4. Question: What specific services and systems appear to offer the most immediate economic potential, and how can they best be provided?

   Answer: The economic potential of satellite services is greatest where the transmission distances are long and the channel bandwidths wide. Intercity video, particularly by the extension of television services to receive-only terminals that are at locations not now being served by terrestrial facilities, offers the most immediate social and economic benefit. However, as reflected in our November 7, 1966 application to the Commission for authority to construct six earth stations, we feel that there are significant benefits to be gained through the installation of a network of regionally-located earth stations, working in conjunction with part of the transponder capacity in a shared-use satellite so as to provide multiple-access record and data services.

LEARNING ABOUT THE PROBLEMS AND POSSIBILITIES OF SATELLITE SERVICES

1. Question: What information about technological capabilities and performance of satellite systems is needed to resolve uncertainties about the technical and economic feasibility of potential systems?

   Answer: There has been sufficient experience with communications satellites and earth stations operating in the common carrier frequencies of 4 and 6 gHz; so the capabilities and technical performance of these are quite predictable. However, inasmuch as future demands for satellite communications will, in all probability, require use of higher frequencies in the 10-30 gHz range; efforts should be expended to develop and test hardware so as to resolve a number of import uncertainties about the technical feasibility of operating communications satellites in this part of the spectrum.

2. Question: What information about operational uncertainties is needed?

   Answer: Additional experience is needed with respect to the operational characteristics of 4 and 6 gHz equipment -- particularly in terms of the reliability of the high-capacity satellites of the types recently launched by both NASA and Intelsat. The earlier satellites, with lower capacity transponders, have demonstrated great reliability. However, the potential for savings in intercity transmission costs really requires the larger and, as yet, only marginally successful satellites.

3. Question: What information about economic and market characteristics is needed?

   Answer: As indicated in earlier comments, most, if not all, of the services that are proposed for domestic satellite applications are presently available using conventional terrestrial communication channels. The market characteristics of these services have been the subject of considerable study, and much has been learned about them. On the other hand, there have been no comprehensive, economic studies made of these services which would justify or tend to support the statements made as to tremendous economic savings in the total cost of services through the use of satellite circuits. We feel that a considerable amount of additional work is needed here, if economic considerations are to influence the ultimate policy as to ownership and operation of domestic satellite services.

4. Question: Specifically, what information or technological developments are needed over the next few years with respect to trade-offs among spectrum utilization, orbit location, and cost to permit maximum utilization of communications satellite capabilities?

   Answer: We believe that both NASA and several of the equipment manufacturers have made trade-off studies between spectrum utilization, orbit location and cost. However, as indicated above, it's our opinion that propagation studies and RF sub-systems development are needed before it can be assumed that services can be rendered as efficiently in one portion of the spectrum as in another.

5. Question: What of the above information can be obtained best by further research, experimental trials, or a pilot operational system?

   Answer: Western Union believes that the practical knowledge of satellite services and possibilities could best be obtained through three parallel efforts:

   - Begin with a test of domestic satellite services with major emphasis on intercity TV with additional utilization of transponder capacity in multiple-access record and data services. The earth stations ought to be owned and operated by the users, that is, the major terminals by the common carriers and the smaller TV-only-stations by the broadcasters. The satellite should be owned by Comsat or an equivalent organization. This initial domestic service would use the common carrier frequencies and existing technology.

- NASA and/or Comsat should begin the development and field-test of the RF sub-systems which would be required to provide operation in the 10-30 gHz range. Part of this experimental program would include measurement of propagation characteristics, analysis of common volume interference problems, etc. Hopefully, this part of the program would lead to making available substantial amounts of communications capabilities in the late seventies for expansion of the common carriers' needs and, where appropriate, permit the operation of completely private or dedicated systems serving special user groups.

- A thorough economic study should be made to realistically compare the cost of providing intercity transmission facilities with satellite vs. terrestrial means at the projected service demands.

INCENTIVES FOR INNOVATION BY COMMUNICATIONS FIRMS TO DEVELOP NEW TELECOMMUNICATIONS SERVICES AND MARKETS

1. Question: What Government policies would be most effective in promoting development of new telecommunications services and markets by the private sector?

