THE RELEVANCE OF THE U.S. SATELLITE ENVIRONMENT TO THE CANADIAN SCENE

VOLUME I

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REPORT

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VOLUME I

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The views expressed in this report are those of the author and do not necessarily reflect the views or position of the Department of Communications.

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PREFACE

The satellite communications industry in the United States has developed in a diversified and dynamic way. Governmental and regulatory policy environments influence the development and operation of satellite systems. The objective of this study is to analyze the relevance of the U.S. satellite environment to the Canadian scene, taking into consideration the differences in U.S. and Canadian industry and regulatory environments. This involves the examination of U.S. governmental and regulatory policies which have influenced the development of the U.S. satellite industry and identify and review various considerations regarding the applicability of U.S. policies to the Canadian situation.

The study is presented in two volumes. Volume I contains the Executive Summary and Sections A, B, and C. Volume II contains Sections D, E, and F, Appendix I and II, the bibliography and glossary.

In Section A, an overview of the development of the U.S. satellite industry is presented, including early satellites and their uses, U.S. domestic satellite systems, and some recent technological developments.

Section B discusses the philosophy of U.S. satellite policy. The "open skies" policy for satellite communications is described along with an examination of the events and rationale

which led to the adoption of this policy.

Section C reviews the statutory and regulatory measures that have been adopted in the U.S. to achieve satellite development objectives.

Section D contains a detailed analysis of the structure of the U.S. satellite communications industry and the impact of statutory and regulatory measures on the development of this industry. Included is an examination of the impact of these measures on the authorization and operation of satellite common carriers and specialized common carriers, on the introduction in the U.S. of new services, and on the users of these services. A brief summary of industry views and regulators' views on industry developments and regulatory policy is also presented.

A brief overview of the satellite industry, services, and statutory and regulatory measures in Canada is presented in Section E.

Section F examines the issue of the applicability of the U.S. policy and regulatory measures to the Canadian situation within the context of the differences in the Canadian telecommunications industry and market and in the regulatory structure.

The study does not attempt to provide recommendations regarding the appropriate market and regulatory structure for satellite communications in Canada. This question is beyond the scope of this study. It would require an exhaustive analysis of various factors and issues relating to telecommunications in Canada, a number of which are highlighted in this paper.

EXECUTIVE SUMMARY

The objective of this study is to examine the U.S. governmental and regulatory policies which have influenced the development of the U.S. satellite industry and identify and review various considerations regarding the applicability of the U.S. policies to the Canadian situation.

A. Overview of U.S. Satellite Development

The satellite communications industry in the U.S. has developed in a diversified and dynamic way. It is a successful commercial off-shoot of the U.S. space program.

The first U.S. satellite was orbited in 1958, followed by a number of experimental passive and active satellites. The first geostationary satellite, Syncom, was launched in 1963. Much of the technological development and experimentation was the work of NASA, working closely with industry, and the technology was transferred to the private sector for the commercialization of satellite communications.

With the creation of Comsat in 1962, and following the 1972 FCC Domsat decision establishing policy for domestic satellites, satellite communications became commercially operational. The first domestic, commercial satellite system was Western Union's Westar system in 1974, followed by RCA's Satcom, Comsat's Comstar, the SBS system, and Hughes' Galaxy. Several other systems have received FCC authorization and are

planned for launch and operation during the 1980's.

These satellite systems provide a variety of message (voice and data) and video services, with video remaining the mainstay of the industry. Experimentation with new services is a continuing process. NASA is again actively participating in communications satellite research and development, including development of the high frequency 30/20 GHz band, applications of the shuttle, larger satellites, and more diverse services. As new technologies are developed in NASA's civilian space program, they will continue to be transferred to the private sector for adaptation to commercial use.

B. Philosophy of the U.S. Satellite Communications Policy

The U.S. domestic satellite communications policy was established by the FCC in its Domsat decision in 1972, and the basic philosophy underlying that decision has not changed. The current policy is described as an "open-entry" policy within a regulatory structure of "maximum flexibility." The philosophy of this policy is based on reliance on the marketplace or free enterprise and competition to determine the direction, design, development, and success or failure of satellite communications.

The political and economic events which shaped domestic satellite communications policy have their roots in the 1960's, and involved numerous players and interests. The early considerations were with the form which a commercial venture in space should take. Views ranged from various forms of private ventures to a government owned monopoly. The issue was

resolved when President Kennedy issued a policy statement favoring private ownership but with government oversight to ensure not only public interest objectives, but national and foreign policy objectives as well. The need for the expeditious establishment of a satellite communications system favored a single, strong entity that could mobilize the developed technology and represent U.S. interests internationally. Comsat was subsequently created in 1962 as a privately-owned monopoly, regulated by the FCC.

Rapid technological developments and changing needs and circumstances during the 1960's changed the satellite environment and the policies governing satellites. Proposals for a domestic satellite system ranged from a monopoly system (controlled by AT&T), to a "pilot project," to free and open competition.

The Johnson Administration and the FCC tended to favor the pilot project approach — a gradual development of satellite communications to gain insight and operational expertise in the commercial applications of domestic satellites. Before any decision could be taken, the change to the Nixon Administration in 1968 produced a change in philosophy. The new Administration favored the development of satellite communications in the free enterprise mode and lobbied vigorously for FCC acceptance of its "open-entry" recommended policy. The FCC Domsat decision of 1972 essentially adopted the "open-entry" philosophy. This policy decision of the FCC was generally consistent with its decisions in other areas of telecommunications at the time which

reflected a growing trend toward liberalized telecommunications policies and the promotion of competition.

The period following Domsat is characterized by an increasing number of applicants to establish satellite systems, changing technology, new FCC approved services, and continuing FCC promotion of competition, deregulation, and flexibility in regulatory measures.

But while the FCC attempted to adhere to its marketplace-reliance philosophy, there are some recent indications that certain technical and physical constraints in satellite utilization have caused "some tempering to our [FCC] normal hands-off policy." The crowding of the useable geostationary arc has recently brought concern to the FCC regarding efficiency in allocation and use of the spectrum. Concern has been expressed for the need to examine more closely the need for and features of proposed new satellites, increased monitoring of existing satellites, and possible establishment of minimum satellite capacity requirements.

C. U.S. Statutory and Regulatory Measures

With the exception of the Communications Satellite Act of 1962 which created Comsat and addressed international satellite activity, Congress has not passed specific legislation to regulate the new telecommunication technology. Since both domestic and international satellites operate as common carriers and engage in interstate activity they are subject to the Communications Act of 1934 and fall under the jurisdiction of

the FCC.

A series of decisions of the FCC since 1959 have promoted competition and deregulation in telecommunications, and decisions regarding satellites have been part of the trend. The 1972 FCC Domsat decision established an open-entry, competitive policy with certain limitations and conditions. While the FCC under this policy makes no attempt to prescribe systems, services, or satellite design, satellite operations are carefully scrutinized. All applications for the construction of satellite facilities are examined by the FCC to ensure that they comport with the public interest before authorization is granted; applicants must be financially, technically, and legally qualified; conditions can be imposed on applicants and operators as they were with AT&T and Comsat; capacity utilization is monitored; and orbital assignments are temporary. Wholesale carriers must permit access to transponders, and carriers providing retail interstate satellite services must have access, at reasonable tariffs, to local loop and interchange facilities.

FCC measures permit a variety of earth station ownership patterns and afford diversified access to space segments. The FCC has approved customer-owned earth stations, distribution of diversified program material to cable TV systems, the use of small, low-cost earth station antennas for transmission and reception, etc. In 1979 the FCC deregulated domestic satellite receive-only earth stations.

The regulatory measures require 4° orbital spacing at 6/4 GHz and 3° spacing at 14/12 GHz, and the FCC is currently

investigating the issue of possible 2° spacing.

The FCC has authorized numerous satellite services and satellite operations, including long-term lease and sale of transponders, shared-use and resale of satellite capacity, direct broadcast satellite services, private networks, trans-border satellite services, utilization by U.S. operators of Canada's Anik satellite, and a variety of voice and data services including private line services, videoconferencing, etc.

The FCC is attempting to introduce similar pro-competition, deregulation measures in international satellite communications. Domestic common carriers have been permitted to offer international services, and the FCC has approved the restructuring of Comsat permitting Comsat to offer end-to-end customer services in competition with other carriers.

The stated objectives of satellite policies and regulatory measures is the creation of an atmosphere allowing for maximum experimentation and innovation. The FCC stresses flexibility in its regulatory approach, minimum restrictive measures, and views the marketplace as the most appropriate means of regulating and developing satellite technology.

D. Impact of Statutory and Regulatory Measures

Changes in the regulatory environment combined with rapidly developing technology to produce a major impact on the telecommunications industry in the U.S., including the satellite segment. Technology eroded the natural monopoly position of traditional carriage, as microwave and satellites were added

to cable transmission, and produced numerous new services in voice and data communications. At the same time a relaxed regulatory climate with easier entry and fewer restrictions facilitated the introduction of these services and innovations into the marketplace.

Domestic satellite systems were rather slow to get started following the 1972 Domsat decision, and in fact, four of the original eight applicants either dropped or postponed their planned systems. Western Union launched its first Westar in 1974, followed by RCA Americom (Satcom satellites) and Comsat General (Comstar satellites). Westars were integrated with Western Union's terrestrial systems; Comstars were leased by AT&T and GTE to provide basic telecommunications services; and RCA's Satcoms found an early, and what was later to prove a very lucrative market, in television services. Services were gradually expanded to include private line voice and data communications, with new companies appearing and leasing facilities from the carriers.

The late 1970's and early 1980's witnessed a number of new applicants proposing satellite systems. These included Satellite Business Systems, American Satellite Co., Hughes Communications Inc., Southern Pacific Satellite Co., U.S. Satellite Systems, Alascom Inc., Argo Communications, Ford Aerospace Satellite Service Corp., Oak Satellite Corp., and Rainbow Satellite Inc. Furthermore, AT&T and GTE proposed to launch their own satellites, and the FCC decision to permit direct satellite broadcast services attracted several additional

applicants. There are currently 20 carriers who have either launched, or have authorization to launch, satellite systems.

A number of the new entrants, such as SBS and ASC were established as subsidiaries of giant firms or conglomerates in the electronics, aerospace, financial, and communications industry (IBM, Fairchild Industries, Aetna Life, Continental Tel., Hughes Aircraft), or were established with substantial financial backing from large firms (Prudential Ins., Manufacturers Hanover Trust).

Besides DBS services, some of the newer services being developed and utilizing satellites in communications include: teleconferencing and videoconferencing; medium-power-direct-to-home satellite broadcasting; expanding message and data services such as SBS Skyline and Southern Pacific's Sprint; distribution services for TV networks, cable/pay TV, and radio broadcasters, such as AT&T's new Satellite Television Service; and several developing technologies which appear to have considerable potential for integrating with satellites to widen their applications including cellular radio and fiber optics.

There are some current signs, however, that the rapid growth of satellite services and the growing number of new entrants and satellites may have begun to level off. Supply of transponders appears to have caught up with demand, there are indicators of idle and under-utilized transponders, and even an excess of supply. Satellite systems are also becoming more expensive with escalating costs of satellites and launch.

Whereas a communications satellite could be built and launched at a cost of about $30 million in the mid 1970's, the current cost is about $60 million. Another potential limitation to the continued growth of satellite facilities is the crowding of the geostationary orbit. There are few useful slots remaining for U.S. satellites at 4° and 3° spacing, and reduced spacing to 2° will involve costs, particularly to earth stations and receiving antennas.

Views of communication industry representatives and analysts on the future development of satellites vary. Some see business voice and data communications as a largely untapped market, with extensive potential. Others tend to favor the video market (pay/cable TV, DBS) as the major application of satellite communications. There is no concensus on the potential impact of fiber optics on satellites, although the general view is that fiber optic technology is not likely to displace satellites for long distance transmission. The U.S. industry in general supports the FCC policies of open entry, competition, and flexibility in regulation.

While U.S. companies have sought transborder services agreements with Canada, there is no general view of Canada as a major or unique market, but rather as an extension of the U.S. market.

The FCC decisions providing for free entry, interconnection, and a wide range of earth-station operations and ownership, combined with decisions relating to shared use, sale, and resale of satellite capacity, established the

environment facilitating satellite industry development in the marketplace, without undue regulatory restrictions, and the industry appears to have responded to the satisfaction of both the regulators and the entrepreneurs. The evidence from observations on the development of the industry, together with views of the industry and regulators, tends to indicate that the U.S. regulatory approach and policies have successfully served the industry and the consumer in that country.

E. Satellite Communications Issues in Canada

The launch of satellites began in Canada as a scientific venture with the launch of Alouette I. As awareness of the potential of satellites in communications grew, Canada began to examine its role in the utilization of this technology. Following the White Paper of 1968, Telesat was created in 1969 as the instrument of Canada's operational satellite program.

The legislation creating Telesat did not enunciate general national or public goals for Telesat. Several attempts were subsequently made, including co-operation with the Provinces, to arrive at a national communications policy. One such attempt produced a general Federal/Provincial concensus in 1979 on satellite distribution and television programming objectives and guidelines.

Most of the attention regarding satellite communications in Canada and the behavior of Telesat in relation to the public interest has been in the regulatory arena involving the CRTC. In 1977 the proposal for Telesat to join the TCTS (Connecting

Agreement) was rejected by the CRTC as not in the public interest. The Cabinet, however, by Order-in-Council approved the Agreement.

In 1981 the CRTC issued a major decision regarding Telesat which, among other directives, lifted some restrictions on Telesat operating solely as a carriers' carrier, and permitted Telesat to deal directly with customers other than members of TCTS. Once again the Cabinet through Order-in-Council varied the decision of the CRTC, retaining Telesat for the most part as a carriers' carrier.

The regulation of Canada's satellite system appears to be an ad hoc affair which does have some advantages of flexibility and expediency in determining policy. It would appear that interpretations of law with respect to just and reasonable rates and to undue preference and advantage which are the foundations of rate-based regulation by the Commission are secondary to more expedient concerns of the government in a larger context. The direction of the CRTC as regards to Telesat and the TCTS has been to try and prevent as far as possible any anti-competitive aspects of the alliance. The Cabinet appears to be following the route of removing restrictions on Telesat's operations but at a slower pace.

F. Considerations Regarding the Adaptability of U.S. Policies to Canada

There is ample evidence in the U.S. telecommunications industry that competition and the flexible regulatory approach of the FCC served as a stimulus in developing new products and

services, in promoting technological innovation and in reducing the time lag between innovation and the marketing of the new product or service. With specific reference to satellite communications, there is general agreement in the industry and government in that country that such policies as open entry, transponder sharing and resale, liberal interconnection and earth ownership policies, and reliance on the marketplace and market forces facilitated the rapid development and utilization of satellite services. Witness the number of firms in the industry in competition with one another, the fact that a notable shortage of satellite capacity in the late 1970's has been erased, the multitude of new satellite services that have been provided or are being developed, and the choice being presented to potential customers.

It would be inappropriate, however, to conclude that because the U.S. satellite policies and regulatory measures appear to have been successful in that country in the development of satellite communications, they could be imitated in Canada and achieve the same degree of success. The success of policies in the U.S. must be viewed in the context of the aims and objectives established by the U.S. Administration and the FCC for satellite communications and within the wider context of the nature and structure of the telecommunications industry and market. Similarly the adaptability of these same policies to Canada must be viewed within the context of Canadian aims and objectives, and within the context of any distinctive features of the Canadian telecommunications industry and

markets and demography.

There may exist government or public objectives other than those deemed achievable through the marketplace in the development of a technology or service. Considerations of national security, national interests and social and cultural objectives as perceived or established by government may enter to temper reliance on the marketplace and may require close government oversight.

There are also various economic and market factors which may influence the manner in which a technology such as satellite communications is utilized and the way in which the industry evolves, and which deserve careful consideration.

The environment in the U.S. in which the satellite open-entry policy has operated contained several favorable economic, market and regulatory factors for its success, including: the large and growing telecommunications market including pay/cable TV; the FCC rein on AT&T to prevent unfair competition; the regulatory structure with FCC jurisdiction over all inter-state telecommunications; favorable FCC decisions in complementary areas of telecommunications; the participation in the establishment of satellite systems of telecommunications companies with nation-wide terrestrial facilities into which satellite facilities could be integrated (AT&T, GTE, Western Union); and the participation of corporate giants (RCA, IBM, Aetna) providing the initial risk capital and establishing satellite communications systems through subsidiaries. It can be argued that the structure of the telecommunications industry in the U.S. and

the sheer size of the market could readily accommodate a competitive satellite component.

In Canada, in contrast, the market is relatively small, jurisdiction over telecommunications is fragmented, which in turn has resulted in fragmentation of the market and problems of access.

It would appear that potential does exist in Canada for more extensive utilization of satellite services, for satellite carriers to become more responsive to user needs, for possibly reduced costs, etc. Increased competition could conceivably exploit this potential as it has in the U.S. But on the other hand, there exist numerous factors and considerations which must be addressed before attempting an imitation of U.S. policies and regulatory measures. There are issues of whether the Canadian market, which is approximately one-tenth the size of the U.S. market is sufficient to support competing satellite systems; whether sufficient risk capital would be forthcoming in a free market, without government assistance or involvement to develop and provide satellite systems and services; whether the fragmented regulatory structure might not add to the risks and uncertainties associated with telecommunications systems; what effect competition might have on the economic viability of Telesat; and whether sufficient economies of scale might be generated from competing systems to maintain costs competitive with terrestrial systems. It may well be that the above factors, combined with the high and ever increasing costs of launching and operating satellite systems,

together with the risks and uncertainties involved, could mitigate against the possible success of a U.S.-style open entry policy.

While some observations have been made regarding the above issues, this study does not attempt to provide definitive answers to these questions. It was not intended to provide recommendations regarding the most appropriate market and regulatory structure for satellite communications in Canada. The study, through its detailed examination of U.S. satellite policy, the satellite industry and satellite communications developments, has traced the factors and developments which led to the adoption of, and which appear to have contributed to the success of, policy in that country. In the process, it identifies the relevant issues for consideration if similar policies were contemplated for Canada. But it remains for further study and analysis to determine whether U.S. policies, or some version of these policies, would be appropriate for Canada.

SOMMAIRE EXECUTIF

L'objet de cette étude est d'examiner les politiques gouvernementales et régulatoires américaines qui ont influencé le développement de l'industrie américaine des satellites et d'identifier et passer en revue les différentes considérations concernant l'applicabilité des politiques américaines à la situation au Canada.

A. Revue du développement américain de l'industrie des satellites

L'industrie des communications par voie de satellites s'est développée aux Etats-Unis d'une manière diversifiée et dynamique. Elle représente une suite commerciale couronnée de succès au programme de l'espace américain.

Le premier satellite américain a été mis en orbite en 1958. Il fut suivi par un nombre de satellites expérimentaux et passifs et actifs. Syncom, le premier satellite géostationnaire fut lancé en 1963. Une grande partie du développement technologique et de l'expérimentation était l'oeuvre de NASA, travaillant en coopération avec l'industrie privée. La technologie était transférée au secteur privé pour la commercialisation de communications par voie de satellite.

Avec la création de Comsat en 1962, et après la décision Domsat de la FCC en 1972 établissant la politique pour les satellites domestiques, les communications commerciales

par voie de satellite devenaient une réalité. Le premier système domestique et commercial de satellite fut le système Westar de Western Union en 1974, suivi du Satcom de RCA, du Comstar de Comsat, du système SBS et du Galaxy de Hughes. Plusieurs autres systèmes ont été approuvés par la FCC et ces systèmes sont pour être lancés et opérés pendant la décennie des 1980.

Ces systèmes de satellite pourvoient une variété de services de message (voix et données) et de vidéo, avec la vidéo restant l'appui principal de l'industrie. L'expérimentation avec des services nouveaux continue sans cesse. NASA participe de nouveau activement dans la recherche et le développement de satellites de communications, y inclus le développement de la bande de fréquences hautes 30/20 GHz, des applications de la navette de l'espace, des satellites plus grands ainsi que des services plus variés. Au fur et à mesure que de nouvelles technologies sont développées dans le programme de l'espace civil de la NASA, ces technologies continueront à être transférées au secteur privée afin d'être adaptées à des fins commerciales.

B. Philosophie à la base de la politique américaine des satellites de communication

La politique domestique américaine concernant les communications par voie de satellite a été établi par la FCC dans sa décision Domsat de 1972, et la philosophie de base à la base de cette décision n'a pas changée. La politique actuelle

est appelée une politique de porte ouverte au sein d'une structure de réglementation de flexibilité maximum. La philosophie de cette politique est basée sur la foi dans le marché ou l'entreprise libre et la concurrence pour déterminer la direction, la forme, le développement, et le succès ou l'échec des communications par voie de satellite.

Les évènements politiques et économiques qui ont façonné la politique domestique de communications par voie de satellite ont leur origine dans les années soixante et ils ont mis en cause un grand nombre de participants et d'intérêts. Au début on se préoccupait surtout de la forme qu'une entreprise commerciale dans l'espace devrait prendre. Les opinions couvraient la gamme de différentes formes d'entreprise privée jusqu'à un monopole gouvernemental. L'issue fut décidée quand le Président Kennedy rendait public une déclaration de politique favorisant l'entreprise privée avec surveillance gouvernementale non seulement afin d'assurer que des objets d'intérêt public soient respectés, mais également des objets de politique nationale et étrangère. Le besoin d'établir sans délai un système de communications par voie de satellite favorisait une entité simple et forte qui pourrait mobiliser la technologie existante et représenter les intérêts des Etats-Unis sur le plan international. Par conséquent, Comsat fut établi en 1962 comme un monopole à propriété privée mais réglementé par la FCC.

Des développements technologiques rapides ainsi que des besoins est circonstances en transformation pendant les années soixante changeaient l'ambiance pour les satellites ainsi que les politiques les concernant. Les propositions pour un système de satellites domestique allaient d'un système de monopole (contrôlé par AT&T), à un "projet pilote", et finalement à un système de concurrence libre et ouverte.

Le gouvernement Johnson et la FCC semblaient être en faveur de l'approche du projet pilote, à savoir un développement graduel de communications par voie de satellite afin de gagner une connaissance intime et une expertise opérationelle des applications commerciales des satellites domestiques. Avant qu'une décision n'ait été prise, le changement de gouvernement en 1968 amenait un changement dans la philosophie concernant les satellites. Le nouveau gouvernement Nixon était en faveur d'un développement de communications par voie de satellite d'après le modèle de l'entreprise libre, et luttait fortement auprès de la FCC pour l'acceptation de sa politique recommandée de "porte ouverte". La décision Domsat de la FCC de 1972 adoptait en somme cette philosophie de la porte ouverte. Cette décision de la FCC était généralement en accord avec ses décisions du même temp dans d'autres sphères de télécommunications, décisions qui réflètaient une tendance croissante envers des politiques de télécommunications libéralisées et la promotion de la concurrence.

La période de temps qui suit la création de Domsat est caractérisée par un nombre croissant de postulants pour établir des systèmes de satellites, une technologie changeante, des services nouveaux approuvés, une promotion de concurrence par la FCC, de la déréglementation et de la souplesse dans les mesures régulatrices.

Cependant, alors que la FCC essayait d'adhérer à sa philosophie d'orientation vers les marchés, il y a des indices récents que certaines contraintes techniques et physiques dans l'utilisation de satellites ont occasionné "quelque modération de notre (FCC) politique normale de non-intervention". L'encombrement de l'arc géostationnaire utilisable a récemment inquiété la FCC surtout au sujet de l'efficacité dans l'allocation et utilisation du spectre. On a exprimé des inquiétudes au sujet de la nécessité d'examiner de plus près les besoins pour et des aspects de nouveaux satellites projetés, d'une surveillance accrue des satellites en orbite, et de l'établissement de standards de capacité minimum des satellites.

C. Mesures légales et régulatrices aux Etats-Unis

Le congrès américain n'a pas voté des lois spécifiques pour réglementer la nouvelle technologie des télécommunications, à l'exception du Communications Satellite Act de 1962 qui établissait Comsat. Puisque les satellites et domestiques et

internationaux opèrent en tant que transports en commun dans de l'activité entre-états, ils sont sujet au Communications Act de 1934 et rélèvent de la jurisdiction de la FCC.

Une série de décisions de la FCC depuis 1959 ont promouvu la concurrence et la dérèglementation dans les télécommunications, et des décisions concernant les satellites ont suivi cette tendance. La décision Domsat de 1972 établissait une politique à porte ouverte et concurrentielle, sujette à certaines limitations et conditions. Alors que, sous cette politique, la FCC n'essaye pas de prescrire les systèmes, les services ou la forme des satellites, les opérations des satellites sont examinées avec soin. Toute demande pour la construction de facilités de satellites est examinée par la FCC afin d'assurer qu'elle est dans l'intérêt public avant qu'une authorisation ne soit accordée: les demandeurs doivent être qualifiés du point de vue financier, technique et légal, des conditions peuvent être imposées à des demandeurs et opérateurs tels que AT&T et Comsat, l'utilisation de la capacité est surveillée, et les octrois d'orbite ne sont accordés que temporairement. Les opérateurs à échelle en gros doivent donner accès à des canaux et ceux qui donnent des services en détail entre-états par voie de satellite doivent avoir accès à des taux raisonnables à des facilités de circuit et d'échange locales.

Les mesures de la FCC permettent une variété de

modèles d'organisations de propriété de stations terrestres et permettent un accès diversifié à des segments de l'espace. La FCC a approuvé des stations terrestres appartenues par les clients, la distribution de matériel de programmation diversifié à des systèmes de télévision par cable, l'utilisation de petites antennes peu coûteuses de stations terrestres pour la transmission et la réception, etc. En 1979, la FCC déréglementait les stations terrestres domestique à réception seulement.

Les mesures de réglementation requièrent un espace orbital de 4^{o} à 6/4 GHz et un espace de 3^{o} à 14/12 GHz, et la FCC est présentement en train d'examiner l'issue d'un intervalle possible de 2^{o}.

La FCC a authorisé de nombreux services et opérations pour voie de satellite, y inclus la location à long-terme et la vente de canaux, l'utilisation en commun et revente de capacité satellite, des services de transmission directe par voie de satellite, les réseaux privés, les services de satellite au delà de frontières, l'utilisation du satellite canadien Anik par des agents américains, ainsi qu'une variété de services de voix et de données y compris des services à ligne privée, des conférences par diffusion vidéo etc.

La FCC essaye d'introduire des mesures semblables proconcurrentielles et de déréglementation dans la sphère de communications internationale par voie de satellites. Les

transmetteurs en commun domestiques ont reçu la permission d'offrir des services internationaux et la FCC a approuvé une réstructuration de Comsat afin de permettre à celui-ci d'offrir des services globaux aux clients en concurrence avec d'autres opérateurs.

