian broadcasting system to gear itself up to the competitive challenge of American DBS.

9.3 Changes to the Canadian Regulatory Environment

The outflow of funds from the country which may be caused by Canadians subscribing to scrambled DBS services presents a novel

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* quoted in Communications Week, August 30, 1982, at p.5

challenge to broadcasting policy. First, there is some doubt about the adequacy of current definitions of 'broadcasting' and 'radiocommunication' to deal with scrambled, satellite-delivered signals. Second, the cost of bypassing the cable system via DBS will be relatively low. Hence a broadcasting policy predicated on the monopoly characteristics of cable is tenable only up to the point where people do not decide to abandon cable for other forms of program reception. The presence of DBS lowers the perceived cost of switching away from cable, in the sense that the choice of viewing alternatives is much greater in a DBS environment, and consumers are not as restricted in their entertainment alternatives. In this regard we should not forget the increasing use of video cassettes and discs, which escapes regulatory scrutiny entirely, but which may affect home entertainment consumption patterns profoundly. There are a lot of barn doors to keep closed. The other way of looking at it is to say there are a lot of new market niches to burrow into.

The Canadian government would seem to have the following choices.

1. Try to prohibit subscriptions by Canadians to American DBS subscribers;

2. Tax such subscriptions;

3. Enter into a trade agreement with the United States governing mutual access to each other's DBS markets, to the degree consistent with the interests of each. This access would consist of arrangements for citizens to subscribe to foreign DBS signals;

4. License Canadian DBS services to ensure there exists a competitive Canadian DBS system.

Essentially, the choices are no different in principle with respect to entertainment programming than with respect to any other commodity. Will freer trade with some market sharing guarantees result in larger Canadian markets for Canadian designed-and-produced product or will it lead to these functions being performed in the United States? While these questions are beyond the range of this study, it may be useful to speak in broad terms about Canada's broadcasting strategy and where a DBS marketing treaty would fit into it.

The new broadcasting policy seems to be predicated on federal control of cable. Successfully resisting massive DBS intrusion through the cable television system depends to a great extent on the relative attraction of viewers to cable in an increasingly competitive video environment. Cable is an imperfect distribution monopoly, which already competes with over-the-air broadcasting. Soon it will be challenged by DBS, videotapes and video discs. The home video entertainment market would be the logical focus of concern for those interested in Canadian content, not simply the broadcasting system. In time the federal government's authority over 'radiocommunication' may diminish in importance as new delivery technologies reduce the quantity of entertainment programming delivered to the home by systems even remotely connected to broadcasting.

These problems are relatively far-off. Nevertheless, basic decisions require a substantial lead time. If American DBS services threaten significant revenue leakage from the Canadian system, or if Canadian broadcasters want to reach large American markets, then a trade agreement

may be appropriate. The earlier a Canadian programming service establishes itself in the U.S. market, the better. Program licensing arrangements would need to be made, and a significant quantity of Canadian produced programming assembled, to ensure a viable service. It might cover large portions of major U.S. markets and generate significant new revenues for Canadian producers.

Such a venture might require significant institutional change.* A private-public sector consortium might be the only organization with the requisite interest and capacity to take the necessary risks.

A commitment to moving forward on a DBS programming trade agreement entails early consideration by DOC and the CRTC of the entire subject. Taxes, tiering, and regulatory delay will have some limited effects in preventing Canadians from subscribing to American DBS services. The concept of moving into bilateral negotiations for shares of the emerging DBS market may provide a useful pretext for elements of the Canadian broadcasting system to focus on a competitive rather than defensive response to market penetration by American DBS services.

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* See Institutional Arrangements for DBS, November 1982, Nordicity Group & T. Denton, DOC Contract Study No. 12ST, 36100.2.4011

10.0 U.S. MARKET FOR CANADIAN DBS SERVICES

In this chapter, we postulate possible Canadian DBS services and estimate what business they could obtain in U.S. markets. An assessment is also made of the economic impact of this U.S. spillover market on Canadian broadcasters, pay television operators, programming suppliers and carriers. The U.S. market potential is then contrasted to the expected inroads of U.S. DBS services in the Canadian market.

10.1 Analytical Approach

The analytical steps followed in developing Canadian DBS spillover scenarios and their impact are:

1) develop a set of Canadian DBS service scenarios for both the interim and the dedicated, DBS periods;

2) postulate the delivery characteristics of these services, particularly in terms of (a) geographic coverage of the U.S. market and (b) compatibility with U.S. earth stations standards;

3) postulate market characteristics in terms of (a) specific factors of service, price, and promotion, and (b) whether the DBS services are marketed separately as individual channels or integrated into a single package;

4) develop market penetration assumptions with respect to (a) the total U.S. DBS market, and (b) the anticipated market share for the Canadian DBS services; determine the potential number of U.S. subscribers to Canadian DBS services.

5) estimate the economic impact on Canadian advertising supported services, pay television services, Canadian programming supplier and carrier interests that would form components of the DBS service reaching U.S. markets.

6) assess the impact of potential regulatory and market entry barriers to Canadian DBS services in the U.S. market; revise the subscriber potential for Canadian DBS services in U.S. markets and estimate the net result of U.S. and Canadian DBS services penetrating each other's markets.

10.2 Canadian DBS Services

Canadian DBS services fall into two categories: first, those which form the de facto interim DBS services because of their anticipated availability on Anik C; second, the delivery of pay television and other services via a full or dedicated DBS system to be launched in the late 1980s. Service scenarios are developed for each of these two time frames, based on marketing delivery and other assumptions. The DBS service scenarios are illustrated in Exhibit 10-1 and outlined below.