   Answer: Volumes have been written on this question, and it's difficult to summarize in a few sentences. But it's our view that the development of new telecommunications services and markets can be speeded if:

   - Circuitry is provided by the common carriers through optimum combinations of cable, microwave, satellite and other new high-capacity means now under development (laser, millimeter waveguide, etc.), so as to provide transmission paths required for the various services at the lowest overall cost.

   - Exchange services (such as the direct dial, telephone, TWX, Telex, etc.) require protection to the network in order that one subscriber's attachment cannot interfere with the operation of another subscriber's service. However, our long-range policy should be one of permitting attachment of approved devices or interface units, in addition to the basic service, so as to make the broadest possible use of the available transmission plant.

   - Policy should be developed to appropriately deal with the utilization of computers, including a clarification of the regulated vs. non-regulated services that can be offered.

2. Question: What research and development can be carried out by private enterprise to speed the development of economically viable domestic communications satellite applications?

   Answer: See answer to question 1 in the second section.

3. Question: Is there research that can be carried out only by the Government that would resolve uncertainties or impediments to technological or market innovation by the private sector?

   Answer: Governmental assistance would obviously be required in launching any experimental satellite payloads of the type visualized for development which we consider necessary in the 10-30 gHz range.

4. Question: Given appropriate economic incentives and institutional arrangements, what new services, markets, or technologies could the private sector likely develop in the forseeable future?

   Answer: There've been long lists of potential new services developed in connection with our own offerings to the public as individual users, to business and to Government. We think it is highly significant that the principal economic deterrent in making these offerings is the cost of the terminal devices rather than the cost of circuitry.

5. Question: What institutional arrangements with respect to ownership and operation of communications satellites will offer the best balance between the rate of innovation and nondisruptive growth of the communications industry?

   Answer: See answer to question 5 in the second section.

DEGREE OF REGULATORY CONTROL AND IMPEDIMENTS TO TECHNICAL AND MARKET INNOVATION

1. Question: What type and degree of economic regulation (such as rate-base regulation, limits on entry of new firms, authorized user limitations, or limits on services offered) are now clearly necessary during the initial phases of domestic commercial satellite communications? What technical regulation, such as spectrum utilization, interference standards, or service standards?

Answer: We would say that all of the types of regulation listed, both economic and technical, are not only desirable but necessary during the initial phases of the introduction of domestic satellite communications. However, rate regulation should not necessarily be restricted to the rate base method of regulation. Present regulatory processes too closely resemble a "cost-plus" approach with little incentive for innovation and improved efficiency. Regulatory procedures which would reward efficiency and innovation would encourage greater responsiveness to changing needs and redound to the benefit of the public. So long as entry is limited by regulation, this approach would assist in obtaining the benefits usually associated with competition.

2. Question: Under reasonable projections of the economic and technological potential of satellite services, what regulatory policies appear most desirable for the long run?

   Answer: We feel it would be premature to make such a determination at this time, as the ultimate answer to this question will be dependent upon technical and economic factors which, at the moment, are unknown.

3. Question: Is it desirable to have regulatory policies with respect to telecommunications via satellite that are distinct and different from policies for terrestrial systems?

   Answer: We do not feel that it's practical to have regulatory policies that are distinct and different for satellites, inasmuch as terrestrial systems will have to be interconnected in order to provide most, if not all, of the proposed services.

4. Question: To what extent can competition, together with general regulatory guidelines, foster a more responsive industry than is possible with very detailed regulation?

   Answer: Unquestionably, a non-regulated business entity can move more rapidly, and enjoys market flexibility beyond that inherent in the business activity of a highly-regulated competitor. However, the theory of utilities is based on the concept that certain public services can only be provided on an economic basis, in view of the tremendous demands for capital, if such an investment is protected. But the creation of such a monopoly, whether it be Governmental or operating in the private sector, obviously requires regulation and control to protect the public interest. It is our opinion that any attempt to deemphasize regulation through the "guidelines" concept or by establishing any other middle-ground is clearly not in the best long-term interest of the public. It is our view that the public's needs best be served by making a clear distinction between regulated and non-regulated businesses and services, and maintain Governmental control over the former and let the competitive free enterprise system control the latter.