Le but énoncé des politiques sur les satellites et des mesures régulatrices est la création d'une atmosphère permettant une expérimentation et une innovation maximum. La FCC met l'accent sur la souplesse dans son attitude envers la réglementation, sur des mesures restrictives minimales, et elle considère le marché comme le moyen le plus approprié pour régler et développer la technologie des satellites.

D. Effets des mesures légales et régulatrices

Des changements dans la politique de réglementation se sont joint à une technologie en développement rapide pour produire un effet majeur sur l'industrie des télécommunications aux Etats-Unis, y compris le secteur satellite. La technologie a amené une érosion de la position de monopole naturel des opérateurs traditionnels, alors que les transmissions par ondes ultra courtes et par voie de satellite furent ajoutées à la transmission par cable, produisant de nombreux services nouveaux dans la communication de voix et de données. En même temps, un climat de réglementation aisé avec une entrée plus facile et des restrictions moins nombreuses facilitait

l'introduction de ces services et innovations sur le marché.

Les systèmes domestiques de satellites étaient plutôt lent à démarrer après la décision Domsat de 1972, et, en fait, quatre des huit demandeurs originels ont soit abandonné ou bien déféré leur système envisagé. Western Union a lancé son premier Westar en 1974, suivi de l'Americom de RCA (satellites Satcom) et de Comsat General (satellites Comstar). Les Westars furent intégrés avec les systèmes terrestres de la Western Union, les Comstars furent loués par AT&T et CTE afin de pourvoir des services de base de télécommunications et les Satcoms de RCA ont trouvé de bonne heure un marché dans les services de télévision, marché qui plus tard s'avérait très lucratif. D'une façon générale, les services furent élargis graduellement par l'inclusion de communications de voix et de données à ligne privée, avec de nouvelles firmes apparaissant sur le marché et louant des facilités d'operation.

La fin des années soixante et le début des quatre-vingt voyait un nombre de postulants proposant des systèmes de satellite. Parmi ceux-ci figuraient Satellite Business Systems, American Satellite Co., Hughes Communications,Inc., Southern Pacific Satellite Co., U.S. Satellite Systems, Alascom Inc., Argo Communications, Ford Aerospace Satellite Service Corp., Oak Satellite Corp., et Rainbow Satellite Inc. De plus, AT&T et GTE proposaient de lancer leurs propres

satellites, et la décision de la FCC de permettre des services de transmission directe par voie de satellite attirait plusieurs autres postulants. A présent, il y a 20 opérateurs qui ont soit lancé des systèmes de satellite ou bien qui ont l'authorisation de le faire.

Un nombre de nouveaux venus, tel que SBS et ASC étaient formés en tant que filiales de firmes géantes ou de conglomérats dans l'industrie électronique, de l'aérospace, des finances, ou des communications (IBM, Fairchild Industries, Aetna Life, Continental Tel, Hughes Aircraft) ou bien les nouvelles firmes étaient établies avec un support financier substantiel de la part de larges entreprises (Prudential Ins., Manufacturers Hanover Trust).

A part les services DBS, certains des services récents à être développés et utilisant des satellites pour les communications incluent: conférences par télé et vidéo, transmission directe residentielle à pouvoir moyen, services accrus de message et de données tels que le Skyline de SBS et le Sprint de Southern Pacific, services de distribution pour des réseaux de télévision, télévision payée par cable ainsi que des postes transmetteurs de radio, tels que le nouveau Satellite Television Service de AT&T, ainsi que plusieures technologies en voie de développement qui paraissent avoir un potentiel considérable pour l'intégration avec des satellites afin d'élargir leur applications y compris la radio cellulaire et les optiques à fibre.

Cependant, il y a des indications en ce moment que la croissance rapide des services par satellite et le nombre croissant de nouveaux venus et de nouveaux satellites ont commencé à ralentir. L'offre de canaux semble avoir atteint la demande pour ceux-ci et il y a des indications de canaux libres et sous-utilisés et même un excédent de l'offre. Les systèmes de satellite deviennent également plus chers avec les coûts de satellites et du lancement toujours en croissance.

Alors qu'un satellite de communications pouvait être construit et lancé à un coût d'environ trente millions de dollars vers le milieu des années soixante-dix, le coût courant en est près de soixante millions. Une autre limitation potentielle à la croissance continuelle de facilités de satellite est l'encombrement de l'orbite géostationnaire. Il y a peu de places utilisables qui restent pour des satellites américain à des intervalles de 4^{o} et 3^{o}, et un intervalle réduit à 2^{o} augmentera les coûts, particulièrement pour les stations terrestres et les antennes de réception.

Les opinions de représentants de l'industrie des communications et des analystes varient concernant le développement futur des satellites. Il y en a qui considèrent les communications commerciale de voix et de connées comme un marché largement vierge, avec un potentiel extensif. D'autres ont tendance à favoriser le marché vidéo (télévision payée à cable, DBS) comme le plus grand champ d'application de communications par voie de satellite. Il n'y a pas d'accord sur

l'effet potentiel d'optiques à fibre sur les satellites, bien que la vue générale est que la technologie d'optique à fibre ne va probablement pas déplacer les satellites pour la transmission à longue distance. L'industrie américaine supporte d'une façon générale les politiques de la FCC sur l'entrée libre, la concurrence, et la souplesse dans la réglementation.

Alors que les firmes américaines ont briqué des accords pour des services au delà des frontières avec le Canada, elles ne considèrent pas d'une façon générale que le Canada représente un marché majeur ou unique, mais plutôt une extension du marché américain.

Les décisions de la FCC pourvoyant l'entre libre, l'interconnection et une multitude d'opérations de stations terrestres et de propriété, combinées avec les décisions concernant l'utilisation jointe, la vente et la revente de capacité satellite, ont établi le climat facilitant le développement de l'industrie des satellites dans le marché sans restrictions réglementaires trop sévères, et l'industrie semble avoir réagi à la satisfaction et des régulateurs et des entrepreneurs. L'évidence à base d'observations sur le développement de l'industrie, couplée à des vues de l'industrie et des régulateurs semble indiquer que l'approche de réglementation et les politiques des Etats-Unis ont servi avec succès l'industrie et le consommateur dans ce pays.

E. Issues de communications par voie de satellite au Canada

Le lancement de satellites a commencé au Canada comme une entreprise scientifique avec la mise en orbite de Alouette I. Avec la réalisation du potentiel des satellites dans le domaine des communications, le Canada a commencé à examiner son rôle dans l'utilisation de cette technologie. Suivant le papier blanc de 1968, le Telesat fut établi en 1969 en tant qu'instrument du programme opérationnel canadien des satellites.

La loi établissant le Telesat n'énonçait pas des buts nationaux ou public pour le Telesat. Plusieurs essais furent faits par la suite, y compris la coopération avec les provinces, afin d'arriver à une politique nationale de communications. Un de ces essais a produit un concensus général fédéral-provincial en 1979 concernant les buts et lignes-guide sur la distribution des satellites et la programmation de télévision.

La plupart de l'attention au Canada concernant les communications par voie de satellite et le comportement de Telesat par rapport à l'intérêt public a été dans le champ réglementaire de la CRTC. En 1977, la proposition de joindre Telesat à la TCTS (Accord d'alliance) fut rejetée par la CRTC comme n'étant pas dans l'intérêt public. Le Conseil des Ministres, cependant, approuvait l'accord par ordonnance-en-conseil.

En 1981, la CRTC énonçait une décision majeure

concernant Telesat, qui entre autres directives, levait quelques restrictions sur Telesat opérant uniquement en tant que transporteur pour d'autres transmetteurs, et permettait à Telesat de traiter directement avec des clients autres que les membres du TCTS. De nouveau le Conseil des Ministres par ordonnance-en-conseil a modifié la décision de la CRTC, maintenant Telesat surtout comme un transmetteur pour d'autres opérateurs.

La réglementation du système canadien de satellite semble suivre une politique ad hoc ce qui donne certains avantages de souplesse et convenance dans l'établissement de politiques. Il semble que les interprétations légales concernant des tarifs justes et raisonnables et des préférences et avantages injustes qui sont les bases de la réglementation des tarifs de la Commission viennent en second lieu après les intérêts opportuns du gouvernement dans un contexte plus grand. La portée de la politique de la CRTC concernant Telesat et la TCTS a été d'essayer de prévenir autant que possible tout aspect anti-concurrentiel de l'alliance. Le Conseil des Ministres semble suivre la voie d'enlever des restrictions sur les opérations de Telesat, mais à rythme moins rapide.

F. Considérations au sujet de l'applicabilité des politiques américaines au Canada

Une évidence abondante supporte la vue que dans l'industrie

américaine des télécommunications, la concurrence et l'approche flexible à la réglementation par la FCC ont stimulé le développement de nouveaux produits et services et ont promu l'innovation et réduit le temps entre l'innovation et la commercialisation du nouveau produit ou service. Avec référence spécifique aux communications par voie de satellite, on est généralement d'accord dans l'industrie et le gouvernement dans ce pay que des politiques telles que l'entrée libre, le partage et la revente de canaux, des politiques libérales concernant l'interconnection et la propriété terrestre, et la dépendance sur le marché et les forces du marché ont facilité le développement rapide et l'utilisation des services des satellites. On peut en citer comme preuve le nombre du firmes en concurrence dans l'industrie, le fait qu'un manque apparent de capacité des satellites vers la fin des années soixante-dix a été comblé, la multitude de nouveaux services de satellites qui ont été fournis ou qui sont en train d'être développées, ainsi que les choix offerts aux clients potentiels.

Il serait impropre, cependant, de conclure que parce que les politiques concernant les satellites aux Etats-Unis et les mesures régulatrices semblent avoir été couronnées de succès dans le développement de communications par voie de satellite dans ce pays, elles pourraient être imitées au Canada et connaître la même mesure de succès. Le succès des politiques américains doit être considéré dans le contexte des buts établis par le gouvernement américain et la FCC

pour les communications par voie de satellite et ce, dans le contexte plus large de la nature et structure de l'industrie des télécommunications et du marché qu'elle sert. En plus, l'adaptabilité de ces mêmes politiques à la situation canadienne doit être considérée dans le contexte des buts et objectifs canadiens, compte tenu de tout aspect distinctif de l'industrie canadien des télécommunications, des marchés et de la démographie.

Des objectifs gouvernementaux ou publics peuvent exister qui diffèrent de ceux qui peuvent être atteints par le marché dans le développement d'une technologie ou d'un service. Des considérations telles que la sécurité nationale, les intérêts nationaux, ainsi que les objectifs sociaux et culturels tels que perçus ou établis par le gouvernement peuvent entrer en jeu et réduire la dépendance sur le marché et demander une surveillance proche de la part du gouvernement.

Il existe également certains facteurs économiques et commerciaux qui peuvent influencer la manière dans laquelle une technologie telle que les communications par voie de satellite est utilisée et la manière dans laquelle l'industrie évolue. Ces facteurs méritent une considération attentive.

Aux Etats-Unis le climat dans lequel la politique à entrée libre a opéré contenait plusieurs facteurs économiques, commerciaux et régulateurs qui favorisaient son succès, y compris le marché étendu et croissant des télécommunications

comprenant la télévision payée par cable, le contrôle de la FCC sur AT&T afin de prévenir une concurrence injuste, la structure régulatrice avec jurisdiction de la FCC sur toutes télécommunications entre-états, les décisions favorables de la FCC dans des sphères complémentaires des télécommunications, la participation dans l'établissement de systèmes de satellites par des companies dans l'industrie ayant des facilités terrestres à échelle nationale dans lesquelles des facilités de satellites pouvaient être intégrées (AT&T, GTE, Western Union), ainsi que la participation de firmes géantes (RCA, IBM, Aetna) fournissant le capital initial d'investissement et établissant des systèmes de communications par voie de satellites par l'intermédiaire de filiales. On peut avancer l'argument que la structure de l'industrie des télécommunications aux Etats-Unis ainsi que l'étendue même du marché pouvait aisément accomoder un élément de satellites concurrentiel.

Au Canada, au contraire, le marché est relativement petit et la jurisdiction sur les télécommunications est fragmentée, faits qui ont mené à une fragmentation du marché et à des problèmes d'accès.

Il semble que le potentiel existe au Canada pour une utilisation plus extensive des services de satellites, pour une meilleure réponse aux besoins des usagers par les opérateurs, pour une réduction possible des coûts, etc.

Une concurrence accrue pourrait possiblement exploiter ce potentiel, tel que c'est arrivé aux Etats-Unis. D'un autre côté, il existe de nombreux facteurs et considérations auxquels il faut s'addresser avant d'essayer d'imiter les politiques et mesures régulatrices américaines. Ainsi il faut se demander si le marché canadien, qui est à peu près un dizième du marché américain, est assez large pour supporter des systèmes concurrentiels de satellites, si les fonds d'investissement suffisant seraient avancés dans un marché libre sans aide ou implication gouvernementales pour développer et pourvoir des systèmes et services de satellites, si la structure régulatrice fragmentée n'ajouterait pas aux risques et incertitudes associées avec des systèmes de télécommunications, si la concurrence n'affecterait pas la viabilité économique de Telesat, et si des économies d'échelle suffisantes pourraient être générées par des systèmes concurrentiels afin de maintenir des coûts en ligne avec des systèmes terrestres. Il se peut fort bien que les facteurs précités, combinés avec les coûts élevés et toujours croissants du lancement et des opérations de systèmes de satellites ainsi que les risques et incertitudes en jeu, pourraient mitiger le succès possible d'une politique de porte ouverte à l'américaine.

Alors que certaines observations ont été avancées concernant les issues précitées, cette étude n'essaye pas d'avancer des réponses définitives aux questions. Le but

n'était pas de pourvoir des recommendations concernant la meilleure structure du marché et de réglementation pour les communications par voie de satellite au Canada. Cette étude, par son analyse détaillée de la politique américaine sur les satellites, l'industrie des satellites et les développements dans les communications par voie de satellite, a tracé les facteurs et les développements qui ont mené à l'adoption de la politique dans ce pays, ou qui semblent avoir contribué à son succès. En même temps, elle identifie les issues pertinents à être considérées si des politiques similaires étaient contemplées au Canada. Cependant, il reste à déterminer par des études et analyses supplémentaires si les politiques américaines, ou quelque version de ces politiques, seraient appropriées au Canada.

SECTION A

INTRODUCTION

1. Brief History of Communications Satellites

The satellite communications industry is one product of the exploration of space. In the U.S. it is a commercial success of the U.S. space program.

In the 1950's both the U.S. and the U.S.S.R. began developing satellites and the necessary launch vehicles to place them into orbit. The space age became a reality in October 1957 when the Soviet Union launched Sputnik I. The U.S. followed with Explorer I on January 1, 1958.

The first active satellite (one capable of receiving signals and retransmitting them) was Score, a U.S. Army-built satellite launched in December 1958. While Score was relatively short-lived (30 days), it served to demonstrate how a satellite could relay voice, code and teletype messages. Courier followed in October 1960. Launched into a 500-600-mile-high orbit it carried 4 receivers, 4 transmitters, and 5 tape recorders and had the ability to receive signals and store them on tape while in view of one ground station, then retransmit the signals to another station.[1] Courier operated for only 18 days but was a major pioneer in communications

[1] NASA, Communications Satellites, Washington, 1977.

satellites.

At the same time the National Aeronautics and Space Administration Agency (NASA) was launching its Echo series of passive satellites. Echo I (August 1960) was a large metalized balloon which simply reflected radio waves. It was in orbit from 1960 to 1968 and demonstrated a long-lived, rigid sphere applicable to passive communications use.

An early active satellite that followed Courier was Telstar, developed by the American Telephone and Telegraph Co. (AT&T) in co-operation with NASA. Telstar was one of the most publicized and best known of the early communications satellites. It was used to exchange U.S. and European television programs and performed numerous technical tests, showing that they were reliable enough for commercial use. Telstar I was launched in July 1962 but failed in February 1963. Telstar II was launched in May 1963. Each of the Telstars had a single transponder which received signals at 6 GHz and retransmitted them at 4 GHz.[1]

The rockets available in the 1950's could boost satellites into orbits no higher than 10,000 km. above the earth. It was not until 1963 that the first geostationary or geosynchronous satellite, Syncom, was launched, placing it in an orbit about 36,000 km. (22,300 miles) over the equator. Prior to Syncom, much of the research and development on satellites had been done by AT&T, which strongly promoted a random-orbital system

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[1]NASA, Communications Satellites, 1977.

as the best technology or approach to communications satellites.[1] This system required a large number of satellites and expensive tracking stations to track each satellite. The synchronous technology allows the satellite to appear stationary to a viewer on the earth, and is considerably less capital intensive enabling an earth station to be permanently and inexpensively aimed. Syncom was developed by Hughes Aircraft and it was contended that Hughes entry into satellite development brought the geostationary technology to prominence about five years sooner than the carriers (AT&T) would have.[2]

The Syncom series were significant in demonstrating that time delay, echo, and several other technical problems, could be overcome for communications satellites in geostationary orbit.

There were several other satellite programs in NASA's experimental era of satellite communications, including Relay, the Advanced Technology Satellite program (ATSI-6) and the Communications Technology Satellite program (CTS). The CTS program started with an agreement between Canada and the U.S. in 1971, under which Canada supplied the satellite (Hermes) and the U.S. the launch vehicle. The principle technological objectives of this program were to attempt to use the 12 & 14 GHz bands, to develop and use low cost, portable earth stations. With this experimentation with small earth stations, Hermes

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[1] W. G. Shepherd, "The Competitive Margin in Communications," in Technological Change in Regulated Industries, W. M. Capron (ed.), Washington: Brookings Institution, 1971, p. 106.

[2] Ibid.

was viewed as a forerunner of direct-to-the-home broadcast satellites.

The commercial era of satellite communications began in the U.S. with the formation of the Communications Satellite Corp. (Comsat) by the Communications Satellite Act of 1962. This was followed by the formation of the International Telecommunications Satellite Organization (Intelsat) in 1964, a consortium of many nations, which serves these and other nations international and domestic satellite communications needs. Intelsat launched the first commercial communications satellite, Intelsat I in April 1965, and is currently using its fifth generation of this satellite system.

In 1972, the Federal Communications Commission (FCC) authorized the U.S. common carriers to construct and operate satellite systems for domestic telecommunications in the free enterprise mode. This led to Western Union's launching of Westar I in 1974; RCA's launching of Satcom F-1 in 1975; and Comsat's launching of Comstar D-1 in 1976. These and other satellite systems launched since then provide a wide range of domestic communications services.

Domestic satellites also serve many other countries such as Germany-France (Symphonie); Indonesia (Palapa), Italy (Sirio), etc. Since Syncom, approximately 100 geostationary satellites have been launched, of which about 90 per cent are communications satellites.

2. Some Technical Features of Satellites

Satellites possess various characteristics and can be identified and distinguished by their technical composition, their path or orbit, and the form of signals they handle.

Technical Composition. Satellites can be classed as either passive or active. A passive satellite has no instruments and merely reflects radio signals beamed at it. Their use is limited since they require powerful earth stations to receive their relatively weak signals. Active satellites, on the other hand, are much more technologically sophisticated and receive, amplify, and transmit the radio signals directed at them. The more powerful the signal, the smaller and less complex the earth station required to receive them. Satellites currently in use and being launched are all active.

Orbital Path. Satellites can be placed in different orbital paths, which are commonly distinguished as elliptical or geostationary. An elliptical orbit is a random orbit and can be of a variety of heights and directions. It remains over a point on the earth for only a short period and therefore is limited in its capabilities to serve any particular geographical area. A geostationary orbit is synchronized with the rotation of the earth and is a circular equatorial orbit at a distance of 36,000 kilometers over the equator. It remains fixed or stationary over the same spot and can serve a particular geographical area of the earth continuously. The area that a geostationary satellite can serve is approximately one-third of the earth's surface. Geostationary satellites are particularly useful for communications.

Satellite Signals. Satellites are capable of receiving message signals from the earth and returning them as in telecommunications, or can generate signals and transmit them as in scientific exploration of the earth's surface, outer space, etc.

Telecommunications satellites are generally grouped into three categories, namely: point-to-point satellites, distribution satellites, and direct broadcast satellites.

Point-to-point satellites receive signals from transmitting earth station and relay them to an earth receiving station. The earth transmitting station receives the signals from senders via microwave or terrestrial cable, the conventional means of earth communications, transmits them to the satellite which relays them to the earth receiving station, which in turn sends the messages to customers via microwave or cable. The earth stations required are large and powerful, and are expensive. Intelsat is this form of satellite.

Distributional satellites emit strong signals which can be received by relatively small and simple antennas or earth stations. The signals are distributed over a wide area to many earth stations that are strong enough to receive them. These stations may be fixed or mobile. The uses of these satellites include navigational telecommunications (Inmarsat) and cable and pay TV.

Direct broadcast satellites (DBS) employ powerful transmitters so that the signals may be received by radio and TV sets. The signals may be scrambled, however, so that special antennas or converters may be required by the receiver. These

are the new generation of telecommunications satellites and are employed for television broadcasting (i.e. pay TV) and educational purposes. They can also be employed for direct TV broadcasting between countries. DBS are of particular use in countries with a large geographical area such as Canada, the U.S. and the U.S.S.R.

Current satellites operate in either the 6/4 GHz or C band or the 14/12 GHz or Ku band. At the lower frequency (C band) satellite transponders receive signals at 6 GHz (uplink) and retransmit them at 4 GHz (downlink). At the higher, more powerful Ku band, transponders receive signals at 14 GHz and retransmit them at 12 GHz. There is now experimentation to develop a more powerful satellite operating at 30/20 GHz or the Ka band. A constraint on operations in the higher frequency bands is that signals can suffer significant attenuation during periods of intense rainfall.

Spacing. Satellites must be sufficiently separated from one another to avoid signal interference. The required separation between satellites depends on a number of factors, including beamwidths of satellites and earth stations and the frequency of the transmissions. Currently a 4° separation is required for satellites operating in the 6/4 GHz band and a 3° separation for the 14/12 GHz band, but the FCC is considering the possibilities of a 2° spacing. Given the spacing constraints, only a limited number of satellites can be positioned in a given arc of geostationary orbit.

3. Applications of Satellites

With advancing technology in rocketry, electronics, and communications, both launchers and satellites became increasingly more sophisticated and diverse in their capabilities. Collecting and transmitting information, satellites are utilized in national and international telecommunications, data transmission, scientific exploration of the earth's surface and atmosphere and outer space, defence purposes, weather watch, and geological purposes. In these areas their services range from daily operational services to experimental services.

At present there are approximately 1,275 operational satellites in orbit, and more than 1,600 which have fallen silent. Satellites are being sent aloft at the rate of 168 a year. Within the next decade NASA expects to launch about 200 satellites with the shuttle, and hundreds of others will be launched using conventional rockets in the U.S., Europe, the U.S.S.R., as well as by new rockets being developed by Japan, China and India.

Satellites perform a variety of tasks and come in all shapes and sizes. Their uses extend to the military, communications, scientific exploration of space, weather, earth mapping and charting. The various groups of civilian-purpose satellites launched up to 1980 are illustrated in Table A-1. Information on military satellites and potential future NASA programs are contained in Appendix I.

Military. There are a number of satellite systems in the military sector upon which the U.S. relies for national security.

The most prominent satellites are the surveillance satellites ("spies in the skies"). These huge, twelve-ton observatories usually travel in polar orbits so that they can cover all of the earth's surface every 48 hours in daylight. The Big Bird is extremely sensitive, and can send back TV images and provide photographs which are ejected in parachute-equipped cannisters that can be hooked in mid-air by recovery planes. Both the U.S. and U.S.S.R. have spy satellites that can scan the earth with radar beams with the objective of tracking naval vessels at sea. Both countries also have electronic listening satellites that can pick up radio transmissions. Various scientific satellites are also used for military purposes, including those that measure miniscule variations in the earth's gravity. This information is useful to keep missiles on target. U.S. satellites, parked far out in space, can record bursts of high-energy radiation that may indicate a nuclear explosion in the atmosphere. The Defence Department is currently developing a system called Navigation Satellite Training & Ranging (NAVSTAR) that will enable nuclear submarines and other vessels to identify their position almost anywhere within an error of inches, an important factor for the accurate firing of missiles.

Earth Mapping and Charting. Satellites, such as Landsat, using remote sensing are capable of producing very detailed imagery of the earth's natural resources. Landsat imagery has led to the discovery of new mineral deposits (i.e. copper deposits in Pakistan). Experiments are also being conducted to determine if Landsat photographs can help trace from space the spread of toxic pollutants. Earth-surveying satellites equipped

with special sensors can examine the state of crops and lead to estimates of harvest production.

The November 1981 flight of the space-shuttle Columbia included experiments with radar images of parts of the earth's surface. The radar images of the Sahara Desert produced X-ray photographs of a buried topography or subsurface (radar waves were able to pierce the dry surface to a depth of 5 meters, reflecting from bedrock). In essence, the radar was used as a time machine, and revealed a sub-surface of water channels, flood plains, and broad river valleys that existed millenniums ago. This radar technique of charting has excited geologists, archaeologists, and anthropologists. Geologists believe that radar scanning will be valuable in detecting modern waterways lying near the surface in arid areas. Furthermore, by illuminating sub-surface features, radar scanning could prove extremely useful in surveying for oil and minerals. By identifying former rivers and lakes, the scanning technique can assist archaeologists locate early human habitations.

Weather. Meteorological satellites have been sending back television-type pictures of cloud formations and weather fronts since the 1960's. This has enhanced the ability to identify gathering storms, hurricanes, etc. A new satellite-based typhoon warning system is currently being planned by East Asian nations, with the hope that it will save countless lives and reduce the region's $3 billion-a-year storm damage.

Meteorological satellite imaging systems are often capable of seeing much more than clouds and weather systems. Fires, air and water pollution, dust and sand storms, snow cover, ice

formations, ocean currents and energy waste are some of the environmental information provided by these spacecraft.

Navigation. Satellites play a major role in ocean navigation, with ships relying on satellite transmissions to ascertain their positions with greater accuracy. Inmarsat, the global maritime satellite communications system provides ship-to-shore and ship-to-ship communications.

Space Exploration. Satellites not only have eyes on the earth, but also toward the heavens. Scientific satellites help astronomers study distant stars and galaxies and view comets above the obscuring atmosphere of the earth.

Communications. The most common geostationary satellites being sent aloft for non-military uses are the communication satellites. Satellite communications comprise point-to-point message, data, and video transmissions. Satellite communications are a $11 billion-a-year business in the U.S. alone. The earliest communications satellites simply reflected radio signals back to earth off their metallic surface. Today they are extremely complex electronic devices capable of picking up signals from earth stations, amplifying them, and returning them to the ground. These satellites are widely used for telephone and TV service. Two-thirds of all telephone calls between North America and Europe are placed via the Intelsat system. In the U.S., as much as two-thirds of the programming on local cable originates via satellite.