10.2.1 Interim DBS Services

The interim DBS services, particularly pay television services, could be marketed individually in the U.S. by individual network operators...likely via arrangements with U.S. retailers. Alternatively, one or more pay television services could be combined with commercially sponsored and public broadcasting services, and marketed as a package in the same way that USTV plans. This approach would constitute an after the fact DBS package, rather than one designed from the outset as a complementary set of services. However, if packaged in this way the interim Canadian DBS services could compete directly in the U.S. against USTV et al.

The Canadian DBS package thus constituted would likely be more expensive than the U.S. interim DBS service packages for two reasons: first, Canadian content stipulations make the programming costs, at least in the first few years, higher than if there were no content conditions. Second, revenues must support the whole operational infrastructure that has been established for each individual channel. Thus, it could be

10-1 CANADIAN DBS SERVICE SCENARIOS

DBS SERVICE TYPES	DELIVERY ASSUMPTIONS		
	earth station compatible		earth stations non-compatible
	interim	full	full
Individual channels marketed separately	as planned on Anik C	54 dBW with EIRP covering 1/3 of U.S.	50 dBW, covering 1/3 of U.S.
Channels marketed as an integrated package	to be packaged from Anik C services	54 dBW covering (a) 1/3 of U.S. market and (b) 80% of U.S.	50 dBW covering 1/3 of U.S.

MARKETING ASSUMPTIONS

	Service	Price	Promotion
Individual channels:	licensed pay television, commercial networks, and CBC (if using Anik C)	pay television 25% higher than equivalent U.S. because Canadian content costs	full U.S. marketing distribtion effort D-T-H and SMATV by major Cdn. pay television services
Integrated package:	integrated set of pay television and ad and public sponsored services	competitively priced for U.S. marketplace	full U.S. marketing, distribution effort for integrated package

anticipated that there would be a higher price associated with the Canadian DBS package than with American interim DBS packages. Consequently, it is assumed that there is at least a 25 per cent higher price than for an American equivalent, although no detailed analysis has been undertaken to support this conclusively.

The problem of this price differential is balanced to some extent by the relatively early market entry of an interim Canadian DBS service in the U.S. USTV and STC plans and arrangements are well underway, ahead of any Canadian DBS package. However, Canadian pay television and other services will be up on Anik C and could be packaged relatively quickly to become the third or fourth interim DBS player in the U.S. market.

The interim Canadian DBS services would likely be compatible with U.S. interim DBS services in terms of earth station standards. The primary reason, of course, is the use by both U.S. and Canadian DBS services of Anik C. Although some interim U.S. DBS services development might occur using other satellites, there should not be an inherent advantage accruing to such U.S. services. It is assumed therefore, that the Anik C TVRO price would be no higher than prices assumed for other dishes.

10.2.2 Dedicated DBS Services

With respect to the dedicated DBS services, it is assumed that Canadian entry is within the approximate time frame of the start-up of equivalent U.S. services. This is optimistic, since Comsat, among others, is nearly ready to make major satellite procurements for high power DBS. It would require a rapid evolution of policy making and DBS investment to make it possible. Two other critical assumptions involve:

(a) the packaging of an integrated DBS service, and (b) the satellite design to cover as large a part of the U.S. as possible and to be of sufficient power to meet U.S. DBS TVRO standards.

(a) Individual Channels or a DBS Package

As indicated for the interim DBS services, the full DBS system could be developed so that either individual channels or an integrated package could be marketed. The marketing of individual channels in a dedicated DBS environment would be disadvantaged for reasons discussed above regarding an interim DBS service. The alternative is the integrated DBS package, also as discussed above.

To be competitive in the U.S., the Canadian dedicated DBS package would have to be similar in price and quality of service to the U.S. DBS packages. Such a Canadian DBS package, like its U.S. counterparts, would comprise a set of pay television, advertising supported, and publicly sponsored services planned as an integrated package for both Canadian and U.S. markets. To organize such an integratead DBS package would be a formidlable task - requiring policy/regulatory acquiescence, a full U.S. marketing and distribution infrastructure in the U.S., and a major multi-investor joint venture.

(b) EIRP and Geographic Coverage

There are two further alternatives to the type of services that could be offered via a dedicated DBS system with its U.S. spillover. First, the dedicated DBS system could operate at the 50 or 54 dBW EIRP level. This could mean in the first instance that the earth stations would not be compatible to the U.S. standards because of the relatively weaker signal from the Canadian DBS service. In the second instance, however, the power level might be sufficient to achieve design compatibility with U.S. DBS services in earth stations, as discussed in Section 8.

The second alternative involves the coverage area for the Canadian DBS system. Up to this point, it is assumed that both the interim and the dedicated would radiate only a part of the U.S. population (say one third). An alternative would be to design the Canadian DBS service to spillover to the majority of the U.S. population, say 80 per cent. While these assumptions are fairly crude in light of the technical possibilities: to design various EIRP contours, they do cover the two basic possibilities incidental spillover and relatively complete coverage.*

10.3 Market Penetration Projections

Market penetration assumptions are necessarily conditioned by U.S. DBS scenarios. For example, a relatively slow development of the U.S. DBS services would mean that Canadian DBS spillover market opportunities would be equally slow to mature. Therefore, projections of the total market for U.S. DBS, as developed in Section 6, are central to the analysis of Canadian opportunities South of the border.