COMMUNICATIONS SATELLITE CORPORATION

JOSEPH V. CHARYK
President

September 8, 1969

Mr. Clay T. Whitehead
The White House
Washington, D. C.

Dear Mr. Whitehead:

Looking toward the opportunity for a detailed discussion of the questions attached to your letter of August 19, 1969, we wish to make a written response which will emphasize the main points that should, in our judgment, govern any new approach to domestic satellite service.

To summarize, first, we think the three years' accumulation of experience in satellite communications since the beginning of the domestic service inquiry in the FCC has mooted most of the technical reasons that three years ago may have counselled delay in going forward with vigorous service proposals. Service requirements appear more clearly and appear to be more immediate now than three years ago. Valuable time has been wasted in the hope that a process of compromise in the configuration of a domestic system would produce a wide measure of agreement among the interested parties. These hopes have proven illusory.

Second, with the progress of the past three years in the technology and construction of satellites and earth stations, we think it is clear that a domestic system, begun now, should not be limited to a pilot model covering mainly the western time zones, but should include all zones and should include service among the contiguous 48 states and Alaska, Hawaii, and Puerto Rico. In the case of Alaska, the most economical and efficient plan for its intrastate and interstate communications is heavily dependent on the degree to which the requirements of Alaska are to be served as a part of an overall domestic satellite system.

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Third, we believe that the domestic system should be structured and regulated in ways that will provide the maximum stimulation of satellite communications development. Ultimately, the way to assure the best and most economical satellite service for users in all parts of the United States is to provide all classes of users with the opportunity and incentive to use satellite service on an efficient basis. Far from threatening the viability of terrestrial communications carriers and systems, we believe that stimulation of satellite service will create new demands for service from terrestrial carriers and give them the incentive and opportunity to improve and expand their present services. Much of the domestic satellite traffic would involve terrestrial links and services by terrestrial carriers, although in some situations direct access by users to the satellite system would contribute to the efficiency and attractiveness of satellite service, and should be permitted under appropriate regulation far less restrictive of direct access than is the case in the international services at present.

Fourth, the responsibility for initiating a system plan and for construction of the system should be designed to achieve rapid progress, system efficiency, and maximum responsiveness of the system to the requirements of the public interest. These objectives cannot be achieved, except by a miracle, if the system plan is developed by a committee representing all of the disparate interests involved.

These four main points require more complete explanation, which follows.

1. Three years have passed since the first major submissions in the FCC's domestic service inquiry, and approximately two and one half years have passed since our pilot demonstration proposal was submitted to the FCC. In this period satellite technology has moved a great distance, encompassing two distinct satellite programs and a part of a third, as well as two new generations of earth station technology.

At the time the pilot plan was developed, experience in the technical, as well as the operational, aspects of satellite communications was rather limited. Since that time, the Intelsat II's and Intelsat III's have been developed and have been in operation collectively for some three years. In addition, the follow-on family of satellites, the Intelsat IV's, is well into the

development cycle. From the point of view of satellite development and production, there no longer appears to be a serious question as to how to provide the requisite satellite capability for a domestic satellite system.

Earth station technology has kept pace with that of the satellites. The most recent design of major earth stations, as typified by the station now under construction at Talkeetna, Alaska, represents a vast economic, technical and operational improvement over the earlier facilities. Comsat is now procuring several smaller, less sophisticated and far less costly antennas of a type which can have a direct application in a domestic system but which will be used initially in the satellite demonstration program in which we are collaborating with NASA.

From the service point of view, provision of all types of communications via satellite has become routine. Television via satellite is provided on a daily basis between single points and multiple points, on a one-way or two-way flexible arrangement. Broadband data circuits are also provided on a routine basis. 48 kHz circuits have been in service between the mainland and Hawaii, and between the U. S. and Europe for some time, and other such circuits are in the process of activation. In the narrowband voice and data field more than 1200 such circuits are now provided between approximately twenty different countries throughout the world. Such service has become an established and growing element in the global communications system. Reliability of service provided by satellite systems has exceeded our expectations and, despite the inclusion of many pioneering components, is at least equal to the technologically mature competitive modes. In short, and in actuality, satellites are routinely providing high quality and high volume service, over long and short distances, to highly populated as well as to remote and sparsely populated areas throughout the world.