Satellites have become very important for conducting national and international business. Banks transfer funds via satellite and multinational corporations use them to communicate

between their widely dispersed operations. Videoconferencing is developing rapidly as a means of communications.[1] Newspapers are sending their daily papers to remote printing facilities via satellite. Satellites have made remote areas more accessible, providing these areas with telephone and TV service. At the same time, satellites have reduced the cost of communication services. In 1965 a 3-minute telephone call between London and New York cost $9. Now it costs less than $4.

In 1965, satellites could handle only about 240 telephone calls at a time across the Atlantic. The current generation of communications satellites can handle 20,000 calls. By the early 1990's, the number is expected to exceed 100,000 calls. Intelsat VI, a $100 million satellite under construction by Hughes Aircraft Co. is expected to be capable of handling as many as 37,000 telephone calls and four TV channels simultaneously.

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[1]See Communications News, February 1983, pp. 53-87.

4. U.S. Domestic Satellite Communications Systems

There are presently 14 commercial satellites servicing the U.S. carrying a total of 270 transponders. These are owned and operated by four large companies -- RCA with four; Western Union with four; and Comsat and SBS with three each. These satellites form four systems, namely; Westar, Satcom, Comstar and SBS.

Westar. This is Western Union's system. Western Union was the first U.S. company to offer domestic business services via satellites when it placed Westar 1 and 2 in geostationary orbit in 1974. These satellites were followed by Westar 3 in 1979 and Westar 4 and 5 in 1982. The first three satellites had 12 transponders, while the fourth has 24. The satellites have a capacity for 7,200 two-way voice circuits or 12 TV channels and the services provided include data transmissions, telex and teletype, and television.

Satcom. This system was started by Radio Corporation of America (RCA) in 1975 with the launching of Satcom I, followed by Satcom 2 in 1976. These satellites occupy geostationary orbits and operate in the 6/4 GHz frequency bands. Services include video distribution and data and telephone services, with the major customers being cable TV distributing companies. TV programs are distributed to about 900 earth stations operated by cable companies. RCA currently has four satellites in operation.

Comstar. This system is operated by Communications Satellite Corporation (Comsat) for the American Telephone and Telegraph

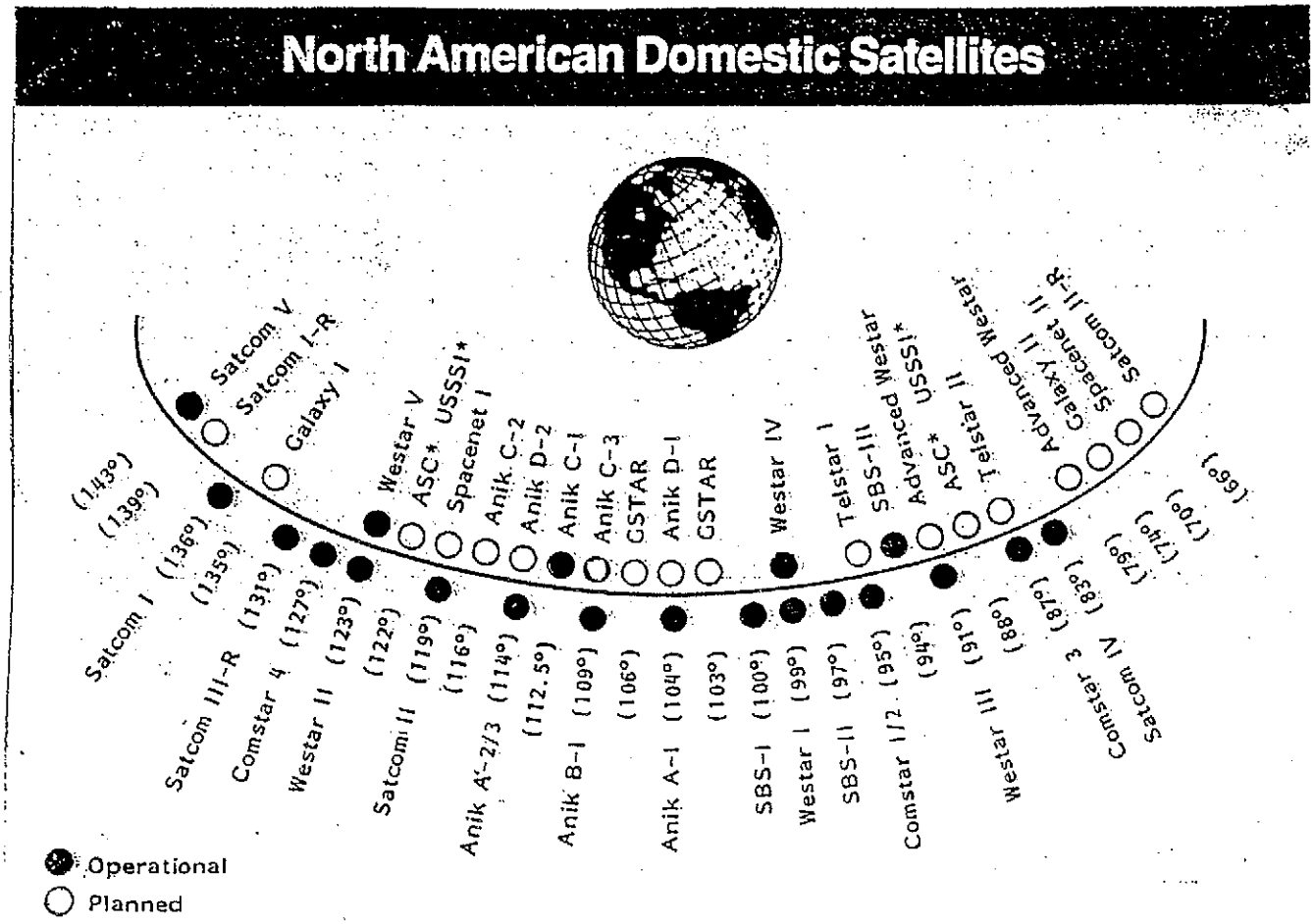
Co. (AT&T) and the General Telephone and Electronics Corp. (GTE) which lease the satellites from Comsat. Two Comstar satellites were placed in geostationary orbit in 1976 and a third in 1978. Through a combined capacity of 10,000 telephone circuits, this system provides primarily telephone services which are supplementary to the terrestrial telephone services of AT&T and GTE.

Comsat has been ordered by the FCC to terminate its relationships with AT&T and GTE because of its participation in Satellite Business Systems (SBS). Consequently, at the end of the Comstar series, AT&T plans to establish its own satellite system, Telstar, which will operate in the 6/4 GHz bands and be developed to operate in the high frequency 14/12 GHz bands. GTE also has authorization to launch its own G-Star satellites.

SBS. Satellite Business Systems was created in 1976 as a consortium of Aetna Life Insurance Co., Comsat, and International Business Machines (IBM) to establish and operate a domestic telecommunications satellite system. The first SBS satellite was launched in 1980, and operates on 14/12 GHz, the first U.S. satellite to employ this high frequency. It provides point-to-point communications services for large corporations such as Aetna, IBM, General Motors, Westinghouse, and others. Antennas about 18 feet in diameter are placed on customers' premises to receive the messages directly from the satellite.

In December 1980 the FCC had authorized the expansion of domestic satellite systems to increase the competitive

CHART 1



Source: Communications News, March, 1982.

sources of supply of domestic communications satellite services in order to satisfy consumer demand over the next few years. The FCC authorized the construction of 25 new domestic satellites and the launch of 20 new or previously constructed satellites.[1] The new satellites would replace in-orbit satellites approaching the end of their operational lifetimes, would provide the initial facilities for new entrants into the domestic satellite market, and would expand the facilities of existing carriers which had demonstrated the need for in-orbit capacity.

Chart 1 illustrates the U.S. and Canadian domestic satellites in orbit and indicates the satellites being planned to be launched in the near future. As shown, companies other than the above four are planning and have FCC authorization to enter the domestic satellite communications field. Joining the group are Southern Pacific Communications Co. (Spacenet satellites), Hughes Communications Inc. (Galaxy satellites), American Satellite Co. (ASC satellites), Space Communications Co. (Advanced Westar satellites), GTE Satellite Corporation (G-Star satellites), and United States Satellite Systems Inc. (USSSl satellites).[2]

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[1] FCC, News, Report No. 2844, "Common Carrier Action," December 4, 1980.

[2] These and other newly authorized systems are discussed in detail in Section D.

5. Recent Technological Innovations and Industry Developments

Except for AT&T's Telstar, launched in 1962, most of the basic research and development (R & D) and the establishment of the practicality of communications satellites was the product of NASA, with major industrial involvement. NASA's R & D was curtailed between 1973 and 1980 on the assumption that the private sector would continue the R & D.[1] The private sector, however, tended to concentrate on those aspects of space communications which had the promise of early commercial returns. In 1978 the Carter administration determined that "the potential economic and social benefits of communication satellites were not being adequately tended to by private R & D . . . and . . . re-established a NASA research effort in advanced space communications."[2] Under its renewed R & D mandate, NASA has become involved in a number of experiments in the applications of communications satellites.

Up to now, communications satellites have been employed to relay signals between the ground and orbit. Early in 1983, NASA expects to place in orbit the first component of the new U.S. Tracking and Data Relay Satellite System (TDRSS). The first satellite is one of four which will ring the earth at roughly equal distances from one another. TDRSS will relay signals not only between the ground and the satellite, but between satellites. This will eliminate the need for a network

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[1] NASA, Civilian Space Policy and Applications, Office of Technology Assessment, Washington, 1982.

[2] Ibid., p. 313.

of ground stations ringing the earth to keep in touch with spacecraft such as the shuttle.

Direct broadcast satellite (DBS) service appears to be the next major market for satellite communications. R & D for DBS was done primarily by NASA, and now is being commercialized. A number of applications were received by the FCC proposing to offer DBS, and the FCC began to consider domestic policies for DBS in late 1980. One of the first applications was from Satellite Television Corporation (STC - a Comsat subsidiary) requesting authority to construct satellites for a satellite-to-home video broadcasting system. This was followed by a number of other applications, of which several were rejected but nine were approved in late 1982. The FCC decision appears to signal a clear road ahead for DBS in the U.S.

A major current pre-occupation of NASA is a program of R & D at 30/20 GHz. This work is directed toward wideband transponder capability. Technologies under development include on-board switching, solid-state transmitters, switched multi-beam antennas, low-noise receivers for satellite use. NASA is expecting to demonstrate the new band technologies on a new satellite to be developed for a 1986 launch.[1]

Another important development in satellite communications will be the use of the space shuttle for many launches. The shuttle will enable larger, more powerful satellites with increased capacities to be placed in orbit.[2]

Other developments predicted by NASA for the 1980's include the assembling of large platforms in low-earth orbit,

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[1]NASA, Civilian Space Policy & Applications, pp. 114-115.

[2]Planned use of the shuttle is discussed in Section D.

the components which will have been transported on several shuttle flights, then raised to geostationary orbit. Frequency reuse techniques may also be common on the next generation of satellites, increasing total capacity, and reduced susceptibility to interference from signals associated with adjacent satellites in geostationary orbit will be achieved.[1] The trend is expected to be toward fewer, larger satellites, carrying more bands, more beams, and more diverse services.

Commercial sector hardware is provided by industrial firms, not only from the U.S. but from Japan, France, Germany, Canada, and Italy. But as part of its reactivated program, NASA will conduct R & D on various hardware, including advanced technologies for low-cost earth stations. The results of this R & D is intended for transfer to the private sector.

In addition to R & D by NASA and the private sector, there is the work being done in the Department of Defence (DOD), as well as other agencies.[2] While much of this is geared to military use, DOD is also involved in other areas of research. Most of the U.S. work on navigation has been done by DOD, and DOD along with NASA is involved in research and development of remote sensing satellites.

In addition to contributing to R & D in space communications, the private industry is moving rapidly to apply existing technology to a variety of satellite communications

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[1]NASA, Civilian Space Policy & Applications.

[2]See Appendix I for agency financing of space activities in the U.S. government.

uses. Various voice, data, and video services are operational, and more and more firms are entering the space communications industry. Profiles of these firms and the services they offer, along with recently introduced and planned services are presented in Section D of this study.

Perhaps one of the greatest obstacles that the satellite communications industry will face in the future as technology develops and services expand, both nationally and internationally, will be political. The varied uses of satellites has given rise to political concerns among countries. Some countries view satellites such as Landsat as economic spies that permit an outside nation to learn about a country's natural resources even before the country itself is aware of them. There is considerable concern in the use of communications satellites over possible cross-border spill-overs of programming, advertising, and propaganda. Further concerns relate to some countries such as the U.S. possibly occupying most of the available geostationary slots.

A succession of United Nations conferences on the peaceful use of outer space have considered the issue of how to preserve national identity and prevent foreign propaganda. At one extreme are countries such as the U.S.S.R. which has demanded guarantees of prior consent from a receiving nation before another country can transmit broadcasts over its territory. At the other extreme is the U.S. which has taken a freer, more open commercial position, and which has emphasized freedom of information. Some countries, such as Brazil have taken the position that they will not launch a

direct broadcast satellite for fear that the resulting DBS earth receivers will leave the country vulnerable to propaganda from other countries. These issues cannot be ignored if satellite communications are to continue to develop and their potential in international communications fully realized.

6. Summary

The satellite communications industry is a commercial offshoot of the U.S. space program. Beginning with the first launch of a passive satellite in 1958, the U.S. space program developed rapidly with numerous experimental passive and active satellites launched during the early 1960's. The first geostationary satellite, Syncom, was launched in 1963 and satellite communications came of age.

Much of the technology and experimentation was the work of NASA, working closely with industry. The technology developed by NASA in communications satellites was transferred to the private sector for the commercialization of satellite communications. With the establishment of Comsat in 1962, and following the 1972 FCC Domsat decisions commercial satellite communications became operational. Early commercial satellites operated on the 6/4 GHz band, and most still do, but progress is being made in operationalizing the 14/12 GHz band, and in developing the still higher frequency 30/20 GHz band.

Currently, four satellite communications sytems are operational in the U.S., namely; Westar, Satcom, Comstar, and SBS. These systems provide message (voice and data) and video services, although video remains the mainstay of the industry. New firms are entering the industry, with FCC approval to provide satellite communications services, including direct broadcast services.

Following a period between 1973 and 1980 when NASA's R & D into satellite communications was curtailed, on the assumption that the private sector would continue the R & D,

NASA is again actively participating in communications satellite R & D. NASA's current R & D program includes development of the Tracking and Data Relay Satellite System, development for use of the 30/20 GHz band, application of the shuttle for satellite launches including low-earth orbit platforms, frequency reuse techniques, larger satellites and more diverse services. As new technologies and services are developed in the civilian space program, they will be transferred to the private sector and applied to a variety of satellite communications uses.

SECTION B

PHILOSOPHY OF U.S. SATELLITE COMMUNICATIONS POLICY

U.S. satellite domestic communications policy was enunciated by the FCC in its Domsat decision in 1972 and the basic philosophy underlying that decision still remains. The policy has been deliberately kept flexible, responding to changing technology, particular proposals, and social and commercial needs. The current policy is commonly described as an "open skies" or free entry policy within a regulatory structure of "maximum flexibility." In this section an attempt is made to examine the rationale and political and economic philosophy and events which shaped this policy.

1. FCC Current Domestic Satellite Policy[1]

a) Entry and Authorizations of Satellite Services

The policy of the FCC for the domestic satellite market is a competitive, open-entry policy. The FCC allows open entry by qualified entities and maintains flexibility in its response to particular domsat proposals.

The FCC authorization process for a domestic satellite consists of the issuance of a construction permit, the grant of launch authority and orbital assignment, and the grant of operating authority. In this process the FCC considers: the applicant's financial, technical and legal qualifications; the technical characteristics of the proposed satellite; the question of a specific, orbital assignment for the satellite; and the applicant's need for additional in-orbit capacity. The FCC may also impose conditions in individual applications. In any application, the applicant must demonstrate that it has complied with all the conditions which may have been imposed by previous authorizations.

b) Orbital Assignments

The FCC has established a policy of 4° orbital spacing at 4/6 GHz and 3° orbital spacing at 12/14 GHz[2] and is investi-

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[1]The details of current FCC satellite policies are found in a number of recent FCC decisions, including, Orbit Deployment Plan, 84 FCC 2d 584 (1981), and Domestic Fixed Satellite Service, 88 FCC 2d 318 (1981). Statutory and regulatory measures are more completely presented in Section C.

[2]The FCC is currently in the process of completing a proceeding to consider the reduction of orbital separations.

gating 2° spacing. Orbital assignments are made on a temporary basis only and may be changed if necessary in response to changing needs. They are subject to relocation on 30 days notice by the Commission.

In assigning orbital locations to existing and new satellite carriers, the FCC is guided by the requirement that each applicant must make a sufficient showing of potential public benefits to justify the assignment of orbital locations and frequencies. All new applicants were and are initially assigned two orbital locations (the one exception being the three in-orbit Comstar system). Additional locations are assigned to a carrier only upon a showing that in-orbit satellites are essentially filled and that an additional orbital location is needed to satisfy future customers growth requirements.

c) Reporting Requirements

The FCC conditions facility authorizations with reporting requirements on the status of satellite construction and in-orbit operations. Each operator must submit the following information on a semi-annual basis:[1]

(i) status of satellite construction and anticipated launch dates including any major problems or delays encountered;

(ii) identification of any transponders not available for service, or not functioning properly;

(iii) a listing of any serious service degradations;

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[1]FCC Reports, 84 FCC 2d (1981), p. 611.

(iv) a detailed description of the utilization made or anticipated to be made of each transponder on each of the in-orbit satellites, including the amount of capacity actually used, the amount sold but not in service, and the amount of unused capacity in the carrier.

d) Interconnection

Any domestic satellite system licensee operating exclusively or in part as a wholesale carrier must permit carrier customers to have access to transponders. All carriers providing retail interstate satellite services must have access at non-discriminatory terms, including reasonable tariffs, and conditions to local loop and interchange facilities as necessary for the purpose of originating and terminating such interstate services to their customers.

e) Earth Stations

The FCC has, from its early decisions on satellite services (Domsat I, II, III), consistently encouraged new and developing services by fostering a flexible ground environment which would permit a variety of earth station ownership patterns and afford diversified access to space segments. For instance, the FCC has approved customer-owned earth stations, distribution of diversified program material to cable television systems, the use of smaller, lower cost earth station antennas for transmission and reception, etc.

In 1979 the FCC deregulated domestic satellite receive-

only earth stations.[1] The result was to eliminate mandatory licensing for domestic receive-only satellite earth stations and to reduce regulatory burdens. Under the new scheme, receive-only earth station operators have the option of licensing their facilities (thereby gaining full interference protection) or operating their receive-only terminals without a license (no interference protection). The provisions of the Communications Act prohibiting the unauthorized interception of interstate and foreign radio signals, however, are still applicable. Deregulation of receive-only earth stations does not imply permission to receive service from non-U.S. domestic satellites or for Domsat carriers to provide service to non-U.S. points.

The current U.S. policy on ownership of U.S. Intelsat earth stations calls for 50 per cent ownership by Comsat and 50 per cent by U.S. international service carriers. In August 1982 the FCC initiated an inquiry to examine the question whether U.S. international service carriers should be granted a more direct access to Intelsat satellite facilities, which would permit customer earth stations to be used directly with Intelsat.[2]

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[1] FCC Reports, 74 FCC 2d 205 (1979). Deregulation of Domestic Satellite Receive-Only Earth Stations.

[2] FCC Reports, 90 FCC 2d, 1446, 1982. In the Matter of Regulatory Policies Concerning Direct Access to Intelsat Space Segment for the U.S. International Service Carriers, Docket 82-548, August 20, 1982.

2. Comsat and the Environment of U.S. Satellite Policy Development

a) Development of Early Satellite Technology

Early development of communications satellite technology involved both private industry and government, with the military playing an important role in the overall U.S. space program. But it was the efforts of the National Aeronautics and Space Administration (NASA) in conjunction with private industry which provided the initial technology base upon which U.S. communications satellite policy was made. Originally NASA was assigned responsibility for developing passive communications satellite technology (Echo), with the Department of Defence (DOD) developing active satellites. But with the cancellation of DOD's geosynchronous satellite program by 1960 due to technical and management problems, NASA had begun to develop active communications satellites for civilian use. During the 1960's and 1970's both NASA and DOD operated active R & D programs examining communications satellite technology to different civilian and military requirements.[1]

The National Aeronautics and Space Act of 1958 established NASA as a new civilian agency to develop a comprehensive program for research and development in aeronautical and space technology and services in support of the goals of the U.S. space program as defined by the Act. The Space Act called for the U.S. space program to be "devoted to peaceful purposes for the benefit of all mankind."[2] NASA was to direct non-military space activities

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[1] NASA, Civilian Space Policy and Applications, Office of Technology Assessment, Washington, 1982.

[2] 42 U.S.C. 2451(a), 1973.

while the Department of Defence would direct military activities.

Pursuant the directives of the Space Act, NASA included communications satellite research in its program and embarked on research and development and on experimental projects to obtain information that would be useful to an active commercial communications satellite system. These projects included testing the feasibility of communications via satellite, and determining the reliability and longevity of components of satellites. These projects included Echo, Courier, Relay and Synchom, which ultimately provided Comsat with a taxpayer-supported technological base for commercial fulfillment of its mission. Without such a base Comsat would have had to duplicate NASA's work at considerable cost to its investors.[1]

The private sector, however, was not without interest in communications satellites in the early phases of development of this technology. AT&T particularly was interested in the commercial potential of satellite communications and proceeded with its own research in the late 1950's and early 1960's. The research at Bell Labs eventually produced the design and construction of Telstar, the U.S. first civilian active repeater satellite. AT&T initiated and funded its own satellite research program without obtaining any NASA assurance of financial or technical assistance.[2] By 1960, Hughes Aircraft Co. had also

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[1]FCC 80-218, Docket No. 79-266, "In the Matter of Comsat Study - Implementation of Section 505 of the International Maritime Satellite Telecommunications Act," Final Report and Order, April 22, 1980, p. 22.

[2]NASA, Civilian Space Policy and Applications, p. 221.

shown interest in communication satellites, and contacted NASA expressing this interest. Others expressing interest and undertaking studies on the possibilities of satellite use included RCA & Lockheed Aircraft Corp.

b) National Policy Development

The development of a national policy for communications satellites and establishment of an operational communications satellite system was not included in NASA's statutory charter. But from the beginnings of the space program, national policy called for establishment of a commercial communications satellite system based on NASA-developed space technology but owned and operated by private industry. In a White House Press Release on December 30, 1960, President Eisenhower made the establishment of such a system a national objective.[1]

Eisenhower's policy statement emphasized reliance on NASA for the necessary research and development which was to be made available to private industry, which was encouraged to use its resources to develop a commercial communications satellite system. NASA was to co-operate with the FCC with regard to technical standards.

With AT&T actively engaged in developing a satellite communications system and Hughes Aircraft showing much interest, it is contended that had the Eisenhower administration's policy been continued:

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[1]FCC, Comsat Study, 1980, p. 23.

> it is almost certain that the private sector would have undertaken the commercialization of satellite communications. With NASA supplying technical assistance and FCC regulating such communication under traditional guidelines, it is probable that the development of this technology would have proceeded without the creation of an organization such as Comsat.[1]

The Satellite Communications Act of 1962 which established Comsat was passed only after a lengthy debate among interested parties concerning the alternative forms which a commercial venture in space could take. This debate covered 4,000 pages of Congressional hearings and reports. The debate encompassed diversity of opinions as to the alternative types of possible Comsat ownership -- government ownership; common carrier ownership; private, broad-based ownership.

The debating parties included business, the Executive Branch and Congress. Their positions are briefly summarized below.

The business or private sector had taken an interest in space communications long before Sputnik. In the early 1950's, Bell Labs, RCA, and Lockheed Aircraft Corp. had begun to study possibilities of satellite uses as mentioned earlier and AT&T envisaged a commercially operable system by 1964. This interest and activity, however, did not produce a unified position on the form of a commercial venture, although most favored a form of private enterprise. AT&T took a strong position that the U.S. should rely on the common carrier industry for experience and financial ability to pioneer satellite systems, and leave

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[1]NASA, Civilian Space Policy & Applications, p. 231.

matters in the hands of international common carriers.[1] GTE favored ownership by all common carriers. Lockheed favored participation by a variety of private companies and the general public. Basically, international carriers tended to favor ownership by international carriers; the domestic carriers by all carriers; and manufacturers by a combination of carriers, manufacturers, and the public.

The various agencies and Departments in the Executive Branch, including the FCC, NASA, and the Justice Department, were unable to produce a consolidated, concise view. The FCC promoted a private venture. The Department of Justice argued that if it was a private venture, it had to adhere to the anti-trust laws. The State Department had no specific views on the form a satellite communications system should take.

Within Congress and its committees, a diversity of opinion was expressed. Views ranged from government ownership to a completely private venture. Some Senators were not convinced that the FCC could regulate a private enterprise in the public interest, and worried about a monopoly in space. The dominant weight of opinion during these early deliberations favored a private venture, with government regulation. Competition would not be promoted through establishing several communications satellite systems, but by establishing a joint venture where no one company would dominate and by FCC regulation.

In 1961, the FCC initiated an inquiry directed toward a

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[1] J. F. Galloway, The Politics and Technology of Satellite Communications, Lexington Books, 1973, p. 28.

possible policy on ownership and operation of communications satellites. The FCC viewed the application of satellite technology as a supplement to the then existing communications facilities and decided that a joint venture by existing U.S. international communications common carriers would be the most effective means of developing a commercial system.[1]

The FCC called for "provisions to ensure equitable access to and nondiscriminatory use of the satellite system under fair and reasonable terms by existing and future international carriers, whether or not those carriers participated through ownership in the joint venture."[2]

Shortly following the FCC report, President Kennedy, on July 24, 1961, issued a policy statement calling for increased resources to be devoted to the development of a communications satellite system. At the same time the President called for a co-ordinated national policy to guide the development of the system. Like Eisenhower, the Kennedy policy statement favored private ownership and operation. The Kennedy statement, however, extended the use of communications satellites beyond commercial use to include their utilization as an instrument for achieving public interest objectives. The statement proposed certain public interest requirements which would condition private ownership and operation, and assigned the U.S. government the

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[1]FCC, "First Report on the Administration and Regulatory Problems Relating to the Authorization of Commercially Operable Space Communications Systems," May 24, 1961. Interestingly, on May 5, 1961, the Department of Justice in response to the Commission's Notice of Inquiry, recommended a broader ownership concept.