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* As pointed out in Section 9, U.S.-Canada bilateral negotiations post-RARC could deal with this issue.

Subscribers estimated for each of the four scenarios are reproduced below:

U.S. DBS SCENARIOS
(000 subscribers)

	1 Rapid DBS	2 Rapid interim slow dedicated	3 Slow interim and slow dedicated	4 Very rapid DBS development through pay television
Interim DBS 1985-86	2,000	2,000	500	3,000
Full (dedicated) DBS 1990	10,200	2,000	2,000	15,000

10.3.1 Market Share Assumptions

If an integrated Canadian DBS package is as competitive as American DBS services, then it should share the market with U.S. DBS services in geographic areas where it is possible to reach potential customers equipped with same standardized earth stations. This assumption in turn depends on a relatively optimistic set of marketing and equipment assumptions discussed above. A highly competitive Canadian DBS package would perhaps emerge as one of the major DBS packagers in the U.S. market, capturing, say, 25 per cent share, presuming that there were about three other U.S. DBS competitors.

Only U.S. DBS Scenario Four would make a Canadian share of this size unlikely. In this scenario, DBS would effectively become the low cost delivery system for HBO. In these circumstances, the Canadian DBS service could not be as price competitive as HBO, which would enjoy tremendous leverage in program procurement, and could only obtain a small share of the U.S. DBS market. For the purposes of our analysis, the

estimate of share drops to 10 per cent.

If Canada had a dedicated DBS system with power levels so low as to mean incompatability with U.S. DBS earth stations, it is estimated that market share would drop to not more than a tenth of that assumed for a system with earth station component is compatibility. Indeed, the U.S. direct-to-home market could be inaccessible because of the weaker signals of the Canadian DBS service. However, some television households accessed by master antenna and other community terrestrial systems might remain as customers of the Canadian service. Again, this one tenth assumption (i.e., 10 per cent of 25 per cent for Scenarios One, Two, and Three and one tenth of 10 percent for Scenario Four) is fairly arbitrary, but reflects the serious reduction in market opportunities for an incompatible Canadian DBS system.

If Canadian DBS services are sold on an individual basis to potential subscribers in the U.S., rather than being offered as an integrated package as are the U.S. DBS services, market opportunities become severely constrained once again in view of the nature of U.S. competition. In the interim period, it is assumed that for Scenarios One, Two, and Three individual pay services could reach about 10 per cent of the U.S. DBS market, rather than the 25 per cent assumed if Canadian DBS is designed and marketed as an integrated package. A five per cent assumption is used for Scenario Four in view of the low price of the U.S. DBS service.

10.3.2 Market Penetration Calculations

Specific calculations for market penetration at two reference points based on the preceeding assumptions are detailed in Exhibit 10-2. Market penetration assumptions must then be related to the U.S. DBS scenarios of subscribers for both the interim and dedicated DBS systems. The results of these calculations of Canadian DBS subscription levels for 1985-86 and 1990 are shown on Exhibit 10-3.

The magnitude of these figures is more important than their precision. They show that an interim DBS service based on individual Canadian pay television channels might attract U.S. subscribers in the tens of thousands. For the integrated package the subscriber base could go into the low hundreds of thousands in the interim DBS period. If the U.S. DBS market grows as projected in the more optimistic U.S. DBS scenarios, the spillover market for Canadian DBS services could reach the high hundreds of thousands.

As indicated earlier, the Canadian signal geographical coverage will obviously play an important part in determining the upper limit of the market potential. This factor is illustrated in the last line of Exhibit 10-3, showing the potential subscriber base in the low millions under the optimistic U.S. DBS scenarios, if 80 per of the U.S. market is accessible to Canadian DBS service providers.

Exhibit 10-2

MARKET PENETRATION CALCULATIONS FOR CANADIAN DBS SERVICES IN U.S. MARKET

- Individual DBS channels - interim and full DBS service

  Scenarios 1, 2, and 3:
  1/3 X total U.S. DBS mkt X 10% (i.e. Canadian DBS penetration)

  Scenario 4
  1/3 X total U.S. DBS mkt X 5% (i.e. Canadian DBS penetration)

- Packaged Canadian DBS - interim DBS service

  Scenarios 1, 2, and 3
  1/3 X total U.S. X 25%

  Scenario 4
  1/3 X total X 10%

- Packaged Canadian DBS - full DBS not compatible with U.S.

  Scenarios 1, 2, 2
  1/3 X total U.S. X 2.5%

  Scenario 4
  1/3 X total U.S. X 1%

- Packaged Canadian DBS - full DBS compatible with U.S.

  Scenarios 1, 2, and 3
  1/3 X total U.S. X 25%

  Scenario 4
  1/3 X total U.S. X 10%

- Packaged Canadian DBS - full DBS compatible with U.S. EIRP covering 80% of U.S.