There can no longer be any questions about the technology or operational capability of satellites or earth stations to warrant either delay or doubts regarding the viability of domestic satellite service.

2. The chief remaining questions about domestic satellite service relate to the market for such service. What uses comprise the market, and how would the market demand respond to various assumed rates and pricing structures?

Certain fundamental postulates suggest themselves. A satellite system that is unnecessarily confined in scope is handicapped in developing large enough traffic to teach us much about optimum rate curves and market response. Moreover, an obvious case can be made for connection by satellite to the mainland from Hawaii, Puerto Rico, and Alaska, as part of a domestic network. The broader the reach of satellite service in the country as a whole, the smaller the economic burden of the system that will rest upon particular routes, and the more feasible it will become to price the service for future traffic growth.

In the case of Alaska, a critical time is at hand to determine the most effective and economical configuration for Alaska's internal and external requirements. The Alaska Communications System has recently been awarded to RCA, with a commitment by RCA for expansion, improvement of service and reduced rates. A major satellite earth station is under construction at Talkeetna, situated between Anchorage and Fairbanks. Proposals for an early capability for satellite communications in Alaska are under study by Comsat, NASA, RCA, and the responsible officials and representatives of Alaska. Any proposal that looks toward the maximum use of satellite links for Alaska's internal and external requirements, and toward an early connection of both with a domestic satellite system, will work toward much improved and lower cost communications for the 50th state. Failure to provide timely access to satellites will chain the chief Alaska traffic streams to conventional facilities and will in the end make all communications more expensive for users in Alaska. The communications requirements of Alaska should be considered as an urgent, integral part of the domestic inquiry.

The United States has other earth station facilities that lend themselves to early application to a domestic system. There are antennas already available in Hawaii and Puerto Rico. With one antenna in Hawaii available for international traffic, the second antenna could readily be adapted for use in a domestic system. The same is true with regard to the two stations on the west coast of the United States. One such station is essential for international traffic, but the other could be used for a domestic system. Additional antennas can be added as desired for convenience and assurance of continuity of service.

With respect to the existing station in Puerto Rico and the one being constructed in Alaska, and in consideration of the fact

that most of the traffic to and from Puerto Rico and Alaska is with the 48 contiguous states, those two stations are readily adaptable to a domestic system.

In this fashion, and by establishing the appropriate satellite capability, a domestic system could quickly be brought into being, serving the mainland and including Alaska, Hawaii, and Puerto Rico. The first factor in the economic viability equation would, of course, be a large commercial TV distribution load. However, with this basic network available, and apart from TV, a substantial number of over-water circuits plus the long-lines traffic in the contiguous 48 states to which the domestic carriers may be willing to commit themselves, will hasten the day of economic viability of the system.

Such a system would not only provide for commercial communications services, but would also provide the basic network desired by the Corporation for Public Broadcasting for a satellite cities demonstration program, and experiments and demonstrations in transcontinental interconnections and remote production capabilities. To have such a basic network at the start of an expanded domestic service would enhance the possibility of attractive pricing of service, which would favor the early and further growth of satellite utilization.

This sketch does not take account of an earlier capability for certain routes, which might involve the temporary use of NASA facilities and of Intelsat and Comsat facilities, if appropriate arrangements can be made.

Under the principle of equating investment shares to use, as proposed by the U. S. for the Intelsat definitive arrangements, the transfer of U. S. domestic traffic to a U. S. domestic system would lead toward a reduced level of U. S. ownership in Intelsat, which would substantially alleviate present foreign concern over the relatively high U. S. ownership interest in Intelsat. Thus, two important aims would be served by this proposal.

3. As noted above, one of the chief unknowns in the economics of domestic satellite service is the relative volume of traffic and revenues that might be expected to flow from each of the prospective user markets. It has generally been realized that in the early years the domestic system would depend heavily, first,

upon commercial broadcast traffic, and on bulk long haul telephony. But since 1966 spectacular growth has occurred in the data processing industry, which is becoming an increasingly attractive and potentially large user market for satellite service. In the same interval extremely interesting projections have been formulated for all forms of an expanded "record" market, as exemplified in the General Electric paper submitted in the FCC domestic satellite inquiry on February 19, 1969.