[2]FCC, Comsat Study, 1980, p. 24.

responsibility to assure conformance with these requirements.

The proposed public interest requirements incorporated certain previous Eisenhower and FCC recommendations and included the following: (a) establishment of a system as soon as possible; (b) non-discriminatory and equitable access to the system by authorized communications carriers; (c) maximum competition in ownership and control; and (d) compliance with anti-trust laws and regulatory controls. Additional requirements reflected the Administration's view that other nations be involved in the application of U.S. technology toward the development of an international communications satellite system that would serve national interest and foreign policy goals. These requirements included: (a) global coverage; (b) foreign participation through ownership, and (c) technical assistance to developing countries.[1]

The basic elements of the Kennedy policy statement -- private ownership and operation; public interest objectives, and government oversight -- were incorporated in the Satellite Act of 1962.

The Satellite Act of 1962 departed from established communications policies of the time in that established policy did not consider existing communications media as instruments by which to achieve national interest and foreign policy objectives. The Act called for the utilization of satellite communications to achieve these objectives and provided for government oversight to assure their fulfillment.[2]

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[1] FCC, Comsat Study, 1980, p. 25.

[2] Ibid., p. 26.

The developments which led to the creation of Comsat have been interpreted by the Office of Technology Assessment of NASA as follows:

> Comsat was the product of public policy considerations and not of the marketplace. With the Kennedy administration came a strong commitment to the space program as a means to enhance U.S. prestige and security. It was felt that satellite communications could be one area of early U.S. competence . . . It was also consistent with the administration's desire to keep satellite communications responsive to government policy and its cautious approach to what seemed an imminent AT&T monopoly in international communications . . . The government wished to ensure that any transfer of technology occurred under conditions that would be responsive to foreign policy considerations.[1]

The Communications Satellite Act of 1962 created Comsat, a single, private corporation to carry out its objectives and purposes. The powers granted Comsat included monopoly status in the provision of services via the satellite system to authorized U.S. users. Ownership of the corporation was to be split evenly between the international carriers and the public. Government oversight would assure that public interest objectives were not overlooked in favor of corporate concern over investments. The corporation was subjected to regulatory controls and Presidential oversight in planning, development, and operation of the global system.

c) Satellite/Cable Controversy

The advent of satellite communications and the creation of Comsat stirred a considerable amount of controversy on the question of whether satellite or cable or some mix of the two could best serve international telecommunications requirements.

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1. NASA, Civilian Space Policy, p. 231.

The FCC, in a 1966 decision,[1] authorized both cable and satellite service and required U.S. international carriers to use a specific mix of each facility. In authorizing both systems the FCC reasoned that there were sufficient potential revenues to support both systems; the two would act as insurance against service disruptions; and that the public interest required the continued development of both technologies. However, shortly after authorizing satellite international service, the FCC in 1968 authorized a fifth transatlantic cable (TAT-5). Numerous questions were raised over this decision, since with more Intelsat satellites scheduled, there was a feeling in the industry that considerable excess capacity could likely result.

The FCC decision on approving both cable and satellites was not well received by the cable carriers who charged that there was no consideration of their operating requirements or the needs of their customers. The FCC was also accused of forcing the carriers to lease satellite circuits from Comsat when they had no need for them and preferred to use and expand their cable facilities.

Considerable controversy also raged over the President's Task Force Report on Communications Policy of 1969 as it related to international telecommunications.[2] The Task Force

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[1] FCC Reports, 5 FCC 2d 823, 1966. In the Matter of ITT Cable and Radio.

[2] M. J. Peck, Satellites: "The Single Entity Proposal for International Telecommunications," in J. W. Markham et al (eds), Industrial Organization and Economic Development, Boston: Houghton, Mifflin, 1970.

examined a number of alternatives to the then existing system, including the promotion of more effective competition between cable and satellite transmission and the establishment of a single entity to provide both. Under the single entity concept the FCC would not have to adjudicate between cable and satellite technologies and companies.

The single entity concept was revived by the FCC in 1977 when the Commission proposed that the divided ownership of cable and satellite be terminated and that a super cable/satellite carrier's carrier be created by the merger of international satellite and cable operations. The FCC reasoned that the merger would produce a more efficient international telecommunications network, would end the cable/satellite controversy, and would strengthen the U.S. position in international negotiations. The carriers opposed this merger concept arguing that it would be at odds with the national trend fostering competition in telecommunications.

The features which gave Comsat a unique position among other U.S. communications common carriers can be viewed in light of the needs and circumstances existing in 1962. There was a stated need for expeditious establishment of a system, which favored a single strong entity that would mobilize the developed technology and would represent the U.S. in the international system. Monopoly status would give the new entity the authority to carry out its mission.

Rapid technological developments following 1962 substantially changed the satellite communications environment, and with it the policies governing the system. The global system

envisioned by the Act was gradually successfully established. Attention turned to the development and growth of domestic and regional satellite systems and specialized satellite-communication based services, to include the distribution of television programming, telephone and radio telephone services, and a variety of new services using private line voice and data channels.

3. Events Leading to Open Entry Policy

The objective of the Satellite Act of 1962 was to develop a global satellite system. The Act, however, did not directly address the issue of establishing and operating a domestic system, nor the place of Comsat in such a system. This ambiguous wording on domestic satellite systems was to create a climate of confusion until the early 1970's.[1] It wasn't until the authority of the FCC to regulate separate domestic communications satellite systems was established that a policy governing this service was decided. That policy was largely established in the Decision of the FCC in its Second Report Order, FCC 72-531 (Docket No. 16495) of June 16, 1972 and has commonly become known as the "Open Skies Policy."

Domestic satellites became a policy issue at the FCC, in the words of a former Commission member, "not because of Commission action, but with the filing of a proposal for domestic satellite television network"[2] by the American Broadcasting Co. in September 1965. Backed by Hughes Aircraft

[1] A NASA report contends that the failure of the Act to address the issue delayed the development of commercial satellite communications in the U.S. for over a decade (from 1963 with the first geostationary satellite to 1974, the first commercial satellite) and resulted in "legal and organizational battles over system's ownerships involving the FCC, the Justice Department, the White House and the numerous segments of private industry who wished to use the technology." See NASA, Civilian Space Policy and Applications, Office of Technology Assessment, Washington, 1982.

[2] FCC Reports, FCC 72-531, Docket No. 16495, "In the Matter of Establishment of Domestic Communications Satellite Facilities by Non-Governmental Entities," Second Order & Report, June 16, 1972, 35 FCC 2d, p. 863.

which was interested in creating a domestic market for its satellite technology, ABC proposed the construction and ownership of a satellite system, which would provide the transmission of network programs to affiliated stations.

The FCC responded by proposing to examine the policy implications before taking action. Subsequently it returned the ABC application and instituted an inquiry into the issue in March 1966.[1]

In response to the inquiry, twenty-one parties filed with the FCC concerning a domestic satellite system, including the Ford Foundation, Comsat, AT&T, and Western Union. All respondents agreed with the desirability of introducing a domestic satellite system, but differed on the issues of the use and ownership of the system. Ford proposed a Domsat system owned by a non-profit organization which would use revenues to finance public broadcasting. ABC favored a private satellite company which would by-pass AT&T for transmission of network shows to affiliated stations. Comsat believed that it had a mandate to control all U.S. satellite operations. Western Union and IT&T proposed a multi-purpose Domsat system supplying telephone, TV and data services and owned by the common carriers. AT&T proposed a multi-purpose system integrated with its existing cable and microwave networks, with the space segment operated by Comsat. Non-common carrier interests (TV networks, educational interests) pushed for a specialized Domsat system owned by other than the common carriers. The proposals of ABC, Ford,

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[1]FCC Notice of Inquiry, 31 F.R. 3507, 1966.

Comsat, and AT&T received the most attention.

By 1967, two of these respondents, Ford and Comsat supplemented their submissions proposing a domestic satellite pilot project rather than a full-scale operational system. The FCC was inclining to favor the pilot project concept as a compromising middle position.[1]

In the Executive Office of the President, the Office of Telecommunications Management (OTM),[2] created in the early 1960's to advise the President on international satellite issues, had been studying the issue of domestic communications satellites from the beginning. A 1966 study by OTM indicated that Domsats could create serious interference with existing radio frequency bands and concluded that a full scale Domsat operation was not warranted. Rather, there was need for additional experimentation with satellite communications, and advocated a limited pilot program for this purpose.

On August 18, 1967, President Johnson announced the formation of a Task Force, headed by Eugene Rostow, to review a variety of telecommunications policy questions, including domestic satellites. By late 1968, the Rostow Task Force had completed its investigations, and included in its recommendations

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[1]T. E. Will, Telecommunications Structure and Management in the Executive Branch of Government: 1900-1970, Colorado: Westview Press, 1978, pp. 88-89.

[2]Reorganized in 1970 to become the Office of Telecommunications Policy.

that a Comsat-directed pilot domestic satellite program be authorized.[1] The Task Force concluded that given the number of unresolved questions regarding the technology it would be "premature to establish full-scale domestic operations at this time."[2] The Task Force went on to contend that it was unlikely that substantial savings would result in the near term from the substitution of satellite facilities for terrestrial facilities, and believed that the most appropriate course was a gradual blending of the new technology with the old. Given the uncertainties of satellite technology application the Rostow Task Force believed that a modest pilot project would provide operational domestic satellite experience. Comsat would provide the leadership and act as a kind of trustee of the space experiment.

It is contended that two of the major players involved in the issue of determining the structure of domestic satellite communications at this point of policy development were AT&T and Hughes Aircraft Co.[3] AT&T, with its 29 per cent ownership interest in Comsat supported the Comsat-directed project approach, while Hughes Aircraft, the promoter of both the ABC and Ford

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[1]In February 1967, President Johnson proposed legislation that later became the Public Broadcasting Act of 1967. In April 1967, Comsat had proposed a pilot domestic satellite system to demonstrate the potential and benefits of satellites, including their use for public broadcasting.

[2]R. S. Magnant, Domestic Satellite: An FCC Giant Step, Colorado: Westview Press, 1978, p. 147.

[3]See T. E. Will, Telecommunication Structure and Management in the Executive Branch of Government: 1900-1970, Colorado, Westview Press, 1978, pp. 49-146 and J. N. Pelton and M. S. Snow, Economic and Policy Problems in Satellite Communications, Praeger, 1978, Ch. 6.

Domsat proposals, supported establishment of private satellite systems unrelated to Comsat. Hughes strongly supported competition and private sector development of domestic satellite communications since it would provide a market for its satellite technology.

In early 1969 the FCC drafted a report and order directed at approving the pilot project concept. The FCC "believed that a Domsat pilot project would assist the FCC in gathering data toward formulation of a Domsat decision."[1] In the interim, however, there had been a change in Administration with the election of President Nixon, and the FCC was requested to hold any action while the new Administration reviewed the policy issues and implications.[2] A working group was established in the White House for this purpose, and sought information and comments from a large number of interested parties and firms (Hughes, RCA, Western Union, ABC, NBC, etc.). The business groups favored competition for domestic satellite communications, viewing communications as a business.[3]

In January 1970, a memorandum from the White House to the FCC Chairman established the Nixon administration's competitive philosophy in domestic satellite communications. Statements from the memorandum include:

> . . . it appears that a diversity of multiple-satellite systems as well as multiple-earth stations will be required to provide a full range of domestic services.

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[1] Will, Telecommunications Structure and Management, p. 89.

[2] Ibid., and 35 FCC 2d 864, 1972.

[3] Ibid., p. 119.

> . . . we find no public interest grounds for establishing a monopoly in domestic satellite communications.
>
> . . . government policy should encourage and facilitate the development of commercial domestic satellite communications systems to the extent private enterprise finds them economically and operationally feasible.[1]

The memorandum went on to state that:

> Subject to appropriate conditions to preclude harmful interference and anti-competitive practices, any financially qualified public or private entity, including government operations, should be permitted to establish and operate domestic satellite facilities for its own needs.[2]

This was basically an "open entry" policy.

It has been observed that the significance of this policy was that it "reintroduced the underlying philosophy that had been behind the satellite policy of the Eisenhower administration of almost a decade earlier: that is, any entity with necessary resources can put a satellite up."[2]

Another notable development at this time was the reorganization within the Executive Branch which, following one of the Rostow Report's recommendations, established the Office of Telecommunications Policy (OTP) formerly the Office of Telecommunications Management. The Office was to advise the President on telecommunications policy and formulate policies and programs and seek to implement them through various means.[3] While it was not created to encroach upon the independent

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[1] Will, Telecommunications Structure, p. 120.

[2] J. N. Pelton and M. S. Snow (eds.), Economic and Policy Problems In Satellite Communications, Praeger, 1978, p. 172.

[3] Ibid.

[4] Will, Telecommunications Structure, pp. 133-135.

regulatory powers of the FCC, it would function to present the President's view on telecommunications issues. Throughout the Domsat debate from 1970 to 1972 the OTP strongly advocated the "open skies" policy, with multiple competing systems.

In the immediate period following the receipt of the January 1970 memorandum from the White House, the FCC refrained from action. The FCC was reluctant to make a decision on the appropriate policy for domestic satellite entry or subject the issue to further study. Instead, in March 1970, the FCC invited all interested parties to apply for authorization to construct and operate a Domsat system. Eight such applications were received with varying proposed systems.[1] All except AT&T proposed to launch satellites and apply them for various uses including telephone, data and TV transmissions. The Hughes Aircraft proposal was in association with GTE for telephone service; Western Union wished to integrate satellites with its terrestrial services. RCA planned to distribute TV and radio programs. AT&T, however, preferred to lease satellite capacity from another carrier, Comsat, letting the latter assume responsibility for satellite launch and operation. The proposals of Comsat and Fairchild Industries was for a system designed to serve all users and carriers, operated on a monopoly basis.

All of the applicants suggested special restrictions on AT&T due to its size and dominant position in the telecommunications industry. The Department of Justice also entered the

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[1]System applications filed included those from Western Union, Hughes Aircraft Co., RCA Global Comm. Inc., Comsat/AT&T, MCI Lockheed Satellite Corp., Western Tele-Communications and Fairchild Industries Inc. Applications for earth stations only were filed by Hawaiian Telephone Co., Tavin County Trans-Video Inc., TelePrompter Corp., LVD Cable, United Video, and Phoenix Satellite Corp.

proceedings, endorsing AT&T entry into the Domsat industry but advising special conditions to be placed on AT&T to prevent it from engaging in anti-competitive practices. During the course of the FCC deliberations on the applications, the OTP continued to exert pressure on the FCC to adopt its "open skies" recommendation, with letters from the OTP Director urging the FCC to issue construction permits to all applicants. The OTP view was that there were customers waiting for services, and firms with the capital eager to supply them and these firms should be given the opportunity to do so. The OTP Director even threatened to go to Congress to obtain legislation in support of the open entry recommendation.[1]

Finally, following an FCC staff report on the issue, the FCC issued its policy on domestic satellite communications on June 16, 1972 in its Second Order and Report.[2]

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[1] D. D. Smith, Communications Via Satellite, Boston: A. W. Sigthoff, 1976, pp. 172-176.

[2] FCC Reports, FCC 72-531, Docket No. 16495, "In the Matter of Establishment of Domestic Communications-Satellite Facilities by Non-Governmental Entities," Second Order and Report, June 16, 1972, 35 FCC 2d.

The FCC had on March 17, 1972 issued a Memorandum and Order (34 FCC 2d 1) and had requested comments on it prior to issuing its Second and final Order in June.

4. Domsat Decision: 1972

As mentioned above, the proceeding which led to the 1972 FCC decision on Satellite communications was instituted on March 2, 1966. The objective was "to explore various legal, technical and policy questions associated with the possible authorization of domestic communications satellite facilities to non-governmental agencies."[1] After receiving numerous applications, representations, and comments, and after examining the entire record, the FCC concluded, in light of certain stipulated objectives, "that the public interest would be best served at this initial stage by affording a reasonable opportunity to entry by qualified applicants, both pending and new, subject to showings and conditions [described] which we believe to be necessary to implement our objectives and to protect the public."[2]

What were the objectives set down by the FCC and what were the showings and conditions which were to act as constraints or limitations on applicants? These are described in the following.

(a) FCC Objectives Re Satellite Systems for Domestic Communications

The FCC set down the following objectives that it proposed to follow in formulating policies to govern its licensing and regulation of the construction and use of satellite

[1]FCC Reports, 35 FCC 2d 863 (1972), "In the Matter of Establishment of Domestic Communications Facilities by Non-Governmental Entities," Second Order and Report, June 16, 1972.

[2]FCC Reports, 35 FCC 2d 850 (1972).

systems for domestic communications purposes:

(1) to maximize the opportunities for the early acquisition of technical, operational, and marketing data and experience in the use of satellite technology as a new communications resource for all types of services;

(2) to afford a reasonable opportunity to multiple entities to demonstrate how any operational and economic characteristics peculiar to the satellite technology can be used to provide existing and new specialized services more economically and efficiently than can be done by terrestrial facilities;

(3) to facilitate the efficient development of this new resource by removing or neutralizing existing institutional restraints or inhibitions; and

(4) to retain leeway and flexibility in FCC policy-making with respect to the use of satellite technology for domestic communications so as to make such adjustments therein as future experience and circumstances may dictate.[1]

The FCC was of the view that multiple entry was the most likely to produce a fruitful demonstration of the extent to which the satellite technology may be used to provide existing and new specialized services more economically and efficiently than can be done by terrestrial facilities. Noting that AT&T was the predominant terrestrial supplier of specialized services, the FCC contended that the presence of competitive sources of supply of specialized services between satellite and

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[1] 35 FCC 2d 846 (1972).

terrestrial systems (as well as between satellites systems) would encourage service and technical innovation and provide an impetus for efforts to minimize costs and charges to the public.[1]

b) Open Skies: With Restrictions and Conditions

The FCC contended that its decision in favor of multiple entry did not mean that it had opted for a policy of unlimited or unrestricted open entry. In the words of the FCC in its Domsat decision of 1972:

> Our aim . . . is to afford qualified applicants a reasonable opportunity to demonstrate the public advantages in use of the satellite technology as a means of communications. But such entry cannot be 'open' in the sense that it is without any restrictions or limitations.[2]

(i) Restrictions

These restrictions or limitations were stated in rather general terms as:

> Pursuant to statute we [FCC] must require showings of financial, technical and other qualification and make the requisite finding that a grant of the particular proposal will serve the public interest, convenience and necessity. . . . each applicant must make a sufficient showing of potential public benefit to justify the assignment of orbital locations and frequencies.[3]

Moreover, the FCC believed it necessary to impose certain conditions on applicants to protect the public from possible detriment and to further the implementation of the FCC's stated policy objectives.

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[1] 35 FCC 2d 847 (1972).

[2] 35 FCC 2d 850 (1972).

[3] 35 FCC 2d 851 (1972).

(ii) Conditions on System Applicants

The FCC set down the general condition that any common carrier applicant engaged in providing essential communications services was required to reasonably show that "revenue requirements related to the proposed domestic satellite venture would not be a burden or a detriment to customers for such essential services,"[1] and that furthermore the enunciated FCC objectives "are not frustrated by any applicant, particularly in the critical threshold stage when others are attempting to become established."[2]

These general conditions were supplemented by more specific FCC directives to the large, dominant carriers, particularly ATT & Comsat and GTE.

ATT & Comsat: The FCC concluded that AT&T should have access to the satellite technology to determine its feasibility as an efficient and economic means of providing AT&T's basic switched telephone services, as well as to explore potential use of the higher GHz frequencies. Because of concerns that AT&T might use its position and its relationships with Comsat to discourage or deter others from attempting to penetrate the markets for specialized services, the FCC limited AT&T's initial use of domestic satellites to MTT, WATTS, AUTOVON, and any services respecting Alaska, Hawaii and Puerto-Rico/Virgin Islands. The door was left open, however, for AT&T to petition for authority to provide additional services such as private

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[1] 35 FCC 2d 851 (1972).

[2] 35 FCC 2d 851 (1972).

line services after a three-year period.

For those services AT&T was authorized to provide via satellite, it would have the option of applying for authority to own and operate satellite facilities or of leasing transponders under tariff from Comsat or any other carrier which was designated as a carrier's carrier. The FCC prescribed that if Comsat elected to serve AT&T it would be required to: (1) operate solely as a carrier's carrier; (2) lease transponders to AT&T under the same tariff terms applicable to other carriers leasing transponders; (3) permit AT&T and other carriers to have access to their leased transponders through their own earth stations, where authorized by the FCC, and (4) to comply with FCC regulations concerning the maximum percentage of system capacity that could be leased to any one carrier.

The issue of whether AT&T should have authority to lease satellite transponders caused some concern to the Commission.[1] On the one hand was the consideration that AT&T initially had the ability to occupy a large number of transponders and thereby could pre-empt much of the capacity of any system, leaving little for other carriers wishing to lease transponders. On the other hand, the FCC did not feel that a wholesale carrier should be saddled with possible idle capacity which AT&T might otherwise lease. The FCC concluded that it saw no "compelling reason of public policy for precluding AT&T from leasing satellite transponders under tariff from a carrier's carrier for its authorized domestic satellite services so long as the

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[1] 35 FCC 2d 852 (1972).

wholesale carrier retains adequate capacity to meet the requirements of other carriers desiring to lease transponders."[1]

In addition, the FCC ruled in its 1972 Domsat Decision that Comsat would be required to form a separate corporate subsidiary to engage in any domestic satellite venture, whether it chose to operate a multi-purpose system or to operate solely as a wholesale supplier of satellite facilities to AT&T and other carriers.

GTE: The FCC expressed concern about GTE's proposal to provide interstate MTS service via satellite facilities (for which it was seeking authorization). Up to this point in time, FCC encouragement of multiple entry had been limited to classes of existing and potential specialized services, as opposed to the monopoly switched telephone services furnished by AT&T. The FCC requested GTE to show that its proposal for using satellite technology for interstate MTS services would serve the public interest. Furthermore, given GTE's prominence in the communications field, the FCC ruled that, like AT&T, any authorization granted to GTE would be limited to the provision of MTS services.

The FCC also ruled that any other terrestrial common carrier which was authorized a domestic satellite system, was required to offer its services in accordance with FCC rules and regulations. If a carrier operated to provide wholesale services (carrier's carrier or end-to-end (retail services)), such services were to be covered by appropriate tariffs. If

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[1] 35 FCC 2d 852 (1972).

a carrier conducted both wholesale and retail operations, it was required to maintain separate accounts. The FCC was concerned that any carrier leasing transponder or satellite system facilities was not burdened with any portion of the revenue requirements applicable to the supplying carrier's retail offerings (i.e. cross-subsidization).

Finally, the FCC ruled that any authorization for satellite services to a satellite equipment supplier would be conditioned on a requirement that the supplier establish a separate corporate entity to engage in the satellite communications operation (i.e. a supplier such as Hughes).

(c) Earth Station Ownership, Access, and Interconnection: Domsat 1972 Decision

In the matter of earth station ownership, access, and interconnection, the general policy objective of the FCC was to aim toward flexibility which would permit a variety of earth ownership patterns. In general, the FCC was in favor of according special purpose users (i.e. commercial and non-commercial local broadcasters, other educational users, cable systems, or local carriers) the option of owning receive-only earth stations.[1] In addition, the FCC did not rule out the possibility that transmit-receive earth stations could be owned by users or independent carriers in appropriate circumstances. But since the FCC at the time could not foresee all possible situations that might arise, it believed that it was premature to attempt to specify standards, terms, conditions, etc. regarding earth station ownership. These were to be

[1] 35 FCC 2d 855 (1972).

established when it became clear as to what domestic satellite systems would be established, and within the context of specific applications.

Similarly, the FCC adopted a fairly general and flexible approach on the issue of access to earth stations and interconnection. The FCC required that existing terrestrial carriers, who sought domestic satellite authorizations, submit for FCC approval a description of the kinds of interconnection arrangements they intended to make available to other satellite systems and/or earth station licensees. The objective of the Commission was to assure that all carriers providing retail interstate satellite services (whether or not affiliated with the Bell System) would have access at non-discriminatory terms and conditions to local loop and interchange facilities as necessary for the purpose of originating and terminating such interstate services to their customers.

On the issue of access by public broadcasting and other educational interests, the FCC cited the well-established policy, incorporated in legislation, which makes it lawful for common carriers to provide free or reduced rate interconnection services to public broadcasters and other educational interests. These statutes made it possible for the FCC to prescribe preferential rates for educational entities and for carriers to file tariffs offering free or reduced rates to such entities on their own initiative.

In summary, the 1972 Domsat decision established two broad policies:

(1) Under the policy of "affording a reasonable opportun-

ity for entry into the domestic satellite field by qualified applicants," in effect all interested firms meeting certain qualifications as to financial and technical expertise were allowed to establish satellite systems, regardless of the impact on other established suppliers (AT&T, Comsat, and GTE were treated separately).

(2) In the area of interconnection the FCC established that AT&T and other suppliers of local telephone service would be required to provide interconnection for the long-distance systems of satellite suppliers, under reasonable tariffs, so as to allow the development of competitive supply in the private line area to subscribers of the local telephone systems. With the exception of GTE's system, however, interconnection with local telephone systems would not be permitted thereby precluding competition and maintaining monopoly in the largest area of the telecommunications market.

The FCC decision to allow all firms to utilize satellite technology, and to establish liberal rules of interconnection released potential market forces of change in domestic telecommunications. These market forces (increased numbers of suppliers, increased rivalry, and heightened threat of entry) did indeed materialize, and along with the growth of the specialized common carriers had a major influence on the market structure of domestic telecommunications. Satellite technology furthermore greatly enhanced the potential capabilities of the specialized carriers as they incorporated satellites in their operations.

In the immediate aftermath of the 1972 decision only four of the 1970 proposals for a Domsat system materialized. Western Tele-Communications, Hughes Aircraft, Fairchild, and MCI Lockheed decided to alter, postpone or withdraw their plans to establish satellite systems, allegedly due to economic pressures.[1] At the same time some new players entered the scene, including International Business Machines (IBM). The three satellite systems that were established in the 1970's were RCA's Satcom, Western Union's Westar, and Comsat's Comstar.[2]

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[1] D. D. Smith, Communications Via Satellite, Boston: A. W. Sijthoff, 1976, pp. 181.

[2] These systems and new entrants which came later are discussed in Section D.

5. FCC Philosophy In Recent Satellite Issues

The essential elements of current U.S. satellite communications policy were enunciated by the FCC in 1972. FCC philosophy, objectives, and regulatory requirements have basically remained unchanged since that time. The FCC believed then, and still does, that maximizing entry opportunities and the resulting competitive supply of satellite services would encourage service and technological innovations, make available at the earliest possible date the technical, operational, and marketing data and experience in the use of satellite technology, and provide an impetus for the carriers to minimize the costs and charges to the public. The FCC has attempted to continue to adhere to this philosophy as evidenced in recent decisions.