  Scenarios 1, 2, and 3
  .8 X total U.S. X 25%

  Scenaro 4
  .8 X total U.S. X 10%

Exhibit 10-3

POTENTIAL NUMBER OF SUBSCRIBERS FROM U.S. MARKETS

CANADIAN DBS SERVICE POSSIBILITIES	U.S. Scenarios (000 Subscribers)							
	1		2		3		4	
	Interim	Full	Interim	Full	Interim	Full	Interim	Full
Indiv. channels: compatible with full U.S. DBS earth stations	67m	330	67	67	16	67	50	100
DBS package: interim compatible, but full DBS not compatible with U.S. DBS	165	80	165	16	40	16	225	50
DBS package: full DBS compatible, with EIRP covering 1/3 U.S.		825		165		165		500
DBS package: compatible, with EIRP covering 80% of U.S.		2,000		400		400		1,200

Note: calculations are rounded

10.4 Economic Impact Assessment

The economic impact of the successful penetration of the U.S. DBS market by Canadian DBS services affects the DBS service providers involved, their satellite facilities providers, and Canadian programming suppliers. Quantification of possible economic benefits must begin with the projected penetration of Canadian services in U.S. markets (calculated earlier). From those estimates, subscriber/subscriber revenues and the financial benefit for each component of the industry can be derived.

10.4.1 Financial Impact

As shown in Exhibit 10-3 there are many possible market penetration projections for Canadian DBS services in the U.S., depending on assumptions as to how the U.S. DBS market will develop and what kind of Canadian DBS service will seek to enter this market. For the purposes of analysis, three penetration levels are selected:

- 50,000 subscribers,
- 250,000 subscribers,
- 1,000,000 subscribers,

An integrated DBS package of five television channels is taken as the base case. These channels might comprise:

- two pay television services which are programmed to complement each others' schedule;
- two advertising supported services;
- one public broadcasting service.

Exhibit 10-4

Economic Impact Assessment

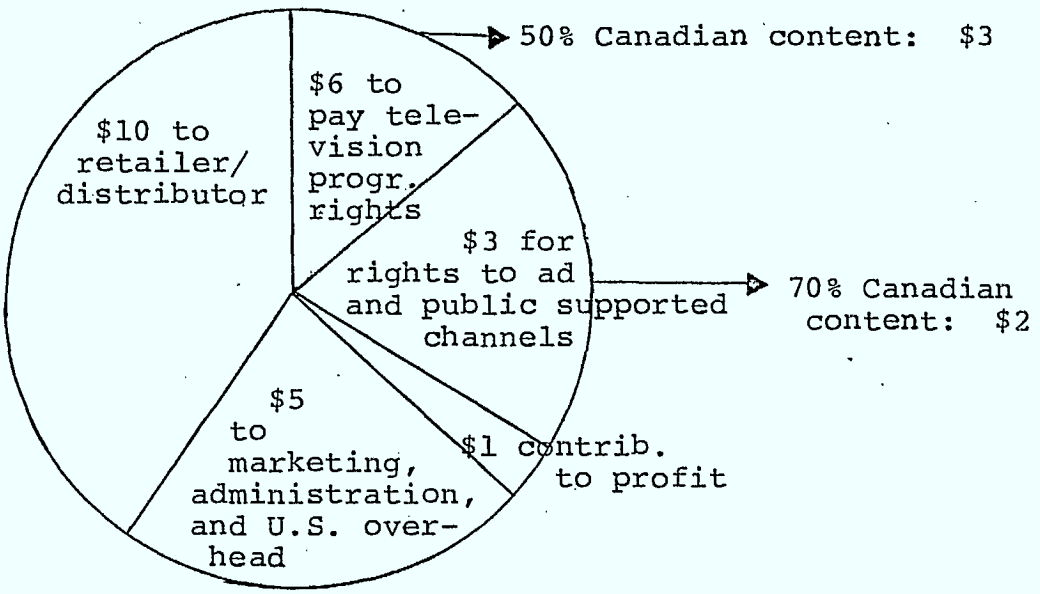
DBS package: 5 channels

2 - pay television

2 - advertising supported

1 - public sponsored

Subscription revenue: $25/month



	Subscription revenue	Funds for Canadian programming
Amount per subscriber per annum	$300	$60

It is estimated that these services would be offered at $25/month/subscriber for the whole package--i.e., priced competitively against U.S. DBS. It is assumed that the service would be priced at marginal costs, with the satellite costs amortized on the Canadian market. In fact, this may very well not be the case, for the DBS package might be designed to have the space segment costs amortized over all markets. However, for the purpose of analysis it is assumed that the $25 monthly subscription charge is allocated as follows (see also Exhibit 10-4):

- $10 to the terrestrial retailer/distributor;
- $6 to pay for the pay television programming rights for two pay channels, of which 50 per cent would be for Canadian content;
- $3 to pay for the programming rights of the three conventional ad or public sponsored television services, whose Canadian content would be about 70 per cent in terms of funding;
- $5 for marketing, administration and overhead in the U.S.;
- $1 to be contribution to profits.

The allocation for pay television programming rights is based on estimates of current Canadian pay television rights acquisition costs. Non-subscription services would be supported by advertising and public funds, but would likely require some additional revenue to pay for the right to have that programming serve U.S. subscribers. The Canadian content proportion is based on the stipulated pay television conditions of license and the practice of commercial broadcasters as discussed in Section 3.* This assumption may not be valid, for the Canadian DBS

package provider might argue that the U.S. proportion of its revenues should not be considered relevant to conditions of license regarding Canadian programming funds allocation. However, at this point, it is assumed that U.S. revenues would be included in calculations of required expenditures on Canadian programming.

Assuming subscription revenue of $25/month and Canadian content requiring $5 of that amount, annual subscription revenue per subscribing television household is $300, of which $60 would be for funds for Canadian programming. The subscriber penetration estimates identified above would mean, then, that annual subscription revenue and investment in Canadian programming would be as follows:

	Range of Subscriber Penetration Levels		
Annual Financial Impact	50,000 subscribers	250,000 subscribers	1,000,000 subscribers
Total annual subscription revenue	$15 mm	75 mm	300 mm
Total annual incremental funds for Canadian content	3 mm	15 mm	60 mm

10.4.2 Economic Impact

A first impact of U.S. market penetration would be the benefits accruing to the Canadian DBS packager accessing this market. Indeed, the U.S. market could form a major component of the business plan of the Canadian DBS service, particularly if the service is delivered at a high power level and/or in a footprint covering most of the U.S. market. To such a DBS packager, the extra subscriber revenue would be crucial. The extent to which aggressive participation in the American market is sought will depend on whether Canada's DBS system is led by public broadcasters whose interests are concentrated on rural and remote Canadian markets, or whether it is led by commercial interests intent on reaching the largest possible market.

The economic benefits to individual pay television packagers and broadcasters would be directly proportional, then, to their involvement in a Canadian DBS package accessing U.S. markets. Canadian access to U.S. markets will, however, be paralleled by American penetration of Canadian markets. So the benefits of participation in the American market have to be balanced against the adverse impacts on Canadian broadcasting services described in Section Seven.

(a) Programming Suppliers

Canadian program suppliers would benefit from the extra revenue earned by Canadian penetration of the U.S. DBS market. assuming that such revenues were not merely used to acquire more rights to programming. U.S. DBS incursion into Canadian pay television markets would however, mean a reduction in payments for the rights to Canadian programming. Of

course, the lack of a strong Canadian DBS presence in U.S. markets could also mean the absence of a strong Canadian DBS system in Canadian markets. Thus, a Canadian DBS service aimed at accessing U.S. markets might be needed simply to preserve the position of Canadian programming suppliers and service packagers.

(b) Commercial Broadcasting Service

Several hundred thousand or even several million scattered U.S. subscribers to a Canadian DBS service would not be all that meaningful for Canadian advertisers. Even the existing advertising supported satellite-to-cable services are delivering viewing audiences whose geographic dispersion makes them of marginal value to media buyers. The fewer potential subscribers to Canadian DBS services constitute a still less attractive advertising record. However, broadcasters could anticipate some additional revenue accruing to subscription fees for the Canadian DBS services, although that income would probably need to be allocated to incremental program rights' costs. In all, penetration of U.S. markets by Canadian DBS will not mean a great deal for those wishing to increase their sales of commercial advertising.

(c) Carriers

The carriers would be interested in the success of Canadian DBS services in the U.S. markets because of their financial interest in Telesat. Indeed, access to U.S. markets might be essential to the viability of higher powered DBS service, from Telesat's business perspective.

10.5 Entry Barriers

The two main barriers to entry of Canadian DBS services into the U.S. market bear on regulatory environment and market conditions.

10.5.1 Regulatory Barriers

U.S. regulations do not prohibit reception of foreign television signals. Indeed, Americans in practice have a preference for the free flow of information, including television programming. However, there has not yet been an alteration of the 1972 exchange of letters between Canada and the U.S. with respect to reception of cross-border satellite delivered broadcasting services. Until bilateral negotiations alter these arrangements, there remains in effect a hands-off practice with respect to the sale of pay television subscriptions across the border. This is demonstrated most clearly by the absence of any marketing effort by U.S. STV border broadcasters in the Canadian markets.

If Canadian pay television packagers and broadcasters were to pursue U.S. markets at this stage, they might inspire unwanted CRTC reaction. At present, in fact, Cancom does not respond to requests that it has received to sell its services across the border (particularly in Alaska), presumably for that reason. Aggressive promotional activity by Canadian service providers in the U.S. would lead to Americans wanting to do the same in Canadian markets. Since Canada has not defined its position with respect to the free or impeded flow of cross-border DBS signals the entry of Canadian interim DBS service providers into the U.S. will continue to be stalled.

10.5.2 Market Barriers

There are two main categories of barriers to the introduction of Canadian DBS services into the U.S. market. First, there may be a perception that signals from Anik C and Canadian DBS services would not be as powerful or as high in quality as U.S. interim and dedicated DBS services. This would hinder marketing and affiliation efforts with, say, SMATV owners. Second, Canadian services would feature programming that has been sold to other American service providers operating in the same U.S. markets. Key program rights holders could balk at selling programming to Canadian DBS service providers, then intend to distribute the programming in markets for which the rights have already been sold.

The practice for pay television in the U.S. is non-exclusive--i.e., multiple sale of the same rights to several service packagers covering similar markets. Quite possibly, DBS services will be treated like the pay television services, with non-exclusive arrangements. However, rights <u>are</u> acquired in some cases on an exclusive basis for pay television, and even when bought on a non-exclusive basis the sequence of availability is important to the service provider. Therefore, transborder DBS services could complicate immeasurably rights acquisition negotiations. It is assumed, however, that in light of the growing number of pay services, whether via DBS or not, the marketplace will find fairly flexible and pragmatic ways of buying and selling rights. Thus, this market barrier should not be a major problem.

The rights to programming that is used for conventional broadcasters is a more difficult problem. The rights are sold on a market exclusive basis, as opposed to a per subscriber, non-exclusive basis as for pay television For example, then, the Toronto area rights for a drama series produced in the U.S. are acquired only for that geographic area. If programming is then bounced off the satellite back into the U.S., broadcasters in those markets where this programming is exhibited could be expected to complain vociferously to the rights suppliers. Where this occurs on an off-air basis in conventional broadcasting, especially in a pre-release situation, Canadian broadcasters have been cut off from future access to the programming in question.