Two recent potentially significant FCC decisions regarding domestic satellite communications services relate to the sale of transponders and the authorization of direct broadcast satellite services. Both reflect the FCC's continued faith in the competitive marketplace for developing satellite services to serve the public interest.

Similar trends toward increased competition and reduced regulation are found in the international arena. Following its Domsat decisions, the FCC launched lengthy inquiries into international satellite communications and the structure and operations of Comsat. The resulting decisions -- Comsat Decisions, 1980 and 1982; the Authorized User Policy Decision, 1982; -- sought to introduce new competition into international satellite services and open up that market for broader access. In addition, in 1982, notices of inquiry were issued on other

aspects of international satellite communications, including ownership and operation of U.S. earth stations (Docket 82-540), and direct access to Intelsat space segment for U.S. international service carriers (Docket 82-548).

(a) Transponder Sales[1]

In an August 17, 1982 decision,[2] the FCC allowed domestic satellite licensees to engage in transponder sales to users provided that it can be shown that an application to sell a transponder is in the public interest and is non-common carrier in nature. The sale of a transponder was an alternative to leasing it under a tariff arrangement. Under the new rules satellite operators could apply for satellite systems planned for non-common carrier operation. Also existing transponders of common carriers could be dedicated to non-common carrier use (if they were idle), but only with FCC approval.

The FCC noted that while its policies to date had been to provide space segment capacity on a common carrier arrangement, its policies did not preclude applications for non-common carrier systems. In its decision favoring transponder sales, the FCC contended that certification of non-common carrier Domsat systems was consistent with Commission policies fostering multiple satellite entry. Transponder sales would

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[1] A "transponder" is a device on a communications satellite which amplifies and relays transmissions between "transmit" and "receive" earth stations.

[2] FCC Reports, 90 FCC 2d 1238 (1982). In the Matter of Fixed-Satellite Transponder Sales, Docket 82-45.

encourage additional entry, additional facility investment, more efficient use of the orbital and frequency spectrum, and allow for technical and marketing innovation in the provision of Domsat services.

Hughes Communications Inc., RCA American Comm., and Western Union, in their applications for authorization to sell transponders on their satellites,[1] argued that sales would provide them with a means of acquiring capital to underwrite the large costs of satellite system development, launch and operation. For the users, sales would permit firm assurances as to supply and price. Sales would provide the device to share the risks unique to satellite technology and a method for licensees to determine with some precision the future demand for satellite services. It was argued that sales transactions could help to insure that there was an adequate supply of transponders to meet all existing and prospective user needs.[2]

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[1]Sales were proposed to Home Box Office, Turner Broadcasting System, Inc., Westinghouse Broadcasting Co., Viacom International, and Times-Mirror Co.

[2]The risks in satellite communications are somewhat more pronounced than other services. There are technical risks because of the possibility of launch, satellite or transponder failure. Moreover, the operator has to make large financial commitments, up to $100 million per satellite, most of which has to be paid years in advance of the time the system becomes available. Until now there was little if any firm knowledge as to the market conditions that would exist at the future time when the satellite is launched. Transponder sales provide a prospective operator a secure method to reduce marketing risks since actual demand can be determined at the time the transponders are put up for sale rather than the time the satellite goes into operation.

The Department of Justice also favored transponder sales, arguing:

> there's no economic policy justification for preventing any domsat from selling or even leasing a transponder on a common carrier basis . . . No domsat enjoys significant market power . . . Sales on a non-common carrier basis would allow the domsats to capture the full value of their product, thereby promoting efficient entry into the industry and technological innovation.[1]

The FCC agreed that the transponder sales proposals presented a positive market development that would enhance the provision of satellite services to the public and were consistent with the public interest. The Commission contended that sales transactions would allow for more efficient usage of the orbital and frequency spectrum (a major concern of the Commission) by providing sellers with the ability to design satellite systems to meet particular user needs. Transponder users would benefit from the certainty that they would have the transponder capacity they needed, when they needed it, and at a fixed price. Finally, stated the Commission:

> This additional financing mechanism should facilitate the entry of new domsat operators who without the option to engage in transponder sales might well be precluded from entering the domestic satellite market as a facility provider. The competition that would ensue from these additional entrants should actively benefit all participants in the domestic satellite industry.[2]

The FCC, of course, cautioned that it would continue to scrutinize every application to insure that they were in the public interest. As stated by the Commission:

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[1] Satellite Week, March 22, 1982, p. 3.

[2] FCC Reports, 90 FCC 2d 1238 (1982).

> Additional noncommon carrier satellites will not be authorized if it should develop that their certification would not inure to the public interest (for example, if we find that additional transponders are required for users who need common carrier service).[1]

In order to make the "requisite public interest determinations," applicants were required by the FCC to clearly describe the details of their proposed operations, including: the proposed disposition of satellite transponders (whether common carriage or noncommon carriage); if transponders were to be made available to other parties, the nature of the offerings (ownership, lease) and the terms of the offerings; the number of transponders and the name of the purchasing customer for which sale contracts were executed.

Some Commissioners cautioned, in a joint separate statement, that the FCC August 17, 1982 decision did not generally approve non-common carrier Domsat transponder sales. Domsats were not being deregulated. Rather, the decision was an FCC expression of "a willingness, in principle, to entertain future applications for non-common carrier facilities, and a commitment to examine all such applicants on a case-by-case basis to insure that they comport with the public interest . . . [and] . . . inure to the public benefit."[2] This position was "compelled by the many unknowns facing this Commission, especially with regard to the future demand of transponders." By adopting a case-by-case approach, the FCC "acknowledged that it cannot make public policy in an information vacuum."[3]

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[1]FCC Reports, 90 FCC 2d 1238 (1982), p. 1255.

[2]FCC Reports, 90 FCC 2d 1280 (1982).

[3]Ibid.

Following the FCC decision, the deputy chief of the FCC Common Carrier Bureau, Mr. J. Smith, stated that the FCC believed that there was ample transponder capacity for both common carrier and non-common carrier use and dismissed the contention that the FCC decision would result in a shortage of transponder capacity for common carrier use. He pointed out that less than 20 per cent of the total U.S. communications satellite capacity would be dedicated to non-common carrier use as a result of the Commission's actions.[1]

In October 1982, Satellite Syndicated Systems asked the U.S. Court of Appeals for the District of Columbia to set aside the FCC action of authorizing sales of satellite transponders on a non-common carrier basis. The company contended that the FCC order is "arbitrary, represents an abuse of discretion, and otherwise is not in accordance with the law."[2]

(b) Direct Broadcast Satellite Service

Direct broadcast satellite (DBS) service is a radio-communication service in which signals from earth are retransmitted by high power, geostationary satellites for direct reception by small, inexpensive earth terminals. DBS systems operate in the 17/12 GHz band.

In late 1980 the FCC initiated an inquiry to consider proposed policies to govern the authorization of DBS. Shortly following the initiation of the inquiry the Commission received

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[1] Satellite News, August 2, 1982.

[2] Telephony, October 18, 1982, p. 18.

an application from Satellite Television Corp. (STC) a subsidiary of Comsat, to begin construction of satellites for a satellite-to-home video broadcasting system. This was shortly followed by thirteen additional applications.

The FCC released its decision on July 14, 1982 approving DBS service and setting rules for the licensing and operation of DBS systems.[1]

As in its other decisions, the major guiding factor was the public interest. The FCC concluded that DBS had "the potential to provide extremely valuable services to the American people."[2] The possible benefits of the service included the provision of improved service to remote areas, additional channels of service throughout the country, programming offering more variety and that was better suited to viewers tastes, technically innovative services (high definition TV, stereophonic sound, dual-language sound tracks), and expanded non-entertainment service (educational programming, transmission of medical data, etc.).

The FCC considered the numerous arguments presented by parties opposed to DBS. The Commission concluded that any adverse effects would be out-weighed by the beneficial new services described above. One of the major concerns was possible adverse effects on the audiences, revenues, and public service programming of local broadcasters. Many commenters extended that competition from DBS would reduce the audiences

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[1]FCC Reports, 90 FCC 2d 676 (1982). In the Matter of Inquiry into the Development of Regulatory Policy in regard to Direct Broadcast Satellites. Docket 80-603. The Rules are contained in Appendix D of the Docket.

[2]Ibid., p. 680.

and revenues of local broadcasters, which would in turn cause them to reduce the amount or quality of locally-produced programming or public service programming they provided. They contended that subscription systems would attract viewers away from existing broadcasters, and that because the audiences that pay systems attract would probably be more affluent than average, the effect on advertising revenues and on the fund-raising ability of public television stations would be substantial. The National Association of Broadcasters argued that programming provided by DBS would not address local needs, and would reduce the number of channels available for terrestrial broadcasting. The FCC concluded that there was no hard evidence that DBS systems would have a critically adverse effect on existing broadcast service and the long-term effect would likely be less than the effect of cable.

The position of the FCC was that its concern was the public interest and not local broadcasters per se:

> The Commission is required to consider the economic effect of a new service on existing broadcasters only if there is strong evidence that a significant net reduction in service to the public will result. The Commission cannot reject a new service solely because its entry will reduce the revenues or profits of existing licensees.[1]

The FCC referred to the Court case of FCC v Sanders Brothers in which the Court stated:

> Plainly it is not the purpose of the Act [Communications Act] to protect a licensee against competition but to protect the public. Congress intended to leave competition in the business of broadcasting where it found it . . .[2]

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[1] FCC Reports, 90 FCC 2d 689 (1982).

[2] FCC v Sanders Bros. Radio Station, 309 U.S. 470 (1940).

FCC Broadcast Bureau Chief Larry Harris re-emphasized this point at the National Association of TV Program Executives convention in Las Vegas in March 1982. He stated: " . . . the Commission [FCC] won't set up artificial barriers to protect broadcasters," and added: " . . . the public will decide if or when DBS replaces cable and/or over-the-air TV."[1] Harris was optimistic that both cable and TV would survive DBS but cautioned: "Anybody that doesn't think that DBS won't compete directly with broadcasters just doesn't understand the economics of the business,"[2] and that it is "a big gamble" for anyone getting into DBS.

The regulatory policy for DBS adopted by the FCC was consistent with its other policies on satellite services, namely; a flexible approach and minimal regulatory requirements. This policy was described by the Commission as follows:

> We remain convinced that it is in the public interest to impose a minimum of regulation during this experimental phase of DBS operation. We believe that this interim approach will best serve to encourage and facilitate the introduction of this new service, the likely nature of which we cannot predict with any certainty at this early stage. By imposing few regulatory restrictions we will allow operators the flexibility to experiment with service offerings to find those that the public needs and wants, and to experiment with technical and organizational characteristics. Imposing minimal regulation will also allow us to gather information about the operation of the industry, which will allow us to make better-informed decisions about permanent regulatory policies. On the other hand, placing constraints on the characteristics of the services prematurely and without sufficient information may reduce the desirability of the service to the public and increase the DBS operators' costs and risks. This, in turn, could reduce their ability to attract financing and might decrease the probability that DBS systems are initiated. Once the systems have proven viable, however, we of course retain the option to imppse further regulation if experience shows it to be necessary.[3]

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[1] Satellite Week, March 22, 1982, p. 7.

[2] Ibid.

[3] FCC Reports, 90 FCC 2d (1982).

During the interim period proposed for DBS, the FCC did not specify a classification for DBS applicants. In the view of the Commission the imposition of a priori classification would determine the nature of the service at the outset and would foreclose the possibility of gathering valuable experimental information. The FCC hoped to learn during the interim period whether DBS operators found it most feasible to operate as broadcasters, common carriers, private radio operators, or some combination or variant of these classifications.[1]

Expecting considerable competition among DBS systems, the FCC declined to attempt to prevent excessive market power by imposing multiple or cross-ownership restrictions. Furthermore the FCC declined to impose access requirements (reserving DBS channels for particular purposes) or program content requirements, arguing they were not necessary in experimental DBS systems. Such regulatory burdens would impede and reduce entrepreneurial experimentation in initiating this new service.

As of the end of December 1982, the FCC had given approval to eight satellite-to-home television applications.[2] The firms have been approved for construction of DBS systems, but not actual launching of the satellites nor the starting of service. Frequencies and orbital positions will not be assigned until completion of RARC-1983. The FCC stated that it would be willing

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[1] FCC Reports, 90 FCC 2d (1982).

[2] The eight firms are: CBS Inc., DBS Co., Graphic Scanning Corp., RCA Americom, U.S. Satellite Broadcasting Co., Video Satellite Systems Inc., Western Union, Satellite Television Corp.

to consider additional DBS applications, and would act upon them on a case-by-case basis to determine if authorization is in the public interest. All authorizations for interim DBS systems are granted for a period of five years. The earliest date for DBS is expected to be 1986, when Satellite Television Corp. plans to launch its DBS satellite. Full scale DBS services are not expected until the end of the decade. The FCC ruled that a satellite station will be required to be in operation within six years of the construction permit grant.

The rules established by the FCC for DBS were for the interim period prior to RARC-1983 (the outcome of RARC-1983 could affect the rules). The rationale of the FCC to proceed prior to RARC-1983 was the long lead time required for construction of satellites. By beginning authorization in 1982, the FCC hoped to implement DBS service earlier than if it waited until the outcome of RARC-1983. Some have also contended that beginning now would likely enhance the U.S. negotiating position at RARC-1983.[1] All DBS applicants, however, were put on notice by the FCC that their systems must conform with the final outcome of the RARC.

(c) International Communications

In the summer of 1982 the FCC took a big step in de-regulating international telecommunications.[2] Several of the FCC actions were directly related to the provision of services

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[1] FCC Reports, 90 FCC 2d 683 (1982).

[2] FCC Docket 80-170, 1982.

by Comsat. Acting in a move it proposed in 1980,[1] the FCC lifted the restrictions confining Comsat to function only as a "carrier's carrier," and allowed it to serve the public directly and to compete for customers with other common carriers. To ensure that Comsat does not use its position in Intelsat to deal unfairly with its competitors, the FCC required the company to offer public services through a separate corporate subsidiary and to deal with all carriers on just and reasonable terms. The FCC also began an inquiry in 1982 on its current policy and rules on ownership and operation of U.S. earth stations active with the Intelsat communications satellite system.[2] The Commission reasoned that in view of its decision to allow Comsat to provide international satellite services directly to end users, it would be appropriate to consider revising this ownership and operation policy.

With regard to Inmarsat, the FCC ruled in August 1982 to allow any carrier to own earth stations to access the system.[3]

The Commission's actions represented a shift from a policy approach that had been in effect for two decades. In a press release the FCC justified its action as furthering the Commission's two goals: promoting a more competitive marketplace and eliminating unnecessary government regulations. The steps taken, contended the Commission, "should remove significant regulatory barriers to the development of a free competitive

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[1]FCC, Docket 80-634, October 29, 1980.

[2]FCC, Docket 80-634.

[3]Docket 80-170, 1982.

international market, thus allowing the public interest to be served."[1]

Immediately following the FCC decision, Western Union International, Inc. and RCA Global Communications requested the U.S. Court of Appeals for the District of Columbia to review the FCC decision. Western Union argued that lifting the restrictions on Comsat would result in Comsat having an unfair competitive advantage over Western Union because of "substantially lower space segment costs"[2] in providing international satellite leased channel service.

The FCC, anticipating some concern over its move by foreign communications authorities, emphasized that its position was intended to deal with U.S. companies providing international services, and should not be interpreted as an effort to dictate to foreign competitors. In a recent statement before the Organization of Economic Co-operation and Development (OECD), FCC Chairman M. S. Fowler insisted that the U.S. has "no intention of trying to impose our telecommunications philosophy on other nations."[3] But he did call for more flexibility in divisions separating traditional service providers, new competitors, and customers, arguing that the increased number of services and volume of use that would result would benefit everyone.

In a further development, the FCC, in a unanimous decision

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[1] Telephony, August 16, 1982, p. 12.

[2] Ibid., September 20, 1982, p. 14.

[3] Ibid., January 3, 1983, p. 12.

in December 1982[1] lifted its restrictions in the international telecommunications market between voice and data carriers, permitting voice carriers into the data market. This opened the way for AT&T to provide international record services, and the international record carriers (IRC's) to offer voice services. Factors mentioned by the FCC supporting its decision were the high rates of return on international record and voice services, and evolving digital technology, which allows voice and data to be transmitted via the same facilities and makes it inefficient to construct separate means of carrying each. AT&T could now begin to offer international telex and data services over existing facilities. MCI, an aggressive small competitor, immediately accelerated its plans to enter the international voice market.

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[1]FCC, Docket 80-632.

6. Problems Suggesting Increased Government Oversight

Following the early 1970 decisions, the FCC made every attempt to adhere to the policies then established. This is evident in the numerous FCC decisions relating to domestic satellites and satellite services in the latter 1970's and early 1980's. The FCC position and rationale in some of these decisions was discussed in the previous pages. But despite the FCC's adamant position that it would adhere to its basic open entry and flexible approach policy, and its emphasis on the marketplace as the determinant of the direction of satellite communications development, there are some signs that the FCC may, however reluctantly, be forced to exercise more oversight of satellite communications, particularly in certain aspects, then it had anticipated as the industry develops.

Because of differing operational advantages between satellites, the FCC has permitted applicants to select the satellites which would best suit their in-orbit traffic needs. The FCC has repeatedly expressed its reticence to compare and evaluate the relative advantages and disadvantages of differing satellite designs. However, the growing congestion in the 6/4 GHz bands, increasing applications for replacing and expanding existing operators' in-orbit capacity and applications for new entrants to establish satellite systems convinced the Commission that "some tempering to our [FCC] normal hands-off policy with the public's concern for efficient orbital use"[1] was required,

[1]FCC Reports, FCC 80-716, In the Matter of the Application of Western Union Telegraph Co. For Authority to Construct and Launch a Fourth and Fifth Westar Space Station in the Domestic Fixed Satellite Service, January 30, 1981. 86 FCC 2d (1981).

along with a need "to examine a number of technical alternatives to ensure that efficient spectrum use"[1] was achieved.

The FCC's concern was evident, for example, in the 1978-1979 launch authorizations of Comstar III, Westar III and Satcom III, when the Commission expressed a need to monitor more closely applications for additional in-orbit capacity by existing operators. The FCC maintained that it was not retreating from its open-entry, competitive policies, but recognized that these policies required the FCC to exercise more oversight than previously to ensure that the orbital spectrum was being efficiently utilized.

In effect, industry developments and potential orbital overcrowding has forced the FCC to begin re-examining its satellite policies, particularly with respect to questions of replacing and expanding existing operators' in-orbit capacity, and questions of new entrants establishing satellite systems. The developments have led the Commission to initiate a proceeding to examine these questions and issues relating to the efficient use of geostationary orbit. Pending the completion of this inquiry, the FCC in early 1981 produced a tentative Orbital Deployment Plan. This plan was revealed in the FCC Orbital Assignment Order of January 30, 1981,[2] and included the following provisions:

(a) Pending the completion of its orbital review proceeding to consider the reduction of orbital separations in the 6/4 GHz

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[1]FCC Reports, FCC 80-716.

[2]FCC Reports FCC 80-711, In the Matter of Assignment of Orbital Locations to Space Stations in the Domestic Fixed-Satellite Service, January 30, 1981, 84 FCC 2d 584.

bands to 3° or less, the FCC retained the 4° spacing criteria for 6/4 GHz bands, and the 3° orbital spacing at 14/12 GHz.

(2) The FCC determined that launch and orbital decisions be made at the same time that the FCC granted authority for satellite construction, rather than continue the past practice of ad hoc orbital assignment decisions immediately prior to launch. At the same time, however, the FCC ruled that, in its opinion, the public interest required the temporary nature of orbital assignments be continued.[1] In the view of the FCC, any orbital deployment plan had to be dynamic, subject to continuing review and alteration so that the FCC could adopt to changing circumstances and/or operational requirements.

(3) In order to have available accurate and timely data on the status of satellite construction and in-orbit operations, the FCC decided to continue its reporting requirements. Authorizations of satellite facilities therefore continued to be conditioned with the requirement that each applicant submit the following information on a semi-annual basis:

(i) status of satellite construction and anticipated launch dates,

(ii) identification of any transponders not available for service or otherwise not performing to specifications,

(iii) a listing of any serious service degradations and the causes of such difficulties,

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[1]Since the launch of the first satellite, all orbital assignments were subject to the following condition: "The temporary assignment of this orbital location is subject to change by summary order of the Commission on thirty days notice and does not confer any permanent right to the use of this orbital location." FCC 80-711, January 30, 1981, p. 611. 86 FCC 2d (1981).

(iv) a detailed description of the utilization made or anticipated to be made of each transponder on each of the in-orbit satellites.

The FCC concluded, in its Orbital Assignment Order and concurrent Orders in January 1981, that existing operators be given an opportunity to expand, and new entrants an opportunity to become established if justified by traffic requirements. However, both were to be limited. New entrants were limited to an initial two in-orbit system, the first to be used for regular service, and the second for anticipated growth and backup. Additional satellites would be authorized only if the applicant could demonstrate that the existing traffic and firm commitments for added service would soon exhaust existing capacity. The FCC maintained that this policy of orbital assignments was based on orbital efficiency considerations and the applicants operational requirements.

One of the alternatives considered in the FCC orbital-analysis proceeding was possible minimum capacity requirements for each satellite occupying an independent orbital location. For example, a possible minimum might be 24 transponders. Even without minimum capacity requirements, the FCC had been hesitant, in its 1980 and 1981 decisions authorizing additional satellite construction to permit 12 transponder satellites to occupy independent 6/4 GHz locations. In those decisions the Commission cautioned applicants regarding future requirements when it stated:

> Our authorizations . . . will be expressly conditioned on the outcome of our future proceeding which will consider minimum capacity requirements. While we do not generally make such evaluations concerning satellite design, we believe the public interest requires this condition because of the growing congestion in the orbital arc and the resulting need to monitor carefully the use of all available orbital locations particularly by satellites whose capacity is substantially below the state-of-the-art. The applicants are, therefore, put on notice that subsequently they may be required to cease operation of one or more 12 transponder satellites from independent orbital locations if minimum capacity requirements become necessary.[1]

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[1]FCC Reports, 86 FCC 2d 210 (1981), In The Matter of the Application of Western Union.

7. Influences on FCC Policy-Making re Domestic Satellites

In approaching the issue of determining a policy for domestic communication satellites the FCC was faced with a number of alternative positions or directions for policy. The fact that three of the Commissioners, including the chairman, dissented from the majority position in the 1972 Domsat decision is indicative of the complexities and uncertainties surrounding the satellite question.

Among the alternatives facing the FCC were the following:

(1) Proceed slowly into the area of satellite communications with the initiation of an experimental pilot project. This had been the recommendation of the President's Task Force in 1968 and which the FCC had been prepared to adopt. Merits were seen in this approach in light of the maze of unpredictables and potential problems related to domestic satellite communications. The project could be operated by a chosen company (Comsat had been selected by the Task Force), or by a new entity of government. It was contended that a single operator could ensure economies of scale, fair and open access to all customers, and the lowest possible rates.

(2) Give an existing carrier such as AT&T a monopoly over domestic satellite service. AT&T exclusive operation in space would have the advantage that all users, including the homeowner, would get some benefit from the new technology as it was integrated into AT&T's terrestrial facilities.

(3) Establish a competitive system. This would involve free entry with the market forces of competition directing and regulating the industry. Firms would experiment with equipment

and services and search and compete for markets. The role of the FCC would be to attempt to maintain conditions of fair competition, particularly when dominant firms (AT&T, Comsat) had opportunities to become involved.

The FCC opted for the third alternative, which was basically consistent with the trend of FCC decisions to increased competition and deregulation in telecommunications at the time, particularly its Specialized Common Carrier Decision of 1971, a landmark decision which authorized the entry of special service carriers into the telecommunications market.

The FCC role in policy-making and its policies for domestic satellites have been shaped and influenced by a variety of forces and developments. Studies of the developments leading to the Domsat decision of 1972 have attempted to identify various influences on the FCC in the decision. Some argue that it was a political decision influenced by the Executive Branch and by the Congress; that it was primarily a political reaction to contain "bigness."[1] Others contend that the FCC was more likely influenced the most by its own past policies, which were emphasizing competition and were becoming more visible at the time of this decision.

Some of the influences, observed in this study and/or contended by other analysts, are discussed below.

Applicants and Intervenors. The FCC relied heavily on the parties appearing before it for the analysis and proposals

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[1] R. S. Magnant, Domestic Satellite: An FCC Giant Step, Westview Press, 1978.

it considered. In 1970 the FCC had been unprepared to make a decision on Domsat policy, but instead called for proposals for systems from interested parties. The FCC had decided to articulate policy within the context of specific proposals.

It is suggested that each of the important parties appearing before the Commission had devoted considerably more resources to the examination of the issues than the FCC had available and could commit. In the words of former Commissioner N. Johnson the Commission "has been a 'captive,' responding to and arbitrating between the variety of forces which have attempted to move it."[1]

During the debate leading to the Domsat decision, and in decisions on telecommunications following 1972, the forces of competition and monopoly exerted considerable pressure on the FCC in its decision-making regarding communications. The FCC was faced with the question of whether to retain the traditional regulated-monopoly approach to the telecommunications industry, or to authorize competition in the industry, and to substitute competitive forces for regulation.[2] And in industry sectors

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[1]FCC Reports, 35 FCC 2d, "In the Matter of Establishment of Domestic Communications - Satellite Facilities by Non-Government Entities," Docket No.16495. Second Order and Report, June 16, 1972, pp. 864-865.

[2]For an examination of the issues involved and the competition-monopoly controversy, with both pro-competition and pro-monopoly arguments, see J. C. Strick, A Study of Competition and Monopoly In Telecommunications Carriers and Services - Economic, Regulatory, Technological and Judicial References, February 1979, Department of Communications, Ottawa; and J. C. Strick, Research Study of Monopolistic and Competitive Telecommunications Services - Economic, Technological, Judicial and Regulatory References, Phase II, Supplement I, February 1981; Supplement II, May 1981, Department of Communications, Ottawa.

where both competition and varying degrees of monopoly appear both feasible and desirable the FCC was faced with the question of melding competitive and monopoly portions of the industry.

The monopoly-competition, regulation-non-regulation issues that the FCC had to meet in the telecommunications industry covered a variety of areas including (a) competition vs monopoly in communications equipment and interconnection; (b) the relationships between monopoly landline telephone companies and miscellaneous carriers who offer a variety of land mobile services in competition, (c) the entry of specialized common carriers; (d) pricing practices, bulk offerings (Telpak, etc.); and (e) the treatment of entrants for domestic satellite services.