It is likely that all DBS services will be delivered on a scrambled basis As well, subscribers will be scattered across the country, with very little concentration in urban areas. Thus, it is unlikely that the rights problem would be regarded as severe as it is for conventional broadcasting. Again, the marketplace could tend to accommodate this reverse intrusion into American markets by Canadian DBS services with American programming rights.

In summary, while there are few existing regulatory or apparent market barriers to the entry of Canadian DBS services to the U.S., timing becomes a critical factor. As long as the U.S. market is perceived as not being open to Canadian DBS services, early penetration will be left to U.S. DBS services. This is the case for the interim DBS services. However, without a potential U.S. market base, plans for a dedicated DBS service from Canada might be delayed as well. Thus, STC and others

planning U.S. DBS services might be in the market with high powered satellites by 1986, perhaps two or more years ahead of Canadian DBS services.

Early entry into the market has proven to be quite important in U.S. cities now serviced by both pay cable and STV. Cable companies selling into communities already served by STV have experienced considerable resistance, despite the superior quality and competitive pricing of their offering. Similarily, HOB leadership position relative to competitors like Showtime to being first into the pay television market.

The advent of "multi-pay" reflects the fact that existing pay subscribers seem to be willing to subscribe to additional services. About 60 per cent of pay television subscribers in the U.S. now take more than one pay television tier, when multi-pay is available. Indeed, HBO has launched the Cinemax pay service, billed in the marketplace as complementary to HBO. Cinemax already has 1.6 million subscribers (as of June 30, 1982). DBS services will be sold in packages offering several channels for a price equivalent to two to three existing pay television services. (Multi-pay penetration supports the notion of DBS package sales, the concept of "multi- package" is not likely to achieve the same market acceptance as multi- pay.). If few television households subscribe to multi package DBS services, the first DBS package to satisfy a subscriber will be difficult to dislodge.

10.5.3 Net Effect of Transborder DBS

The potential effect of U.S. and Canadian DBS services in each other's markets can be calculated from matching the projections developed in this Section with those in Section Six. The results in subscriber terms for each U.S. DBS scenario are portrayed in Exhibit 10-5.

This comparison shows that Canadian spillover into U.S. markets would roughly parallel that of U.S. penetration into Canada in the first scenario of successfully introduced dedicated DBS systems. This scenario, on the Canadian side, assumes the timely and aggressive market entry of a Canadian DBS packaged service. If the Canadian DBS service is designed to reach most of the U.S. market, however, the advantage could be on the Canadian side. The only scenario whereby the Canadian DBS system fails to match the U.S. DBS penetration is Scenario Four; in this scenario one DBS service dominates the North American market on the basis of price competitiveness.

Exhibit 10-5

COMPARISON OF U.S. DBS PENETRATION INTO CANADA VS CANADIAN DBS PENETRATION INTO U.S
(000 subscribers)

	Scenario 1	Scenario 2	Scenario 3	Scenario 4
U.S. DBS penetration into Canada	1,050	400	200	1,550
Canadian DBS penetration into U.S. - compatible earth stations, with EIRP covering 1/3 U.S.	825	165	165	500
- compatible earth stations, with EIRP covering 80 per cent U.S.	2,000	400	400	1,200

11.0 U.S. DBS AS A MARKET FOR CANADIAN PROGRAMMING AND EARTH STATION

This section assesses the potential value of the U.S. DBS market for Canadian program suppliers and for Canadian equipment manufacturers, specifically those supplying earth stations.

11.1 U.S. DBS Programming Market

The U.S. broadcasting environment is undergoing considerable structural changes of which the introduction of DBS services is only one part. Traditional program supplier/broadcaster relationships are being disrupted, leading to increased opportunities for new program suppliers. Canadian programming suppliers are already taking advantage of some of these opportunities--for example, in the sale of drama programming to U.S. pay television systems.

To estimate the potential sales of Canadian programming to U.S. DBS markets the following analytical steps were undertaken:

- assess the market:
  - identify the likely structural characteristics of the U.S. DBS market for programming;
  - project the potential programming needs of U.S. DBS services, and compare with other U.S. pay and broadcasting markets;
- assess the Canadian programming supply capability:
  - identify the structural characteristics of Canadian programming suppliers;
  - project the development of programming suppliers in the 1980s, particularly as a result of the introduction of pay television in Canada;
  - assess the ability of Canadian suppliers to capture some of the U.S. DBS market;

- determine sales potential:
  - develop two scenarios, one optimistic and one based on a realistic assessment of the future capability of Canadian programming suppliers;
  - estimate the sales potential for Canadian programming suppliers for each of these scenarios.

11.2 U.S. DBS Market for Program Suppliers

In view of their multi-channel, integrated programming approach, U.S. DBS services will represent highly centralized markets for programming suppliers. Buyers will be seeking to acquire rights for programming of four to five channels. Although there should be some crossover of programming from one channel to another, the programming needs will be roughly equivalent to those of the same number of independent services.

Although the integrated services would be centralized, it could be expected that they would exhibit buying patterns similar to existing American commercial networks and pay television packagers. That pattern is to acquire most non news and non sports programming from outside suppliers, primarily, of course, from the Hollywood majors. In theory, any outside supplier has a crack at these markets, while in practice most of the sales go to a few major production studios and independents in Hollywood. However, as documented in a survey by Pri-Media,* programming supply companies rise and fall over the years, a pattern which presents the opportunity of major market breakthroughs for new entrants to the business.

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* Pri-Media - see intervention to pay-tv hearings, CRTC 1981. For example Desilu Productions rose in the back of the I Love Lucy program series but has since receded. Mary Tyler Moore Productions ascendency occurred later as did Norman Lear for All in the Family.

The types of programming required for DBS services should cover the gamut from conventional network drama series to special interest programming (childrens, cultural, and even second language) sports, and feature film and other high production value drama programming typical of pay television operators. The conventional and special interest programming will be required for the advertising supported services as part of the typical multi-channel DBS package that is proposed. Rights to sports programming should also be available to DBS in view of the lack of significant overlap between DBS subscribers and conventional and pay television networks.

The core of the programming is likely to be quite similar to that shown on the pay television services at present, since that kind of programming is what appears to sell subscriptions. At the beginning, with low subscriber bases, almost all of the DBS programming will be acquired through the purchase of rights, on a per subscriber basis, to already produced programs. DBS in the initial years will, therefore, be primarily a subsidiary market, much like home video today, for example, or what pay television was in the early years in the U.S. As the subscriber base builds, the amount that U.S. DBS will be able to pay for programming will enable them to consider original production, as outlined in Section Four.

It is useful to review the experience of U.S. pay television services in this regard. Historically, U.S. pay television packagers commissioned few original productions. However, the amount that pay television services like HBO could pay for programming rights began to approach the level equivalent to low budget feature films. For example, at the five million subscriber mark for any pay television service (HBO, is now nine and a half million subscribers) the payment would be up to two million dollars for the rights to show a specific feature film. Even with that kind of programming budget HBO and Showtime have only fairly recently begun to commission original production. For example, HBO plans twelve new made for pay television movies over the next year.

The size of the U.S. DBS market can be estimated based on the number of projected subscribers as outlined in the four U.S. DBS scenarios. Exhibit 11-1 shows the number of subscribers to the U.S. DBS services and translates those projections into the funds that would be used for acquiring rights to programming. The projections are based on the assumption that each subscriber would be generating $2.50/month for each of two pay television equivalent services and $1.00/month for three advertising-based services. These calculations show that DBS could well become a major market for programming suppliers.

11-1 U.S. DBS Programming Market

	U.S. DBS SCENARIO – NUMBER OF SUBS. (000,000)			
	1	2	3	4
Interim DBS	2	2	500	3
Full DBS	10	2	2	15

	U.S. DBS SCENARIOS – FUNDS BY PROGRAMMING RIGHTS* ($000,000)			
	1	2	3	4
Interim DBS	180mm	180	45	270
Full DBS	900	180	180	1450

*Calculated at $7.50/sub./mo., or $90/year allocated as follows:
- 2 pay-tv channels with rights costing $2.50/sub./mo. each;
- 3 ad-supported channels with rights costing $2.50 in total

The value of the U.S. DBS market relative to other U.S. pay and broadcasting markets can be appreciated by reference to current and projected markets. The number of pay television versus DBS subscribers and the programming expenditures (or rights costs) for pay television, cable channels (i.e., non-pay), commercial broadcasters, and DBS services is shown on Exhibit 11-2. While DBS is important, "conventional" pay television and the networks are much larger markets.

The pay television and commercial broadcasting projections will in practice vary depending on how important DBS becomes as a delivery mode for those services. Thus, in 1990, there may be some significant overlap, particularly between pay television and DBS. This is not reflected in the estimates on Exhibit 11-2, especially in respect of Scenario Four (where HBO goes DBS).

11.3 Canadian Programming Suppliers

Canadian programming suppliers consist of:

- major commercial broadcasters which have captive production companies that supply the bulk of commercial network programming, particularly for the CTV;
- public broadcasters, particularly the French and English services of the CBC;
- independent producers.

Exhibit 11-2

U.S. DBS VERSUS OTHER MARKETS

	1982	Projected for 1985	Projected for 1990
No. of pay-tv subscribers (via cable)(1)	19.9 million (June 30)	23.6 million	31.9 million
No. of U.S. DBS subscribers	-	0.5 - 2 million (depending on scenario)	2 - 15 million (depending on scenario)
	1982	**Estimated 1985**	**Estimated 1991**
Programming rights costs pay-tv(2)	$597 million	710 million	957 million
Commercial broadcasting program expenditures(3)	$3 billion	5-7 billion	8-12 billion
U.S. DBS programming costs	-	$45-270 million (depending on scenario)	$180 million to $1.35 billion (depending on scenario)

1. Projections are those of Kalba Bowen Associates from their HDTV study for CBS, op. cit.

2. Calculated on the basis of $2.50/mo./sub. rights costs. It should be pointed out, however, that some estimates are greater, eg., Grieve Horner (see below) projected pay-tv and non-pay cable programming demand as follows:

	1981	1986	1991
pay-tv	$390mm	$1.59 billion	$3.4 billion
non-pay	$ 75mm	$280mm	$900mm

3. Derived from Grieve Horner Associates Inc., 1981, DOC, "study of U.S. Market for TV Programs".

Historically, U.S. network broadcasters and the syndication (i.e., independent station) markets have been difficult for Canadian programming suppliers to crack. With the advent of pay television and other satellite to cable services, U.S. markets have become more fertile for Canadian programming suppliers. These markets seem to have been tapped primarily by independent producers, particularly in the feature film category.