The issue of domestic satellites services was particularly perplexing for the FCC because it was a new, experimental area of communications with a great many unknowns in the non-technical aspects of satellite operations. The FCC was called upon in the late 1960's and early 1970's to establish ground rules for a new technology to serve some existing markets and others that were at best speculative.

There could only be speculation on such questions as: possible new institutional and personal uses of the qualities of satellite distribution systems; the effects of satellites on communications costs; problems that might arise in joint operations of satellites or earth stations; possible new rate-making or regulatory concepts and procedures that might be needed, etc.

The Executive Branch. The extent to which the political

pressures of the White House and the Office of Telecommunications Policy impacted on the FCC's Domsat decision of 1972 has been widely discussed and debated, with a variety of views. As documented earlier, there is evidence that the OTP actively promoted the White House "open skies" recommendation through various means (letters to the FCC and even threats of seeking Congressional legislation). Some have cited this evidence and concluded that the Domsat decision was partly a result of OTP influence.[1] This was also the view of Commissioner N. Johnson when, following the 1972 decision, he stated: " . . . the ability of the Commission to move in variance with White House positions on important policy questions is very questionable."[2] Those who see validity in this viewpoint argue that the White House recommendation for "free entry" was part of the entire philosophy of the new Republican administration to promote the private sector and competition.

In the words of one such advocate:

> A general review of the White House statements will clearly show that the Nixon philosophy was not only intended as supporting greater competition in communications, but in other fields (for example, railroads and aviation) as well.[3]

Still others have assigned to Nixon some anti-media motives and interpret the events as a scheme by the Nixon administration to increase White House control over non-governmental telecommunications:

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[1] D. D. Smith, Communications Via Satellite, Boston: A. W. Sijthoff, 1976, p. 168.

[2] 35 FCC 2d 864, 1972.

[3] R. S. Magant, Domestic Satellite: An FCC Giant Step, Colorado: Westview Press, 1978, p. 162.

> It seems obvious that Nixon was attempting through . . . [the OTP] . . . to gather additional Presidential authority in spectrum allocation.[1]

As students of the American political system have repeatedly pointed out, regulatory bodies such as the FCC while legally and technically independent, are not exempt from White House influence and pressure. Besides "moral suasion," the President can influence the FCC through FCC appointments, the FCC budget, and the Department of Justice.

FCC personnel adamantly maintain that the FCC is an independent regulatory agency, free of direction from the Executive, and responsible only to legislation or statutes. While they admit that they came under pressure daily from lobby groups representing industry interests, from Congressmen, and from the executive, FCC decisions are based on staff evaluations and Commissioners' judgements within the terms of reference established for the Commission by law and independent of any outside direction.[2]

While this is technically correct, the observations of Commissioner Johnson, cited earlier, of the questionable ability of the FCC to move contrary to the Executive on major policy issues cannot be lightly dismissed. It is well established and documented that the FCC, after studying the Domsat issue for about five years had determined, and had drafted a preliminary Order to the effect in early 1969, that a pilot project was

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[1] T. E. Will, Telecommunications Structure and Management in the Executive Branch of Government, 1900-1970, Colorado: Westview Press, 1978, p. 129.

[2] Interviews with FCC staff.

the most appropriate approach to the establishment of a domestic satellite system; that indeed, the Domsat issue, in the mind of the FCC had been settled. Interestingly enough, the Pilot project approach was also the one recommended by the Presidential Task Force investigating the matter. But as explained earlier, the draft Order was never finalized, and following the new administration's review of the issue and its resulting "open entry" recommendations, the FCC's announced policy in the Domsat decision in 1972 followed very closely the White House "open entry" recommendations.

While acknowledging Executive pressures and overtures to influence the FCC in its Domsat decision, others have contended that the FCC appears to have been influenced much more by its own past policies permitting competition in other areas of telecommunications.[1] This was also a growing perception within the FCC in the late 1960's and early 1970's that competition in telecommunications was more in tune with the changing technology and the public interest than monopoly.

Trends to Pro-Competition. The open skies or free entry policy adopted by the FCC in its Domsat decision was consistent with the general trend towards increased competition reflected in other FCC decisions on telecommunications.[2]

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[1]This is the conclusion reached by Magant. See R. S. Magant, Domestic Satellite: An FCC Giant Step, Colorado: Westview Press, 1978, p. 190.

[2]See Appendix II for various pro-competition decisions of the FCC during the 1960's and 1970's in the area of telecommunications. For a detailed presentation and examination of FCC pro-competition decisions in telecommunications and the events and rationale leading to these decisions, see J. C. Strick, A Study of Competition and Monopoly in Telecommunications

Competition was coming to be viewed by the FCC as a means of stimulating technological development, developing new and improved services, and reducing telecommunications rates. Competition incorporated more open and easier entry into the industry, and a greater reliance on market forces to act as the regulator of the industry.

The FCC frequently referred to earlier decisions in subsequent ones, concluding that no evidence was being produced to show that its earlier decisions permitting competition in such areas as terminal attachment, interconnection, and private line services had adversely affected the telecommunications services. On the contrary the FCC would tend to stress the various benefits from competition that appeared evident.

The trend toward competition began in the 1950's, took more definitive shape in the 1960's, and accelerated and became well entrenched in the 1970's. Beginning in the area of terminal attachments, it was extended to private-line transmission and special services, and finally to practically all areas of telecommunications. Noteable among the FCC decisions promoting competition are: The Above 890 Decision in 1959; the Carterfone Decision in 1968; the MCI Decision in 1969; the landmark Specialized Common Carrier Decision in 1971; the Computer II Decision

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Carriers and Services - Economic, Regulatory, Technological and Judicial References, February 1979, Department of Communications, Ottawa; and J. C. Strick, Research Study of Monopolistic and Competitive Telecommunications Services - Economic, Technological, Judicial and Regulatory References, Phase II, Supplement I, February 1981; Supplement II, May 1981, Department of Communications, Ottawa.

in 1980; and the Competitive and Common Carrier Decision of 1980 which opened MTS and WATS to competition and removed the last remaining barrier into the interstate telecommunications market.[1]

The pro-competition, emphasis-on-the-marketplace philosophy is now well entrenched in the FCC, as evidenced not only from FCC decisions, but by statements from the FCC itself, particularly by Mr. M. Fowler, the Chairman. Typical of his philosophy is the following statement made in April 1982 in an appearance before the U.S. Senate Sub-Committee on Appropriations:

> The Commission is dedicated to the policy that the public should benefit from new services as quickly as possible and that the marketplace, not the government, should determine the success of new services. We will continue to move forward on existing proposals and rapidly but thoroughly review any new service proposals which may arise.[2]

Congress and The Courts. Some of the Court decisions and the activities within Congress on telecommunications should also be noted for their pro-competition flavor and possible influence on the FCC.

It should be noted that AT&T's monopoly on terminal equipment and the prohibition of foreign attachments to the AT&T system was first breached in 1956 by the U.S. Court of Appeals reversal of the FCC Hush-a-Phone decision. The Court ruled against Bell and the FCC, permitting interconnection of non-Bell equipment to the Bell system telephone lines. This Court

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[1] See Appendix II.

[2] Senate Hearings Before the Committee on Appropriations, State, Justice, Commerce, and Related Agencies, Appropriations, Fiscal Year, 1983, Wednesday, April 21, 1982, p. 1017.

decision was implemented by the FCC and used as a precedent in the FCC Carterfone decision in 1968 which opened the terminal equipment market for new entrants.[1]

It was also a Court ruling which eventually led to open entry into the long-distance message toll market. In 1974 the FCC ruled against permitting Microwave Communications Inc. (MCI) to offer its Execunet (metered-long-distance) service. The U.S. Circuit Court of Appeals reversed the FCC decision in 1977.[2] The FCC Competitive and Common Carrier Decision of 1980 opened the long-distance market to competition.

During the 1970's there was considerable activity within Congress to attempt to rewrite the Communications Act of 1934. The first attempt during this period was initiated by the telephone industry (Bell Bill) in 1976 which would have entrenched the monopoly of the Bell System. The Bell Bill died and was quickly replaced by a number of others, in both the Senate and the House of Representatives. Basically all of the Bills introduced to amend the Act following the Bell Bill had as their goal increased competition in telecommunications rather than monopoly.[3] Attempts to rewrite the Act have continued into the 1980's, with increased competition and reduced regulation as the general objective.

A House Republican study group recently praised the FCC for its actions and objectives in deregulating the telecommunications industry and promoting competition in the industry.

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[1]Strick, A Study of Competition and Monopoly.

[2]Ibid.

[3]Ibid.

Reliance on the marketplace has spurred the development of new technologies according to the study. The group also supported the proposal to reduce orbital spacing requirements, viewing it as a positive entry-opening step.[1]

Technology. It would appear that the direction of FCC decisions has been significantly influenced, perhaps even forced, by the tide of technological change. Traditional monopoly positions in telecommunications, dictated by early technology, were made obsolete by technological change as new means of transmission, and a host of new services were ushered in. The FCC concluded that, with regard to new services, as well as established services, whenever the underlying technological and economic factors permitted, competition should be the norm and regulation the exception. As an example of how technology can impact on FCC policy, consider the following case. The FCC has shown concern over the orbital arc glut and efficiency in spectrum use as outlined earlier, with indications that the orbital overcrowding could force the FCC into increased oversight of satellite applications. The hope has been expressed, however, that technological change could eliminate the problem (use of 2° spacing; development of higher frequency bands such as 30/20 GHz; development of larger capacity satellites, etc.) thereby enabling the FCC to continue its open-entry, marketplace-reliance policy for satellite communications. Without such technological developments, however, the 6/4 GHz and 14/12 GHz bands will soon

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[1] Regulatory Reform: The Quiet Revolution, Report of the Task Force on Congressional and Regulatory Reform of the House Republican Research Committee, January 1983.

become saturated, with some significant policy implications for the FCC.

The Public Interest. The dominant consideration running throughout the numerous FCC inquiries and decisions on domestic satellite communications was the public interest.

The public interest factor appears to be something recognizable but difficult to define. Former FCC Chairman Dean Burch in 1973 defined the public interest as actions which

> create a prevailing climate in which the widest possible range and variety of services are provided to the public by the greatest practical number of independent entities, each one seeking to satisfy public wants in its own way.[1]

It has been pointed out that by this definition public interest regulation of domestic telecommunications only goes back to 1959[2] and the 1960's when the FCC's policy of increased competition was adopted. In the area of satellite communications, this concept of public interest regulation is only about 10 years old (Domsat decision of 1972). Indeed the Satellite Communications Act of 1962 had created Comsat, or monopoly as the "chosen instrument" for satellite communications.

Public interest considerations involve more than just trying to develop competition in the interests of consumers. The concept can mean many things to different people and parties.

The public interest criteria has its basis in the Communications Act of 1934 which, broadly speaking, dictates that the public interest be served. Even though the Act has

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[1]Dean Burch, "Public Utility Regulation: In Pursuit of the Public Interest," Public Utilities Fortnightly, September 1973, p. 70.

[2]FCC, Above 890 Decision, authorizing private ownership of microwave communications systems.

been overtaken by events and is outdated in view of the changes in telecommunications, FCC decisions could still be made within the context of broad communications guidelines contained in the Act. Section 1 of the Act states that the Commission was created:

> For the purpose of regulating interstate and foreign commerce in communication by wire and radio so as to make available, as far as possible, to all the people of the United States a rapid, efficient, Nation-wide, and world-wide wire and radio communication service with adequate facilities at reasonable charges . . .[1]

Reference to "public convenience, interest or necessity" can be found in numerous parts of the Act, such as in the following:

Section 214: Commission shall authorize common carrier facilities as "the present or future public convenience and necessity require;"

Section 303(a) and (b): Commission "shall" "classify radio stations" and "prescribe the nature of the service to be rendered by each class of licensed stations and each station within any class" "as public convenience, interest, or necessity requires";

Section 307(a): Commission shall grant station licenses "If public convenience, interest or necessity will be served thereby";

Section 309: Commission shall grant radio license applications according to whether "the public interest, convenience, and necessity" will be served thereby.

The "public interest" can be interpreted to embody the totality of the needs of society. Social needs in communications

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[1] Communications Act of 1934, 47 USC.

can be viewed as encompassing national goals, commercial requirements, entertainment, education, news, public affairs, health and medical services, cultural preservation, etc. Services in these areas should be provided economically and efficiently, in an environment that stimulates technological development and the development of new and varied services to meet changing consumer needs. Since the early 1970's the FCC has judged that, in the area of satellite communications, the appropriate environment is one which features freedom of entry, competition, and a flexible regulatory policy.

8. Summary

The U.S. domestic satellite communications policy is a competitive, open-entry policy, combined with a flexible regulatory approach, designed to serve the public interest, and sensitive to changing circumstances and public needs. The policy makes no attempt to prescribe systems, services, or satellite design. Satellite operations, however, are carefully scrutinized by the FCC. All applications for construction of satellite facilities are examined to ensure that they comport with the public interest; applicants must be financially, technically and legally qualified; the FCC can impose conditions on any particular applicant; capacity utilization is carefully monitored, and orbital assignments are temporary. However, the FCC has become increasingly conscious of the need for efficient orbital use.

The economic and political events which shaped U.S. domestic satellite communications policy have their roots in the 1960's. These events led to the FCC Domsat Decision in 1972 establishing the basic philosophy, objectives, and measures of the policy which still hold today. Free entry and a flexible regulatory policy continues to be viewed as the means of stimulating efficient satellite technology development and services and allow private applicants, not the FCC, to shape the direction of Domsat operations. It was left to the marketplace to shape the evolution of satellite telecommunications and to determine the success of operations and services, with a minimum of regulation, and no government monopoly-protected positions.

Numerous players and interests were involved in influencing and shaping U.S. Domsat policy. The early considerations following the launch of the first satellites in the late 1950's and early 1960's were with the form which a commercial venture in space should take. Both industry and government agencies had different views, and the issue was finally resolved when President Kennedy issued a policy statement favoring private ownership but with government oversight to ensure not only public interest objectives, but national and foreign policy objectives as well. The result was the Satellite Communications Act of 1962 creating Comsat.

Comsat's role and structure can be viewed in light of the needs and circumstances existing in 1962. There was a stated need for an expeditious establishment of a system, which favored a single, strong entity that could mobilize the developed technology and would represent the U.S. in the international system.

Rapid technological developments during the 1960's and political pressures changed the satellite environment and with it the policies governing the system. Proposals for a domestic system were filed with the FCC in the mid 1960's, ranging from a monopoly controlled system (AT&T), to a "pilot project," to free and open competition. The FCC and the Johnson Administration tended to favor the pilot project approach, a gradual development of satellite communications to gain insight and operational experience in the commercial application of domestic satellites. The new Nixon Administration in 1968, however, favored competition and lobbied vigorously for FCC acceptance of its "open-entry"

recommended policy. Ultimately, in 1970, the FCC proposed to consider policy in relation to specific proposals for satellite systems, and invited applications from interested parties. The deliberations relating to these applications produced the FCC Domsat Decision in 1972, in which FCC policy was established.

Since the 1972 Decision, a number of satellite communications systems have been approved and have become operational with others in the process of becoming operational. The FCC has continued to adhere to the open-entry, flexible regulatory policy as evidenced by the number of new entrants and the new and varied services authorized, and aspects of satellite operations liberalized. A very recent example of a new system and service is the authorization of direct broadcast satellite systems. Examples of liberalized operations is the permission by the FCC to allow sale of transponders, the authorization for Comsat to serve end-users, authorization to provide trans-border services, and lifting restrictions in the international telecommunications market permitting voice carriers into the data market.

There are some indications, however, that despite the FCC's commitment to competition and the marketplace in satellite communications, certain physical and technical limitations regarding the orbital spectrum have caused the FCC to engage in "some tempering to our normal handsoff policy." With more and more satellite applications, the number of available slots for satellites at 4° and 3° spacing is rapidly diminishing with growing congestion in the orbital arc. The FCC has recently shown increasing concern for efficient allocation and use of the spectrum. It has begun to examine more closely the need

for, and the features of, proposed new satellites, and increased monitoring for existing satellites. Minimum capacity requirements for satellites are being considered and 2° spacing is being evaluated.

A number of influences and considerations in the development of U.S. satellite communications policy and FCC policy-making can be identified. Some tend to be controversial and some more prevalent than others, but all have combined to impact on policy. These influences and considerations include: the reliance of the FCC on the analysis and information in applicant proposals; the controversial influence of the White House; the general pro-competition attitude gradually developing in the FCC; the direct and indirect influence of Congress and the Courts; technological change; and considerations of "the public interest" as interpreted by the FCC.

SECTION C

U.S. STATUTORY AND REGULATORY MEASURES

This section presents a review of the statutory and regulatory measures that have been adopted in the U.S. relating to satellite communications. It includes provisions of the Communications Act, the Satellite Communications Act, and a summary of the provisions found in various FCC decisions on both international and domestic satellite communications. Emphasis is placed on the more significant rules and regulations rather than developments and rationale leading to the decisions as the latter are covered primarily in Section B of this study.

1. Communications Act of 1934

With the exception of the Communication Satellite Act which created Comsat and addressed international satellite activity, Congress has not passed specific legislation to regulate the new technology. Yet, because both domestic and international satellites operate as common carriers and engage in interstate activity, they are subject to both Title II and Title III of the Communications Act of 1934 and fall under the jurisdiction of the Federal Communications Commission.

The Act demands that the carrier set rates which are just and reasonable. Those which do not meet the criterion are

declared to be unlawful.[1] Furthermore the carrier is barred from unjustly discriminating among classes of customers or in giving any undue preference to any person, class of persons or locality. These prohibitions apply not only to rates but also to the supplying of facilities and services.[2] Tariffs, which designate rates and services, must be filed with the FCC at least 90 days before the date on which the changes are scheduled to go into effect.[3] If the Commission, either as a result of a complaint or by its own initiative, has reason to believe that the tariff does not meet the requirements of the Act, it may suspend it for a period not longer than five months.

During that time, the FCC must conduct a hearing into the lawfulness of the tariff. If a final determination is not made before the lapse of the five month period, the tariff goes into effect and remains operational until a decision is reached.[4] This process includes not only an adjudication by the FCC but also an appeal to both the Circuit Court and the U.S. Supreme Court. Thus, a tariff which may eventually be declared unlawful, may be offered by the carrier for an inordinate length of time. For example, AT&T's TELPAK tariffs were offered for 18 years before they were prohibited. Once a tariff has been declared unlawful, the Commission has the right to prescribe a just and reasonable one.[5]

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[1] 47 U.S.C. s 201.

[2] 47 U.S.C. s 202.

[3] 47 U.S.C. s 203.

[4] 47 U.S.C. s 204.

[5] 47 U.S.C. s 205.

If a carrier wishes to engage in the construction of a new service or extend an existing one, it must first obtain an authorization from the FCC. The Commission reviews the application and has the power to impose upon it whatever terms and conditions which are deemed necessary. The carrier can begin to construct its new services only if it is pursuant to the dictates of the Commission.[1]

Besides approving tariffs and authorizing construction, the FCC can also oversee any transactions in which the carrier engages for the purchase of equipment, supplies, research, services, credit, etc.[2] In addition, the Commission has the right to review the accounting procedures used by the carrier and prescribe the form that its record-keeping takes.[3]

Under Title III of the Act, the Commission is given the authority to license the use of the electro-magnetic spectrum and to assign frequencies to users.[4] In addition, it has the right to make rules and regulations and prescribe conditions and restrictions which are pursuant to U.S. law, treaties and conventions.[5] Finally the Commission can allocate frequencies only after it has given public notice of the application and has made a determination that the public interest would be served by the granting of the application.[6]

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[1] 47 U.S.C. s 214.

[2] 47 U.S.C. s 215.

[3] 47 U.S.C. s 220.

[4] 47 U.S.C. s 303.

[5] 47 U.S.C. s 303 (r)

[6] 47 U.S.C. s 309.

2. Domestic Satellite Policy

a) Domsat Decision I

In 1970, the FCC began to articulate policy regarding the authorization of domestic satellite facilities.[1] The parties who took part in the proceedings differed on the type of system which should be approved and the purposes for which it should be used. The common carriers expressed a preference for a multipurpose common carrier operation while other interests, including the television networks, "urged that specialized systems should be authorized or at least not foreclosed."[2]

After determining that domestic satellite communications warranted the assignment of frequencies and the use of orbital parking positions, the Commission addressed the question of the type of systems which should be authorized. While a variety of applications had been filed with the FCC which favoured either a multipurpose system, a specialized one, or a combination of the two, the Commission found the information submitted too inconclusive to be the basis of any policy. Instead it called for "concrete systems proposals" which might contain any of the following: 1) "the rendition of services directly to the public on a common carrier basis," 2) "the leasing of facilities to other common carriers," 3) a combination of providing direct service to the public and functioning as a carrier's carrier, 4) "the shared use of some facilities by different systems" and 5) "a division in the ownership of various system components."[3]

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[1] 22 FCC 2d 86 (1970).

[2] Ibid., p. 87.

[3] 22 FCC 2d 93-94 (1970).

In this way the FCC decided to formulate policy within the context of specific proposals.

This decision also included a Notice of Proposed Rule-making to determine general policy in the following areas: 1) "procedures in the event of technical or economic conflicts between applications, 2) the appropriate initial role of AT&T in the domestic communications satellite field and 3) access to earth stations."[1]

The major fear which the Commission had regarding AT&T was the fact that its dominant position as a carrier could result in its foreclosing competition in the new domestic satellite area. Therefore the Commission was interested in comments addressing the degree to which AT&T should be permitted into this industry.

One particular area was identified by the Commission which warranted a departure from international satellite policy. Because the new satellite carriers would be permitted to deal directly with customers for their services, their role would not be restricted to that of a carrier's carrier.[2] The Commission anticipated that the customer could provide for access to the carrier's earth station either by leasing connection facilities from an existing carrier or by constructing his own connecting channels. In addition, the new carriers themselves could choose to lease or purchase facilities from an existing carrier.

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[1] 22 FCC 2d 96 (1970).

[2] Ibid., p. 96.

b) Domsat Decision II

The policy which was articulated by the Commission was guided by five objectives as outlined earlier in Section B. In order to achieve its goal, the FCC decided on a policy of multiple entry rather than attempting to select or prescribe one system or to chose one or more systems through comparative hearings.[1] Applicants would be required to establish their technical and economic qualifications as well as show a potential public benefit which would justify the assignment of orbital locations and frequencies. The FCC, in granting the application would have to make the requisite finding that the proposal served the public interest, convenience and necessity. Furthermore, any common carrier who was presently providing essential communication services would have to establish that "revenue requirements related to the proposed domestic satellite venture would not be a burden or detriment to customers for such essential services."[2]

Because of the dominant positions of Comsat and AT&T, the FCC severely restricted their entry into the domestic satellite market. AT&T's use of domestic satellites would be limited to the provision of MTT, WATS, AUTOVAN, emergency restoration in the event of terrestrial outage, and services found necessary by the FCC to Alaska, Hawaii, and Puerto Rico-Virgin Islands. An application for additional services within the contiguous United States would be entertained by the Commission once either of the following had occurred: "(a)

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[1] 35 FCC 2d 850 (1972)

[2] Ibid., p. 851.

domestic satellite licensees authorized to offer specialized common carrier services have achieved substantial utilization of their satellite capacity or (b) three years after the commencement of domestic satellite operations by AT&T."[1]

AT&T could either obtain authority to own or operate its own satellite facilities or lease from Comsat or any other carrier which chose to operate as a carrier's carrier. The Commission stipulated the kind of contractual arrangement which could exist between Comsat and AT&T. Comsat would be required "(1) to operate solely as a carrier's carrier; (2) to lease transponders to AT&T under the same tariff terms applicable to other carriers which were leasing transponders; (3) to permit AT&T and other carriers to have access to Comsat's leased transponders through the carriers' own earth stations, where this was desired and authorized by the Commission; and (4) to comply with a formula to be prescribed by further order of the Commission, concerning the maximum percentage of system capacity that can be leased to any one carrier."[2]

Furthermore, Comsat would be required to make the following election if it wished FCC approval of its multipurpose application (retail and wholesale provider) so that it could serve AT&T. Should Comsat choose to proceed as something other than a carrier's carrier, "it would be prohibited from owning or operating domestic satellite facilities at any overseas point served by INTELSAT facilities."[3] Furthermore, Comsat would be

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[1] 35 FCC 2d 853 (1972)

[2] Ibid., p. 852.

[3] 35 FCC 2d 851 (1972).

required to form a separate corporate subsidiary to handle such domestic satellite activities as providing a multi-purpose system which would deal directly with the public or wholesaling satellite facilities to AT&T and other carriers.[1]

Any authorized domestic satellite would be required to file tariffs with the Commission pursuant to Section 203 of the Communications Act. If the carrier intended to provide both wholesale and retail end-to-end services, the accounting procedure utilized would have to identify clearly the cost and revenues related to each.[2] Furthermore, if any satellite equipment supplier wished to provide satellite communications services, it would have to do so by means of a separate corporate entity.

The Commission also approved a flexible policy for earth station ownership, access to space segments, and interconnection. Special purpose users (such as commercial and non-commercial local broadcasters, other educational users, cable systems and local carriers) would be permitted to own receive-only earth stations. The Commission also anticipated circumstances, which were not articulated at this time, in which transmit-receive earth stations could be owned by users or independent carriers.

In order to encourage flexibility for access to earth stations and interconnection, the Commission approved less stringent application requirements. While terrestrial carriers seeking domestic satellite authorizations would be required to

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[1] 35 FCC 2d 851 (1972).

[2] Ibid., p. 855.

describe the kinds of "interconnection arrangement they [would] make available to other satellite systems and/or earth station licencees," the descriptions would not have to anticipate all conceivable situations.[1]

c) Domsat Décision III

A number of parties petitioned the FCC to reconsider its Domsat II decision in order to alter or clarify particular aspects of the ruling. The first issue addressed was the condition in the Second Report limiting AT&T's use of domestic satellites to those services specified by the FCC. The Commission agreed to modify the conditions to permit AT&T "to use any domestic satellite facilities authorized for its use to provide all United States Government private line services.[2] Furthermore, the Commission clarified how the question of the removal of the limitation on ATT's participation in the satellite industry would be determined. The other carriers would have the burden of proving that the restrictions should be continued in order to avoid any adverse impact on the public interest. To demand otherwise would be inappropriate because AT&T would have to establish a negative -- that unconditional use of satellite facilities would not adversely affect competition and be contrary to the public interest. The FCC then stipulated that the lifting of the limitation would depend upon whether AT&T had divested itself of its interest in Comsat. The interlocking arrangement between the two companies would not

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[1] 35 FCC 2d, p. 857.

[2] 38 FCC 2d 676 (1972).

be compatible with the type of competition in domestic satellite communications which the FCC wished to promote.[1]

At the time of the Second Report AT&T and Comsat had arrived at a lease agreement which the Commission had disallowed for the following reasons: "(1) concern that Comsat would be unlikely to compete vigorously with AT&T in the provision of specialized domestic services because AT&T would be the principal source of the domestic revenues Comsat would seek to obtain; (2) concern that the revenues from its contractual arrangement with AT&T would give Comsat an extraordinary advantage and head start over domestic satellite entrants seeking to compete with Comsat and with AT&T's terrestrial services; and (3) concern that Comsat's expertise and facilities would not be available to the public and carriers other than AT&T if Comsat elected to serve AT&T." A reexamination of the satellite industry prompted the Commission to conclude that "the public interest does not require that other carriers have access to the system used by AT&T under a tariff offering by Comsat."[2]

The lease agreement between Comsat and AT&T had called for the former to provide space segment capacity to the latter on a non-tariff basis. The Second Report established the general requirement that satellite carriers make their service offerings pursuant to tariff schedules setting forth all terms and conditions relating to each class of offering. This was considered particularly essential in the case of a satellite carrier offering both wholesale and retail services. The Commission,

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[1] 38 FCC 2d 676 (1972).

[2] Ibid., p. 687.

however, concluded that, because Comsat sought to lease the entire capacity of its proposed space segment, a different situation resulted. In this instance, "Comsat's provision of facilities and services to AT&T . . . would be treated as a non-common carrier activity not requiring tariff filing."[1]

d) Satellite Processing Order

By 1980, the FCC had authorized a variety of domestic satellites and had pending seven applications for either replacement satellites or satellites offering new service.[2] The pending satellite applications were filed by Hughes Communications Inc., RCA American Communications Inc., Satellite Business Systems, Western Union Space Communications Inc., Western Union Telegraph Company, Southern Pacific Communications Company, and GTE Satellite Corporation. All had been submitted in accordance with the open entry policy which was articulated in the earlier Domsat I decision.

The Commission recognized that the communication needs of the subsequent 2-5 years necessitated an efficient processing of these applications. Yet because the satellite industry had developed so rapidly, the Commission was in a position where it was necessary to review its policies so that it could ensure the most efficient use of the geostationary orbit. It appeared that the demand for satellite communications had developed to the point at which in-orbit capacity had almost been reached. Sufficient orbital locations, however, were still

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[1] 38 FCC 2d 676 (1972).

[2] 77 FCC 2d 956, 961 (1980).

available to accommodate the applications then before the Commission.[1]

Thus the Commission decided to consider the pending applications as a group. After they were processed, the FCC anticipated a new rulemaking proceeding which would address "satellite technology, frequency use, orbital spacing, processing procedures and other factors which would improve the use of the spectrum and ensure the continued growth of a wide variety of satellite services."[2] Subsequent applications would have to meet the requirements of the new rules. The Commission believed that it was not in the public interest to approve an excessive development of the current generation satellites since this would hamper the future development of the industry. This rule, however, was not to be regarded as a freeze on the filing of new satellite applications. They would be accepted by the Commission, but their processing would be deferred until new rules and policies had been enacted.

e) Orbital Deployment Plan

Pursuant to its processing order, the Commission authorized the construction of 25 new domestic satellite and the launch of 20 new previously constructed satellites.[3] These would replace satellites already in orbit which were near the end of their operational lives, provide for facilities for new

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[1] 77 FCC 2d 956, 961 (1980)

[2] Ibid., p. 958.

[3] 84 FCC 2d 584 (1981)

entrants, and permit existing carriers to expand their facilities and meet their additional needs. In order to accommodate all these new satellites, the Commission articulated an orbital deployment plan.

The existing satellites were using the 6/4 GHz and 14/12 GHz portion of the frequency band. The Commission had established a policy of 4° orbital spacing at 6/4 GHz[1] and 3° orbital spacing at 14/12 GHz[2]. Although reduced orbital spacing was technologically possible, the Commission chose not to address that issue in this proceeding.

Two orbital locations were allocated to each new entrant who relied on speculative satellite traffic.[3] Additional space segments were allocated only if the applicant could establish that it was needed to satisfy customer growth requirements. The actual assignment would be made at the time at which the orbital location was actually needed. Because of the increasing congestion of the orbit at 6/4 GHz, the Commission decided that a premature assignment would be inefficient.

A tentative orbital deployment plan was outlined by the Commission. Applications were approved for the 6/4 GHz bands which would allow for the replacement of satellites now in orbit and the launch of new satellites.[4] Two of the satellite carriers,

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[1] 47 FCC 2d 274 (1974).

[2] 62 FCC 2d 997 (1977).

[3] 84 FCC 2d 603 (1981).

[4] Ibid., p. 613.

Hughes and Southern Pacific, were new entrants and were allocated two locations each. The remainder, Western Union, RCA Americom, and Comsat, all of which sought to expand their services, were allocated 11 orbital locations. A 4° orbital spacing criterion was maintained pending new rulemaking. All of the applicants proposed satellites capable of serving the 50 states. One orbital location in the orbital arc between 119°W and 135°W was assigned to each system. This was pursuant to the FCC policy of encouraging "competitive sources of supply of services to customers desiring services to points in all 50 states from the same satellite."[1]

Orbital locations outside the 119°-135° orbital arc were assigned to satisfy the traffic, operational, and scheduling requirements of the carriers.[2] The FCC retained the right to change its orbital location assignment so that it could adapt to changing requirements. This was especially important in light of prospective changes which might be made in orbital spacing requirements.

The Commission also approved two systems which would operate only in the 14/12 GHz bands and two hybrid systems which would operate in both the 14/12 GHz and 6/4 GHz bands. ("The term hybrid has generally been used to refer to those satellites which incorporate operations in two pairs of frequency bands"[3]). Those operating on the 14/12 GHz frequency band would require only a 3° spacing so that more orbital

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[1] 84 FCC 2d 603 (1981), p. 614.

[2] Ibid., p. 605.

[3] Ibid., p. 606.

locations would be available in this band. Because the hybrids operated in two pairs of frequency bands, the 6/4 GHz band which required a 4° spacing and the 14/12 GHz band which required a 3° spacing, problems arose regarding orbital location.

Because hybrids had not yet been utilized, the Commission opted for an interim solution to the spacing problem "so that the potential benefits of hybrids could be demonstrated in actual operation at the earliest practical date."[1] A 12° spacing interval between the hybrids was adopted. The Commission stated that "although this criterion might reduce orbital flexibility . . . the potential benefits to be derived from the presently proposed hybrid operations justified the result."[2] Thus 119°W, 51W, 79°W, and 70°W were designed at hybrid locations.

The Commission also streamlined its authorization process. Previously three distinct phases existed in the procedure: "(1) the issuance of a construction permit; (2) grant of launch authority and tentative orbital assignment; and (3) grant of operating authority under both Title II and Title III of the 1934 Communications Act."[3] The Commission believed that the growth of the industry coupled with the increasingly more sophisticated information available to the applicants at the time of construction made it possible to settle launch and orbital assignment issues concurrently with construction authorizations.

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[1] 84 FCC 2d 603 (1981), p. 607.

[2] Ibid., p. 607.

[3] Ibid., p. 609.

f) Reduced Orbital Spacing

As the Commission suggested in its Orbital Deployment Plan decision, it wished to consider whether reduced orbital spacing was feasible.[1] On November 18, 1981, the Commission released a Notice of Inquiry and Proposed Rulemaking in which it proposed to reduce orbital spacing to 2° in the 6/4 GHz band and to 2° in the 14/12 GHz bands. In addition the Commission initiated an inquiry to "identify the technical and regulatory issues that might be raised by the third generation of domestic satellites."[2]

When the Commission reviewed its present orbital assignment, it found that on the 6/4 GHz bands the demand was quickly exceeding the supply. Rather than requiring more stringent regulation, the FCC wished to take advantage of the advances in technology to make available more orbital locations by reducing the present spacing requirements between satellites. Recognizing that reduced spacing might give rise to some difficulties, the Commission asked those who wished to submit comments to address the following: "(1) review their existing operations with a view towards finding ways of achieving the proposed 2° orbital separations in both the 6/4 and 14/12 GHz bands; (2) propose whatever minimum standards they believe are necessary to assure reasonable performance at small satellite separations; (3) comment on the need for any frequency co-ordinate requirements or changes to the small antenna authorization and (4) submit supporting analysis and documentation to support the position

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[1] 88 FCC 2d 318 (1981)

[2] Ibid., p. 319.

that the cost of achieving a 2° spacing outweighs the increase in potential in-orbit capacity."[1]

The Commission also proposed to retain the policies set forth in Domsat I, the Satellite Processing Order, and the Orbit Deployment Plan decisions if the 2° orbital spacing proposals were adopted. A flexible open entry approach could be maintained for as long as the number of available locations exceeded the number requested.[2]

An inquiry was also proposed to study "additional technological approaches that might further increase the amount of domestic satellite capacity available in the future. These included: (a) use of higher frequency bands (20/18 GHz bands); (b) higher capacity satellite designs; and (c) more spectrum efficient transmission techniques."[3] Furthermore, the Commission also wished to examine the impact that reduced orbital spacing would have on the feasibility of implementing these technological advances.

g) Processing of Pending Satellite Applications

Since the FCC opened its docket to examine the question of reduced orbital spacing, it had received a number of new domestic satellite proposals.[4] The Commission decided that they would be processed as a group because two or more applicants had made conflicting requests for the same orbital position and the

[1] 88 FCC 2d 318 (1981), p. 327.

[2] Ibid., p. 331.

[3] Ibid., p. 333.

[4] 90 FCC 2d 1 (1982).

applications had proposed a wide array of services and technical designs. They would have to be considered together so that the Commission could assign orbital locations to best serve the public interest.[1] As a result of this, an applicant might not be assigned the orbital location which he requested.

The Commission stated that this approach of group processing for pending applications was not meant to preclude the filing of new applications. While it might be difficult to authorize many more satellites wishing to operate in the 6/4 GHz and 14/12 GHz bands, the currently unused 30/18 GHz offered an alternative to new domestic satellite systems.

h) Domestic Fixed Satellite Transponder Sales

On August 17, 1982, the Commission issued an order authorizing domestic satellite licensees to engage in the sale of discrete transponders.[2] RCA Americom, Western Union, Hughes Communications, and Southern Pacific Communications had all received requests from customers who wished to obtain satellite communications pursuant to non-common carrier arrangements. The Commission believed that the approval of the satellite applications in its Orbit Deployment Plan decision, coupled with its present rule-making procedure to reduce orbital spacings, would meet the demand for transponders. Thus the sale of transponders would not reduce the available supply to the public detriment.

Although the buyer did not purchase a transponder pursuant to common carrier regulation, the satellite owner would still

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[1] 90 FCC 2d 3 (1982).

[2] Domestic Fixed Satellite Transponder Sale FCC 82-351 (August 17, 1982).

have to be licensed by the FCC. Even after the sale he would "continue operating the telemetry, tracking and control stations and would retain full authority to comply with all Commission requirements regarding operation of the satellite in orbit."[1] The purchasers would be the recipient of limited ownership rights to the transponder equipment. Although he would have to assume the risk of loss if the satellite were to malfunction, he would hold a limited performance warranty from the seller. In addition he could enjoy the tax consequences of ownership and would have the authority to convey, lease, assign or encumber his ownership interest.

The Commission concluded that because the satellite owner would remain within its jurisdiction, it would not be necessary for the owner of the transponder to obtain a licence. The Commission held that these sales, because the ownership rights were so limited, did not involve the transfer of control of a Title III licence. The buyer's relationship to the satellite owner remained comparable to that of a lessee under a tariff.

i) Deregulation of Receive-Only Earth Stations

In 1979, the Commission repealed the rule which made the licencing of receive-only earth stations of domestic satellite transmissions mandatory.[2] In its place, the FCC instituted a system of voluntary licensing. Those who wished to obtain a license and receive protection from possible interference

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[1] Domestic Fixed Satellite Transponder Sale, p. 23.

[2] 74 FCC 2d 205 (1979).

would file an application pursuant to the requirements of the Communications Act of 1934.

The Commission, however, decided that the prospective licensee would not have to supply them with information related to his financial and legal qualification. By reducing the amount of information requested, the administrative burden placed upon the agency would be reduced and the applications could be processed more quickly. In addition, the Commission decided that receive-only earth stations licenses would be issued for a term of 5 rather than 3 years. Modifications of licenses for shared use would no longer be required so long as the sharing was done on a non-profit basis.[1]

The optional licensing policy would not insulate the owners of earth stations from statutory proscriptions dealing with the unlawful use of signals. They would still be subject to Section 605 of the Communications Act which prohibited the unauthorized interception and disclosure of non-broadcast signals. In addition, criminal sections contained in the 1968 Omnibus Crime Control Act[2] would be applicable. Enforcement of Section 605 would be left to private litigation, however, because the Commission believed that such mechanisms as revocation proceedings in cases where a license had been issued would not be an effective means of enforcing the statute.

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[1] 74 FCC 2d 205 (1979).

[2] 18 U.S.C. 2511 et seq. (1976).

j) Direct Broadcast Satellite Policy

In the spring of 1983, the Regional Administrative Radio Conference (RARC-83) will meet in order to allocate frequencies for direct broadcast satellites. In anticipation of the meeting, the FCC issued a Notice of Proposed Policy Statement and Rulemaking to determine policy to govern the authorization of direct broadcast satellites.[1] Prior to this, the Commission had received applications from the following parties: Satellite Television Corporation (a subsidiary of Comsat), CBS, Inc., Direct Broadcast Satellite Corporation, Focus Broadcast Satellite Company, Graphic Scanning Corporation, RCA American Communications, Inc., United States Satellite Broadcasting Company, Video Satellite Systems, and Western Union Telegraph Company. Thirteen more applications were filed following the adoption of the Notice.[2] In response the Commission decided that it would articulate policy and issue interim licenses which would be contingent on the determinations made at RARC-83.[3]

Because of the fact that present policy might be subject to revision after the Conference, the Commission decided to enact as few rules as possible so that it would have sufficient flexibility "to permit almost any permanent regulatory policy to be imposed at a later date."[4]

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[1] 86 FCC 2d 719 (1981).

[2] Inquiry into the Development of Regulatory Policy in Regard to Direct Broadcast Satellites, Report and Order, General Docket No. 80-603 (July 14, 1982).

[3] Ibid., p. 3.

[4] Ibid., p. 8.

The Commission first addressed the issue of frequency assignment. The channel requirement for DBS services in the United States was estimated to be 65 to 207 channels by the year 2000.[1] A spectrum allocation of 500 MHz for both the downlinks and uplinks would be necessary. Because the 12 GHz band had been allocated internationally for DBS, it would be necessary to use that portion of the band. Therefore the Commission would eventually assign the 12.2-12.7 GHz band for downlink operations and the 17.3-17.8 GHz band for uplink operations.[2] This allocation meant that existing users of the 12 GHz band would have to be reallocated to the 12.7-13.25 GHz band.[3]

The Commission decided that applicants would not have to structure their proposals to meet the requirements of any particular regulatory model. They were encouraged to experiment both with service offerings and methods of financing. Because DBS appeared to constitute a very competitive market, diversity of consumer choice would be achieved without undue intervention on the part of the Commission.[4] The FCC also decided that it was not necessary to "require DBS systems to operate under a particular service classification [e.g. broadcasting or common carrier] before the developmental and experimental period had had a chance to run its course."[5] Certain principles were articulated,

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[1] Inquiry into the Development of Regulatory Policy in Regard to Direct Broadcast Satellites, Report and Order, p. 22.

[2] Ibid., p. 23.

[3] Ibid., p. 25.

[4] Ibid., p. 31.

[5] Ibid., p. 32.

however, which would guide the Commission in deciding on classifications. If an applicant were to propose direct-to-home services and retain control over content, he would be classified as a broadcaster and would be subject to Title III of the Communications Act of 1934. If, on the other hand, the applicant proposed to operate as a common carrier, he would have to offer his satellite transmission services pursuant to tariff which met the requirements of Title II of the Act. Furthermore a DBS operator could operate as a broadcaster with respect to some channels and as a common carrier with respect to others.[1] Programmers who were customers of a common carrier-type direct broadcast satellite would not be classified as broadcasters and thus would not be regulated under Title III of the Act. Finally, the Commission refused to place restrictions on the ownership of the DBS system. Neither multiple ownership nor cross ownership of DBS systems by other media interests would be prohibited. The Commission believed that "ownership restrictions might discourage potential applicants and financial supporters."[2]

k) Programming Policy for Pay Cable

In 1975, the FCC promulgated rules to impose programming restrictions on pay cable and subscription television services (STV). Known as the anti-siphoning rules, they were meant to prevent the programming now available on free television to be purchased by pay television providers.[3] Restrictions were

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[1] Inquiry into the Development of Regulatory Policy in Regard to Direct Broadcast Satellites, Report and Order, pp. 33-34.

[2] Ibid., p. 37.

[3] 52 FCC 2d 1 (1975).

placed on the movies, sporting events available to pay services and a quota of 90 per cent movies and sports was imposed. Fifteen appeals of the rules were filed in the District of Columbia Court of Appeals. The cases were then consolidated. The court upheld the rules as they applied to subscription television and found them unlawful as they applied to cablecasts.[1]

First the Court questioned whether the Communications Act of 1934 gave the FCC power to determine particular entertainment formats. Attention was called to the FCC's decisions regarding format changes in radio in which the regulatory body professed an inability to regulate entertainment programming. Since the FCC's jurisdiction over cable was ancillary to its jurisdiction over broadcasting, "the Communications Act could [not] be construed to give the Commission 'regulatory tools' over cablecasting that it did not have over broadcasting."[2] The Court also found the evidence of the FCC inconclusive. The Commission had not established that "siphoning" would occur, or if it did, that it "would lead to a loss of film and sports programming for audiences not served by cable systems or too poor to subscribe to pay cable."[3]

The most persuasive argument of the Court for making the anti-siphoning rules inapplicable to pay cable was the fact that they were inconsistent with the First Amendment guarantee of freedom of speech. Broadcasting could be constitutionally

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[1]Home Box Office v FCC, 567 F. 2d 9 (D.C. Circuit, 1977) cert. denied 434 U.S. 829 (1977).

[2]Ibid., p. 27.

[3]Ibid., p. 39.

regulated because the airwaves, a scarce resource, was being used and physical interference had to be prevented. Neither of these preconditions existed in cable television.[1]

The U.S. Supreme Court had permitted expression to be curtailed by regulations only if they "furthered an important or substantial government interest . . . and if the incidental restriction on alleged First Amendment freedoms was no greater than was essential to the furtherance of that interest."[2] The Court found that these rules did not serve any "important or substantial interest." Furthermore, the rules were greater than what was necessary to promote the Commission's interest in preserving the existing quality and quantity of programming on free television. Thus, because the rules did not meet the stringent test required by the First Amendment, they were declared unconstitutional.

1) Attempts at Legislative Reform

With the exception of the Communications Satellite Act and the International Maritime Satellite Telecommunications Act, which deal with international and maritime communications, Congress has not passed legislation dealing specifically with satellites. There have been, however, numerous attempts to rewrite the 1934 Communications Act and especially those sections of the statute dealing with common carrier regulation. In the mid-1960's the FCC began to permit competition in the market for specialized

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[1] Home Box Office v FCC, p. 45.

[2] United States v O'Brien, 391 U.S. at 377.

carriers and terminal attachments. More recently, such traditional monopoly services as MTS were open to competition. This trend has been reflected in the bills which have been introduced in Congress. Because satellite communications are regulated under Title II of the Communications Act, any legislative reform in this area is important.

In 1976, the telephone industry sponsored the Communications Reform Bill or the Bell Bill in Congress. It was meant to reverse the trend towards competition which had developed at the FCC by attempting to restore the monopoly status of the traditional common carriers.[1] Barriers would be implemented to reduce or eliminate competition in the specialized carrier and terminal attachment market; the monopoly carriers would be permitted to use incremental cost pricing which would allow AT&T to cross subsidize its competitive services with the revenues from its monopoly ones, and the established common carriers would be exempted from the anti-trust laws.[2]

The Bell Bill met with heavy opposition and was eventually superceded by the Communications Bill of 1978 which favored competition. This attempt at legislation would have replaced the FCC with an agency, the Communications Regulatory Commission, which would have more limited powers. Secondly, a plan of divestiture would prohibit telephone companies which offered monopoly services from owning an equipment manufacturing subsidiary. Overall the Bill reinforced the deregulatory measures which had

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[1] H.R. 12323.

[2] Ibid.

been implemented by the Commission.[1]

When this Bill met with failure, subsequent attempts at legislative reform were made. Two bills were introduced in the House of Representatives which attempted to rewrite the 1934 Communications Act and which favored competition but neither was successful. The Senate, in turn, was attempting to revise the Act. Hearings were held on two bills in 1979.[2] When neither met with success a compromise bill which was composed of sections of s. 611 and s.622 was introduced.[3] This Bill directed the FCC to reduce or eliminate regulation as competition developed; ordered the deregulation of the marketing and provision of telecommunications equipment; and permitted a dominant regulated carrier to operate on deregulated markets under a separate subsidiary; and ordered the regulated carriers to allocate costs and revenues between monopoly and competitive services. The Bill, however, was not implemented.

During the early part of the 1981 term, a new bill was introduced in the Senate which resembled S.2827.[4] It, as well, favoured deregulation and the operation of marketplace forces to determine services and prices. Like its predecessor bills, this one also met with failure. Finally, in 1981, an amendment to Section 605 of the Communications Act which would establish civil and criminal penalties for the unauthorized reception of subscription and satellite television signals was introduced in the

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[1] H.R. 13015

[2] S. 611, S. 622

[3] S. 2827

[4] S. 898

House. Although hearings were conducted on it, it failed to get out of Committee.[1]

Although it does not appear that legislative reform is forthcoming, the tenor of the bills which have been introduced in Congress is important. Most have reinforced the policies of the FCC and have favoured increased competition in the common carrier industry. Should a new statute be enacted, it promises to continue the trend begun by the Commission.

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[1] H.R. 4727.

3. International Satellite Policy

a) Communication Satellite Act, 1962; Creation of Comsat

In 1962, Congress passed the Communications Satellite Act which contained American international communications satellite policy. The goal of the statute was to implement a global communications network which would be committed to the "efficient and economical use of the electromagnetic frequency spectrum," and would reflect, in terms of both the quality and costs of the service, benefits of the new technology.[1] In addition, the new system was identified as one which would not only serve the needs of the United States but also would contribute to world peace and understanding.[2] A world system was envisioned which would require that efficient service be extended to both the economically advantaged and disadvantaged countries in the world.

In order to implement the statutory goal, the Act created a private corporation, the Communication Satellite Corporation (Comsat) which would be subject to government regulation.[3] The corporation was to be headed by a board of directors, the membership of which included three appointees of the President subject to Congressional approval, six members who were to be elected by the stockholders of the communications common carriers, and six directors were to be elected by the remaining stockholders of the corporation.[4] The authorized communication carriers and the public each owned a one-half interest in the corporation.

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[1] 47 U.S.C. s 701(a)(b)

[2] 47 U.S.C. s 701(a)

[3] 47 U.S.C. s 702(c), s 731

[4] 47 U.S.C. s 733.

The ownership of stock by the Common Carriers was subject to a finding by the Federal Communications Commission that its ownership would be consistent with the public interest, convenience and necessity.[1] Comsat was given the right to own and operate both the space and earth stations which comprised the system.[2]

Because the Act envisioned Comsat as a monopoly satellite service which would operate almost exclusively as a carrier's carrier, it recognized the need for governmental regulation.[3] The corporation fell within the jurisdiction of the Federal Communications Commission which would ensure non-discriminatory use and access to the system at just and reasonable rates.[4] The Act further stipulated that any economies which resulted from the utilization of the satellite system had to be reflected in the "rate for public communication services."[5] Finally the corporation was identified as a common carrier as defined in section 153(b) of the Communications Act of 1934. As such, Comsat was subject to both Title II and Title III of the Communications Act. This meant that the Corporation would be subject to the same licensing procedures and rate regulation as the terrestrial common carriers.[6]

Comsat's role in international satellite telecommunications

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[1] 47 U.S.C. s 734(b)

[2] 47 U.S.C. s 735(a)(3)

[3] 47 U.S.C. s 735(a)(e)

[4] 47 U.S.C. s 721(c)(2)

[5] 47 U.S.C. s 721(c)(4)

[6] 47 U.S.C. s 741.

was achieved through the creation of the International Telecommunications Satellite Organization (INTELSAT). Interim arrangements were initially signed by 14 nations in 1964. They defined Intelsat's purpose as the "design, development, construction, establishment, maintenance and operation of the space segment of a global commercial communications satellite system."[1] The definitive Intelsat Agreement which was enacted in 1973, differed greatly from its predecessor and provided the framework for a global satellite system. The purpose of the agreement was to provide on a commercial basis, the "space segment required for international public telecommunications services of high quality and reliability to be available on a non-discriminatory basis to all areas of the world."[2]

Intelsat was also authorized to provide domestic public telecommunications services on a non-discriminatory basis, as long as the international service was not jeopardized. Furthermore, international and national specialized services could be provided as long as the public service was adequately maintained and the provision of these additional services was economically and technically feasible.[3]

Comsat was given a special role in the Agreement, Article XII(e) identified the Corporation as the "management services contractor" responsible for the performance of "technical and

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[1]Richard R. Caleno, The INTELSAT Definitive Arrangements: Ushering in a New Era in Satellite Telecommunications (Geneva, 1973), p. 25.

[2]Intelsat Agreements, Article III(a).

[3]Intelsat Agreements, Article III(C), (d).

operational management services for Intelsat." The contractual agreement between Comsat and Intelsat was limited to a six year term and had to include provisions which made Comsat directly responsible to the Intelsat Board of Governors.[1]

Although Comsat's management function was terminated in 1978, it still provides research, development, technical, and support services on a contract basis.[2] In addition, the Corporation retains the largest ownership interest in the international system.

Because of the rapid development of satellite communications technology since 1962, Comsat has sought to exploit commercially the technology and expertise which it developed as a member of Intelsat. Business opportunities now exist both in the specialized domestic and international spheres. As a result, Comsat has begun to diversify into a variety of non-Intelsat/Inmarsat activities. As a consequence, the Federal Communications Commission has sought to impose a new corporate structure upon Comsat which would place its monopoly and competitive activities in separate subsidiaries.

b) Restructure of Comsat

i) Comsat Study

When the International Maritime Satellite Telecommunications Act was passed in 1979, the legislation directed the FCC to conduct

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[1]Annex B of the Agreements lists in detail the functions Comsat was to perform under the contract.