Although statistical documentation is poor in this area, available information is portrayed on Exhibit 11-3. The major category of exports to the U.S. consists of the acquisition of rights to Canadian made feature films for commercial and pay television services in the U.S. Not much conventional television programming is sold in the U.S.; estimates of $7 to $8 million were quoted in the financial press for 1980 and 1981. The CBC, as the largest supplier of Canadian television programming, generates only about a million dollars in sales to the U.S. market.

Since licensed pay television packagers in Canada are prohibited from owning production facilities, pay television should ultimately have some stimulative effect on the independent producer, who has so far suffered from the lack of significant markets domestically. However, in the early years Canadian pay television operators will be inclined to acquire rights to existing and emerging product rather than sponsoring extensive original production. This has been the U.S. pattern, and reflects some

Exhibit 11-3 Historical Indication of Export Sales of Feature film and television programming to tv markets

CFDC FINANCED SALES ('77-'79)(1)

Television programming revenue		0.7
Feature film revenues		
CBC	1.8	
CTV, Global	2.6	
Total Canada		4.4
U.S. commercial networks	14.5	
Pay television networks	16.4	
Total U.S.		30.9
Total		36.0

TELEVISION PRODUCTION EXPORTS (2)

	Exports	
	1977	1979
Independent production companies	1.7	6.0
"Affiliated production companies	.3	.1
Public broadcasters	1.1	2.0
Total	3.1	8.1

1. Belanger, et. al., p. 36.

2. Table derived from figures in Belanger et al., p.30-37. Survey only obtained figures from four companies, although they were the major ones.

sound business judgement when competition is tough and subscriber bases are small. Nevertheless, pay television in Canada should build up a subscriber base quite quickly and begin to offer independent producers within 2-4 years sufficient enough pre-sale commitments to enable them to initiate new projects within the next two to three years.

Following the bursting of the feature film bubble between 1978 and 1980, independent producers in Canada have not been generating a sufficient level of business to keep more than a few of them fully occupied. 1980 Statistics Canada data indicate that there were 15 companies with sales over a million dollars and 19 companies with sales between five hundred thousand and one million. However, these included producers of television commercials and educational/institutional programming, as well as feature film and television programming.

For these independent production companies, and indeed for broadcasters seeking co-production opportunities, U.S. DBS services represent an incremental market. DBS development should coincide with the emergence of a more substantial Canadian independent production sector, following the buildup of Canadian pay television subscriber bases.

Two scenarios are postulated for Canadian supplier penetration of the DBS market, based in part on the Canadian penetration achieved in U.S. pay television markets to date.

The first scenario is that Canadian television programming suppliers will continue to produce basically for the Canadian broadcasting market, selling to U.S. DBS and other markets as a secondary source of revenue. This is the present case for integrated broadcasters. With respect to independent producers, it is assumed in this scenario that the record achieved by Canadian programming suppliers (mainly feature film producers) in the '77-'79 period would be similar to what could be accomplished in terms of sales to U.S. DBS services. As indicated in Exhibit 11-3, 16.4 million dollars was the total revenue generated in pay television markets in CFDC financed sales for '77-'79. This represents about 6 per cent of the total market. If carried forward the results are shown as the "realistic" scenario in Exhibit 11-4. Such a scenario might still be relatively optimistic, given the substantial number of feature films produced in the latter part of that time frame in Canada. Although this boom period might distort calculations to some extent, it is assumed that while fewer projects will be completed than there were in the boom period, these that are will generally be more saleable.

The second scenario represents an optimistic Canadian market share, stemming from the potentially positive impact that Canadian pay television could have on the development of Canadian programming suppliers. In this scenario, the CBC and public broadcasters are forced by economic necessity to enter into a greater number of co-productions with independent producers, who will be amortizing their production costs over Canadian broadcasting, pay television, and foreign (both Europe and the U.S.) markets. It assumes that the value of the Canadian dollar and lower domestic union rates continue to make this country an attractive place to produce programs. Toronto and Montreal continue to be

Exhibit 11-4

PENETRATION OF U.S. DBS MARKETS BY CANADIAN SUPPLIERS

	Total programming demand '77-'79	Canadian Revenues '77-'79	Canadian Market Share
U.S. pay-TV networks	270 million	$16.4mm	6%

	1985-86	1990
U.S. DBS programming needs	$45-270 million	$180 million to $1.35 billion
"Realistic" Canadian market share scenario	$2.7 to 16.2 mm	$10.8 to 81 mm
"Optimistic" Canadian market share scenario	$4.5mm to 27mm	$18mm to $130 mm

Exhibit 11-4

PENETRATION OF U.S. DBS MARKETS BY CANADIAN SUPPLIERS

	Total programming demand '77-'79	Canadian Revenues '77-'79	Canadian Market Share
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Exhibit 11-4

PENETRATION OF U.S. DBS MARKETS BY CANADIAN SUPPLIERS

	Total programming demand '77-'79	Canadian Revenues '77-'79	Canadian Market Share
U.S. pay-TV networks	270 million	$16.4mm	6%

	1985-86	1990
U.S. DBS programming needs	$45-270 million	$180 million to $1.35 billion
"Realistic" Canadian market share scenario	$2.7 to 16.2 mm	$10.8 to 81 mm
"Optimistic" Canadian market share scenario	$4.5mm to 27mm	$18mm to $130 mm

POTENTIAL IMPACT OF U.S. DBS SERVICES ON CANADA