[2]For details of current Comsat contracts with Intelsat, see 77 FCC 3d 592-93 (1980).

an inquiry into Comsat activities in order to determine whether any changes in the structure or operation of its company should be required so that it could effectively fulfill its obligations under the Communications Act and Satellite Act.[1] Since its incorporation in 1962, Comsat had become increasingly more involved in non-monopoly activities. The three following areas were identified as those in which Comsat would seek to diversify: "providing (1) specialized user-oriented satellite services, (2) satellite system planning and consultation services, and (3) high-technology equipment and components."[2]

Although the FCC did not object to such diversification, the Commission identified a number of problems which might result from Comsat's venture into competitive, non-Intelsat and Inmarsat activities. The four areas of concern were: "(1) the scope of Comsat's authority as it related to non-Intelsat/Inmarsat lines of business; (2) conflict of interest and other related problems resulting from involvement in such activities; (2) competitive advantages on non-Intelsat/Inmarsat markets, flowing from Comsat's unique status as U.S. signatory in Intelsat and Inmarsat; and (4) cross-subsidization and related problems resulting from the misallocation of common costs."[3]

A close examination of both the 1962 Communications Satellite Act and Comsat's Articles of incorporation revealed to the FCC that Comsat had the statutory obligation to engage in

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[1] In the Matter of Comsat Study, 77 FCC 2d 564 (1980).

[2] Ibid., p. 569.

[3] Ibid., p. 570.

those activities which would be necessary to establish a global satellite service. Furthermore, Comsat was barred from those activities that would be inconsistent with the goals of the legislation. Thus Comsat could engage in activities on which the Act and Articles of Incorporation were silent as long as those activities did not interfere with the purposes and objectives of the Act. The FCC forsaw further controversy in this area and recommended that the 1962 Satellite Act be amended in order to define clearly those non-Intelsat/Inmarsat activities in which Comsat might engage.

The conflict of interest problems which might arise when Comsat diversified were then considered. As a member of Intelsat, Comsat might be involved in deciding matters which could have a financial impact upon its non-Intelsat/Inmarsat activities. As the U.S. representative, Comsat might adopt a position which would favor the overall profitability of the firm rather than one which would be most advantageous to Intelsat. Because decisions of this kind might adversely affect the public interest, the FCC concluded that it would have to impose upon Comsat such safeguards as increased government oversight, changes in the corporate structure of the company, and more stringent accounting procedures.

In addition, because of its monopoly position in Intelsat and Inmarsat activities, Comsat would have a competitive advantage in the new markets in which it wished to diversify, particularly in supplying direct satellite-to-user services and specialized communications equipment. The FCC isolated the following two practices which would give Comsat the edge: "(1) intra-corporate transfer of Intelsat provided technology information

to support other lines of business; and (2) integration of Intelsat-Inmarsat systems planning and technology development functions with other lines of business."[1] The information generally would not be available to Comsat's competitors and consequently would place them at a distinct disadvantage. The 1962 Satellite Act mandated that "maximum competition will be maintained in the provision of equipment and services utilized by the system."[2] Thus, Comsat's competitive edge might be inconsistent with the objectives of the statute.

As Comsat became more involved in competitive activities, greater opportunities would exist to engage in cross-subsidization. Effective evasion of rate regulation could be achieved by shifting the common costs which would be incurred in the unregulated sector to the regulated sector. For example, Comsat's research and development programs were funded by rates subject to regulation, yet the program would provide the technologies for many of the proposed competitive services. Consequently ratepayers would bear a disproportionate burden of the cost of research and development.[3]

Many of the problems identified by the Commission could be remedied by corporate structural changes and increased government oversight of Comsat activities. The FCC recommended that Comsat be divided into two corporate entities, Comsat Global and Comsat National. The former would be limited to Intelsat/Inmarsat

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[1] In the Matter of Comsat Study, 77 FCC 2d 564 (1980), p. 648.

[2] 47 U.S.C. s 701(c)

[3] Comsat Study, 77 FCC 2d 752 (1980)

activities, while the latter would handle competitive services. Although interlocking directorates would be permitted, separate officers, facilities, advertising, marketing, records, and books of accounts would be necessary.[1]

The two companies could share high technology facilities and professional resources but precautions would have to be taken to prevent Comsat from cross-subsidizing its competitive services and from using its position in Intelsat and Inmarsat to gain exclusive access to information and technology which would enhance its competitive position.

The FCC believed the competition would be better served if Comsat labs became part of Comsat National. Comsat Global, by means of a competitive bidding procedure, could use the revenues from ratepayers to procure research and development from the labs. They would retain proprietary rights to any inventions or data generated by the research. If Comsat Global wished to license any of its rights to Comsat National, the same licenses would then have to be made available to all of Comsat National's competitors.[2]

Those abuses not remedied by the structural changes in the corporation would be monitored by means by increased government oversight. The Commission recommended an amendment to the 1962 Satellite Act "to delineate the instructional authority of the President and the status of government instructions

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[1]Comsat Study, p. 763.

[2]Ibid., p. 764.

issued."[1] Secondly the three government agencies (Department of State, National Telecommunications Information Agency (NTIA) and the FCC), would be required to update inter-agency procedures by the instructional process. Finally the Commission would update its procedures in order to "reflect increased procedural time for public input into consideration of Comsat applications regarding the facilities of Intelsat and Inmarsat.[2]

The Commission maintained that the structural changes in Comsat would "provide a framework for achieving a more competitive environment in the retail market for international communications services."[3]

The restructuring of Comsat would place Comsat Global in a position where it would have to sell Intelsat half-circuitry, including both the space and earth station services, to all competitive retailers at fair and equal rates. Through its subsidiary, Comsat National, Comsat would then be free to enter the retail competitive international market and provide services directly to end users rather than just to carriers. The corporation's major competitors would consist of the international carriers which transmit via cable. Thus competition would be encouraged in the international market.[4]

To further implement competition in the area of international communications, the Commission issued a Notice of Proposed Rulemaking in order to modify its Authorized User policy. Comsat

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[1]Senate Bill 2469 which dealt with international communications and which delineated some of the changes ordered by the FCC was passed by the Senate Commerce Committee in September 1982. It has not yet been passed by Congress. See Broadcasting (Oct. 11, 1982), p. 34.

[2]Comsat Study, p. 765.

[3]Ibid., p. 730.

[4]Ibid., p. 750.

National would be given permission to acquire Intelsat space segments from Comsat Global in order to provide end-to-end satellite services.[1] The change envisioned by the Commission would allow all carriers to be designated as authorized users who would have the right to purchase segments directly from Comsat Global. The change would result in a lowering of both wholesale and retail prices, an increase in intermodal international competition, and an increase in the rate of innovation in the industry.[2]

The proposed restructuring of Comsat also led the Commission to issue a second Notice of Proposed Rulemaking to amend its Resale and Shared Use policy.[3] Current resale and shared use restrictions for third parties would be eliminated from the tariffs of the international carriers. Firms would be permitted to buy half-circuits from Comsat Global or from the owners of cable and resell them at prices determined by marketplace forces. Furthermore the FCC would consider whether the re-sellers should be designated as carriers so that they could deal directly with Comsat's wholesale arm. Finally the Commission would consider whether the resellers would have to file tariffs pursuant to Section 203 of the Communications Act and whether they would have to obtain a Section 214 authorization.[4]

A final policy change envisioned by the Commission would permit Comsat National to own and operate earth stations. If

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[1] 77 FCC 2d 535 (1980).

[2] Ibid., p. 751.

[3] Ibid., p. 751.

[4] Ibid., p. 752.

Comsat's restructuring, the Authorized User, and Resale and Shared Use modifications were implemented, the Commission might wish to permit the "provision of specialized services to particular end-users via small station systems, separately owned and operated by either the International Retail Carriers themselves or by Commission authorized private users."[1] If a change in ownership policy was determined to be beneficial, the FCC would then have to consider whether joint ownership of earth stations should be required or whether an open entry policy should be introduced for earth station ownership. The answer would rest upon whether a proliferation of earth stations would bring either economic or technical harm to the efficiency of the satellite system. Until final policy decisions were made, the FCC stated that they would retain present policy which permits Comsat a 50% ownership interest in earth stations.[2]

(ii) Comsat Structure Decision

In response to the FCC's findings in the Comsat Study decision, Comsat engaged in structural reorganization in order to separate its monopoly and competitive services.[3] The Comsat Structure decision evaluated the changes made by the corporation and ordered additional ones. The Commission found that while the alterations to Comsat's Corporate structure were in accord with the Comsat Study, they would not fully alleviate the problems which the FCC envisioned.

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[1] 77 FCC 2d 535 (1980), p. 760.

[2] Ibid.

[3] Comsat Structure 90 FCC 2d 1159 (1982).

Comsat introduced the following changes. The global organization, World Systems Division (WSD) was designated as an international common carrier which would engage in Intelsat and Inmarsat activities. In addition it would undertake "corporate research and development, engineering, and systems integration."[1] WSD would also provide "administrative and support services to both WSD and elements of the corporation's subsidiaries."[2] The parent company would "have ultimate policy control over various subsidiaries of and divisions within the corporation."[3] Finally Comsat Labs would remain within the parent company and would be responsible "for the research and development of new technologies for satellite communications, experimental earth stations and spacecraft equipment, various engineering services and special projects."[4] These services would also be provided to Comsat's subsidiaries engaging in non-Intelsat and Inmarsat activities.

Three subsidiaries were created to handle Comsat's competitive enterprises. Comsat General was presently providing both domestic and maritime satellite services. Among other things it was involved in Satellite Business Systems and also leased its Comstar domestic satellite to AT&T for use in domestic telephone services. Comsat General Integrated Systems (CGIS), a subsidiary of Comsat General, would "develop, support

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[1] Comsat Structure, p. 1163.

[2] Ibid.

[3] Ibid.

[4] Ibid.

and market integrated computer aided design, manufacturing and test products for the production of complex electronics equipment."[1]

A second subsidiary of Comsat General, Environmental and Technology Inc. (ERT) would "offer consulting services in the environment area, including environmental monitoring, analysis, and prediction services, and environmental and ecological consulting services."[2] The third subsidiary, Satellite Television Corporation was to provide direct broadcast satellite services.

The FCC approved this structural change and imposed other restrictions upon Comsat. Accounting and reporting requirements with regard to research, development, and administrative costs were imposed to prevent Comsat from engaging in cross-subsidization by misallocating costs. If Comsat adequately satisfied this directive it could keep Comsat labs as part of the parent corporation. Secondly, Comsat was ordered to make available to the public and to competitors any Intelsat and Inmarsat information which it made available to its subsidiaries. Finally the FCC required Comsat to maintain a non-discriminatory licensing policy for ratepayer funded inventions and data.[3] In this way competitors would have access to valuable and previously unavailable information.

Comsat was given permission to give financial support to its competitive ventures. The FCC would engage in strict over-

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[1] Comsat Structure, p. 1164.

[2] Ibid.

[3] Ibid., p. 1160.

sight of the Corporation by engaging in a case by case review of its investments into competitive ventures. If Comsat wished to seek additional debt or equity financing for these corporate activities, the Corporation would have to provide the FCC with 90 days advance notice of any expenditures which related to its competitive ventures. Comsat was given 90 days from the release date of the decision to provide the Commission with plans to correct these deficiencies. The change would subsequently be reviewed by the Chief of the Common Carrier Bureau who would report his findings to the Commission and suggest any further changes that might be necessary.

(iii) Subsequent Deregulation

In 1982, the FCC completed its inquiry into the Authorized User policy and decided that Comsat's activities would no longer be limited to those of a carrier's carrier. The Corporation was given permission to serve both carrier and non-carrier entities.[1] The authorization was made conditional on the implementation of the directive in the Comsat Structure decision that Comsat establish a separate corporate subsidiary to handle its non-Intelsat-Inmarsat activities.

As a provider of end-to-end services, Comsat would function as any other international carrier. It was authorized to provide leased-channel, switched, or any other international service directly to end users. Before entering this market, Comsat would have to meet the requirements of the Communications Act,

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[1] 90 FCC 2d 1395 (1982).

that is, obtain the necessary authorizations and file tariffs.[1]

Non-carriers could be served by Comsat in another manner. They were permitted access to Comsat's Intelsat basic transmission facilities. This service, identical to that traditionally supplied by Comsat, allowed it to provide service which began or ended at the U.S. Intelsat earth station. The major difference from former policy was that both carriers and non-carriers would be able to deal directly with Comsat under the same terms and conditions.[2]

The Commission also reconsidered its composite-rate policy which permitted the setting of international rates by averaging cable and satellite transmission costs. The composite rate policy was made discretionary. Carriers, then, could file separate cable and satellite rates or file composite rates as they deemed appropriate.

The FCC regarded this as one of a series of decisions which would encourage competition in the international communications market and which would remove the dichotomy between domestic and international communication markets. Marketplace forces were regarded as a more efficient means of determining pricing than the use of traditional rate and rate-of-return regulation. The lesson learned in domestic satellite policy, that "innovation and rate competition flourish best in a freely competitive market," was also well suited to international communications.[3]

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[1] 90 FCC 2d 1397 (1982)

[2] 90 FCC 2d 1396 (1982).

[3] Ibid.

In the 1980's, the Commission issued three decisions which were aimed at increasing competition among the U.S. international record carriers (IRC's), the entities with whom Comsat could now compete as a result of the Authorized User decision. In its Gateway decision, the FCC considered the request of the IRC's to provide service between additional U.S. cities and international points. The carriers had been limited to providing services between the cities of New York, Washington, D.C., San Francisco and New Orleans and international points. They requested authority to establish gateways at twenty-one additional cities as well as at the four Intelsat earth stations so that they could offer private line and specialized services.[1] In approving the request, the Commission ordered the IRC's "to unbundle (charge separately for) terminal equipment and the local access loop in order to ensure fair competition among carriers operating in the domestic segment of the market.[2]

The Datel order, also released in 1980, removed the "limited voice use" restriction which had been imposed on the Datel offerings.[3] Customers could now use the facilities to transmit voice in addition to data as a permissive or secondary use. The policy was meant "to allow a more efficient utilization of existing common carrier facilities."[4] Customers could use the facilities in whichever way was most operationally acceptable, without worrying about non-technical restrictions on their

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[1] 76 FCC 2d 146 (1980).

[2] 76 FCC 2d 125 (1980).

[3] 76 FCC 2d 166 (1980).

[4] 76 FCC 2d 179 (1980).

use. The carriers, however, were barred from building facilities which were designed to be most efficiently used to carry the permissive or secondary service.[1]

In a companion decision, the FCC removed the restriction on AT&T which prevented it from using the international Message Telecommunication Service (voice) network for international record traffic.[2] The Dataphone order permitted AT&T to use the overseas MTS network for the transmission of data as a permissive or secondary use to voice. AT&T was subject to the same restrictions as the IRC's in that it was not authorized "to invest any capital or engage in any rearrangements of its facilities for the purpose of enhancing the utility or capability of its MTS telephone network for the provision of non-voice services."[3]

After the Authorized User decision was released, the U.S. International Service Carriers composed of AT&T and the International Record Carriers (USISC) asked the FCC to grant them a more direct form of access to Intelsat satellite facilities.[4] The parties maintained that the Authorized User policy put the USISC's at a competitive disadvantage which would be corrected only if the FCC "(1) authorized the international carriers either to invest in Intelsat circuits via Comsat or to acquire long term, 'cost sharings' leases in these facilities and (2) required Comsat to offer Intelsat space segment and

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[1] 76 FCC 2d 179 (1980), p. 180.

[2] 75 FCC 2d 682 (1980).

[3] Ibid., p. 694.

[4] 47 Fed. Reg. 40226 (Sept. 13, 1982).

associated earth segment facilities under separate tariffs."[1] The FCC instituted an inquiry into the question of direct access and asked the parties to address the issues raised by the international service carriers.

The Authorized User decision also gave rise to another FCC Inquiry which was initiated in August 1982. This decision allowing Comsat to provide international satellite services direct to end users required a reconsideration of earth station ownership and operation policy.[2] The inquiry was to focus on whether FCC policy should be modified to permit individual or joint ownership of general purpose and/or special purpose U.S. earth stations by authorized U.S. carriers independent of the existing earth station ownership arrangements. The decision is still pending.

c) Comsat's Domestic Services

i) Satellite Business Systems

In 1975, Satellite Business Systems (SBS), a partnership composed of Comsat General Corporation, a wholly-owned subsidiary of an affiliate of Communications Satellite Corporation, Information Satellite Corporation, a wholly owned subsidiary of International Business Machine Corporation (IBM) and The Aetna Casualty and Surety Company (AETNA) filed an application with the Federal Communications Commission to construct domestic

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[1] 47 Fed. Reg. 40226 (Sept. 13, 1982).

[2] 47 Fed. Reg. 36235 (Aug. 19, 1982).

satellite facilities in order to offer to government and business users specialized telecommunication services.[1] SBS described its service as a "dedicated private switched network for the routing and transmission of information originated by its customers."[2] The networks would permit the integrated digital transmission of voice, data and image messages (by means of time division multiplexing) among the geographically diversely situated business locations of its customers.[3]

One of the primary concerns of the Commission was the fear that the involvement of IBM and Comsat in this partnership would result in their being given a competitive advantage in the domestic satellite industry. IBM especially might be placed in an advantageous position because it could influence its customers to subscribe to SBS services and thus forclose the healthy competition the Commission wishes to encourage in the industry. Thus, in addition to enforcing the requirement that both these companies form separate subsidiaries for their domestic satellite activities, the Commission ruled that the directors, employees, and officers of each corporate entity in the partnership be completely separate from one another and that they be separate from the directors, officers, and employees of each of the parent

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[1] In its Domestic Satellite decision, the FCC considered the role which Comsat would play in the domestic satellite industry. The Corporation would have to form a separate corporate subsidiary to engage in any domestic satellite venture. See Reconsideration Order 38 FCC 2d 665 (1972). In its CML Satellite Corporation Decision, the Commission ruled that IBM would, as well, have to establish a separate corporate entity to participate in domestic satellite activities. Furthermore, the corporate entity would be barred from selling or promoting IBM terminal equipment. See 51 FCC 2d 14 (1971).

[2] 62 FCC 2d 997, 1021 (1977).

[3] Ibid., p. 1001.

companies. Finally, both parent and subsidiary companies were barred from having any of their officers or directors function as officers or directors of AT&T and its subsidiaries.[1]

Because industries regulated under the Communications Act also fall within the jurisdiction of the anti-trust laws, the Commission also addressed whether the formation of the SBS would contravene Section 7 of the Clayton Act.[2]

The Commission found that SBS was to operate not only in the domestic satellite market but also in the much more broadly based domestic specialized services market which would include terrestrial services from numerous competitors. Although the FCC admitted that the approval of the SBS joint venture might result in a lessening of potential competition in the domestic satellite arena, the public interest benefits which would accrue more than compensated for this detriment. Because satellite communication services constituted a high risk enterprise, the barriers to entry were great. Any entity wishing to operate in the market would have to be prepared to suffer a negative cash flow for a lengthy period of time. This in itself would

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[1] 67 FCC 2d 997, 1021 (1977), p. 1045.

[2] That no corporation engaged in commerce shall acquire, directly or indirectly, the whole of part of the stock or other capital share . . . of another corporation engaged also in commerce, where in any line of commerce, in any section of the country, the effect of such acquisition may be substantially to lessen competition or tend to create a monopoly.

No corporation shall acquire, directly or indirectly the whole or any part of the stock or other share capital or one or more corporations engaged in commerce, where in any line of commerce in any section of the country, the effect of such acquisition of such stocks or assets, or of the use of such stock by the voting or granting of proxies or otherwise, may be substantially to lessen competition or to tend to create a monopoly. 15 U.S.C. s. 18.

severely limit the number of potential entrants. SBS represented a viable, healthy competitor which might best be able to sustain the risks. Furthermore, it would be able to offer vigorous competition to AT&T's private line services which used both terrestrial and satellite routes. The public interest, therefore, was best served by permitting the entry of SBS into the domestic satellite market.[1]

ii) Transborder Private Line Services

In 1981, the FCC issued a final order which would permit SBS to offer private line telecommunication services between the United States and Canada.[2] Many of SBS's American customers had subsidiaries or affiliates in Canada which would benefit from access to the SBS services utilized by the U.S. parent corporations. The authorization which was requested by SBS delineated two means by which the service could be provided. The first was based upon a direct interconnection between SBS customers in Canada and the United States by means of SBS's domestic satellites. The second entailed a lease back arrangement with Intelsat and Comsat "whereby Intelsat would lease satellite capacity from SBS and then re-lease such capacity through Comsat back to SBS. A similar arrangement would be negotiated with Comsat for the lease and lease back of SBS earth station capacity."[3]

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[1]The decision was upheld on appeal. See United States v. FCC 652 F2d 72 (1980).

[2]In the Matter of the Application of Satellite Business Systems, FCC 81-490 (Oct. 30, 1981).

[3]Ibid., p. 3.

The Commission in its review of the position of SBS vis-a-vis Intelsat, addressed the issue of whether "the use of U.S. domestic satellites for these transborder services would be consistent with the U.S. commitment to Intelsat and the integrity of the global system."[1] Article XIV(d) of the Intelsat agreement recognized that some members would at times utilize non-Intelsat space segment facilities to satisfy their international communications needs.[2] The State Department believed that domestic satellites might be utilized, when use of Intelsat was neither economically nor technically feasible. The FCC noted that because the cost of terrestrial links between Canada and the United States was lower than the cost of using Intelsat facilities, the two countries had not relied on Intelsat facilities for transborder communications.[3]

After assessing SBS's two modes of service, the Commission opted for the use of the domestic satellites to provide direct links between customers in the two countries. A lease back arrangement with Intelsat would result in a needless duplication of the SBS system over global facilities for the transborder portion of the customer's network. This would result in increased costs to the SBS customer. The granting of the application was made conditional upon Intelsat approval and in the absence of that, letters of agreement negotiated between Canada and the United States.[4]

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[1] Application of Satellite Business Systems, p. 5.

[2] Ibid.

[3] Ibid., p. 12.

[4] An exchange of letters which would permit this kind of service occurred in August, 1982.

iii) Satellite Television Corporation

Satellite Television Corporation is a wholly-owned subsidiary of Comsat Corporation. On December 17, 1980, the corporation filed an application with the FCC seeking approval to begin the construction of direct broadcast satellites.[1] The system was composed of four satellites which would provide service to the contiguous United States and to the more densely populated areas of Alaska and Hawaii. In its application, STC asked to be classified as a broadcaster rather than a common carrier because it proposed to control all its programming activities.

STC's financing of the project included a $225 million equity contribution from Comsat in addition to a $400 million line of credit from a commercial banking syndicate. Comsat was to provide an unconditional guarantee for an amount up to $170-$200 million for the term of the loan. Comsat assured the FCC that it would provide both the unconditional guarantee and the equity contribution without jeopardizing its ability to meet the capital requirement of its Intelsat and Inmarsat activities.[2]

The Commission concluded that neither the Communication Satellite Act nor the Intelsat Agreements prohibited Comsat from engaging in non-common carrier activities. The corporation had only to establish that these additional activities did not interfere with the Intelsat/Inmarsat obligations. Thus the approval of Comsat's application rested on a determination that

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[1] In re application of Satellite Television Corporation for Authority to Construct an Experimental Direct Broadcast Satellite System, FCC 82-427 (Oct. 13, 1982).

[2] Ibid., p. 5.

"the potential benefit to the public outweighed the possible detriments, particularly the possible risks to Comsat's obligations as a monopoly carrier under the Satellite Act.[1] The Commission rejected arguments that Comsat would cross-subsidize its DBS operations with revenues from its monopoly services or assign competitive costs to its monopoly services, thus enabling it to engage in anti-competitive behaviour. The requirements established in its Comsat Study and Comsat Structure decision, which compelled Comsat to form a separate subsidiary for its competitive activities and which imposed stringent accounting procedures on its ventures, would permit the Commission to monitor Comsat for any misallocation of costs or other anti-competitive behaviour. Finally, the Commission found that Comsat's financing of the DBS activity would not necessarily result in an increased cost of capital which could be passed on to its monopoly services.[2]

The Commission indicated that it would pay special note to Comsat's submission on capital costs in rate regulation hearings to monitor any abuses. The FCC placed upon STC the requirement that it use "all reasonable means to secure capital from external, financial markets before approaching the Commission for permission to obtain additional parent financing."[3] STC's application was found to be in the public interest, and STC was determined to be the type of entry which would provide healthy

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[1] Satellite Television Corporation DBS System, p. 13.

[2] Ibid., p. 27.

[3] Ibid., p. 20.

competition in the DBS industry. An interim construction permit was issued by the Commission with final authorization to be issued after the 1983 RARC conference.

4. Summary

When the FCC first began to articulate its domestic satellite policy in 1972, it attempted to create an atmosphere which would allow for maximum experimentation and innovation. Because the stakes were so high for entry in the market, the Commission believed that strict agency oversight would be restrictive and unnecessary. The marketplace mechanism was regarded as a far more accurate means of regulating this new technology.

After ten years of steady development, it appears that the Commission's assessment was valid. The number of entrants has increased dramatically as has the diversity of services now available to meet ever growing demands. The present inquiry into reduced orbital spacing attests to this. Rather than attempting to restrict entry because of the growing scarcity of available frequencies and orbital locations, the Commission has sought a technological answer which would promote its de-regulatory approach.

The domestic satellite industry has enjoyed such success under this deregulatory model that the Commission has sought to implement similar policy in the international satellite area. It appears as though the distinctions between the two have started to blur as competition has begun to take hold in the international market as well.

The evolution of FCC policy regarding international satellite regulation has placed more and more emphasis on marketplace forces as the proper mechanism to determine services and prices. Rate and rate-of-return regulation is now regarded

as too cumbersome and unwieldly to keep step with the rapid changes in the technology and the changing demands of customers. While satellite carriers are still required to file applications and tariffs with the Commission pursuant to the requirement of the Communications Act of 1934, the dependence on competitive pricing reduces the need for undue agency intervention.

The restructuring of Comsat promises far-reaching repercussions. First, in clearly defining the monopoly services of the corporation, the Commission has opened wide the door for increased competition in both the international and domestic spheres. Comsat has been given FCC approval to supply services both in the domestic market, through its SBS and STC subsidiaries, and in the international market, by means of competition with the international record carriers. Thus, while its competitive ventures are expanding, its monopoly ones may soon be subject to marketplace forces. One can expect the FCC to promote continued deregulation of the international satellite industry.

STRICK, J.C.
--The relevance of the U.S. satellite environment to the Canadian scene: report.