We believe that much, and perhaps most, of the potential satellite traffic will involve terrestrial handling through terrestrial carriers at each end. The ordinary user would find it neither economical nor convenient to assume communications responsibilities that would necessarily accompany direct access to satellite earth stations. On the other hand, some large users may find it highly efficient and desirable to have direct access.

Telephony message traffic will presumably continue to be handled by the telephone common carriers in whatever manner will be most efficient and economical for them. Where ground facilities are overcrowded, carriers may be expected to turn to the domestic satellite system, and when new facilities are required, they may be expected closely to scrutinize comparative costs of obtaining satellite service or of providing their own additional facilities. Obviously, coordination and long range planning will be required to assure that the necessary satellite facilities are available when needed and will be adequately supported when furnished. Data, facsimile and other forms of record traffic may also be expected to find their way to the satellite system to the extent that there are advantages of speed, broadband availability, convenience, and cost.

We hope and assume that the terrestrial carriers will find it in their interest to stimulate the use of satellite service because of the benefits to them from new and expanded communications uses which will result, and because of the direct benefits to the terrestrial carriers from providing terrestrial services for such traffic. Much satellite traffic will presumably be placed through the terrestrial carriers. In important instances, however, particular data or other large scale users may have a volume of traffic which will justify private communications links for direct access to the satellite earth stations.

The broadcast industry, particularly the three commercial television networks, may well find it desirable to shift a major

part of their traffic to satellite service, thus relieving the terrestrial system of the burdens of carrying broadcast matter at rates the conventional carriers have increasingly asserted to be inadequate. The satellite offers outstanding capability in handling large volume and large bandwidth requirements, and requirements from a single point to many destinations. It is thus a facility par excellence for broadcast distribution, both for commercial and non-commercial networks. For this purpose, a small number of transmit/receive large earth stations and a relatively large number of small receive-only facilities would be appropriate.

The Federal Communications Commission has followed a quite restrictive policy with respect to direct access to the international satellite system. Such service to other than carrier users is permitted only upon an elaborate showing as to the unavailability of effective satellite service through terrestrial carriers. The Commission was evidently concerned in particular that the low cost of satellite service, absent a terrestrial middleman, might drive the international record carriers out of business, or at least reduce their revenues to an extent sufficient to force a curtailment of service.

Whatever their validity in the international sphere, we think it is clear that such concerns should not be permitted to govern the structuring of a domestic satellite system. First, preliminary estimates indicate that the relative costs of satellite and terrestrial communications will be much closer than in the international sphere, and domestic satellite service is not likely to present to the same degree unique, non-cost advantages to certain users as the international satellite system. Thus, unless satellite communications use is given adequate encouragement, and in some cases unless the user is given the benefit of the economies of direct access, there may be little benefit to him from domestic satellite service.

Second, although the U. S. international record carriers predicted dire economic consequences from any relaxation of the strict authorization policy followed by the Commission in the international sphere, we very much doubt that any such forecasts could be substantiated in the domestic scene. Indeed, it may well be that by stimulating the demand for communications service generally, the availability of an economical and flexible domestic satellite service would provide significant added revenues to terrestrial carriers.

Accordingly, although some carriers will likely express fears concerning a liberal policy on direct access to the system, it does not appear that such concerns can have any real validity, and the Federal Communications Commission itself has in the past in other instances rejected anticompetitive restrictions based upon generalized fears. An excellent example is the Above 890mc proceeding where the Commission concluded that a "finding on adverse economic effects cannot be based upon a speculative possibility of future adverse effects" 27 F.C.C. 359, 412 (1959). Also, in terrestrial private line services, for example, the Commission has permitted leasing by customers of AT&T lines for record traffic purposes, but has permitted AT&T to charge Western Union less than it charges the public, thus enabling Western Union to compete against AT&T in providing service over AT&T lines. Thus it is clear that the Commission through its rate regulatory power has ample means to safeguard the public interest while preserving the viability of terrestrial communications service.

In sum, we believe that if the domestic satellite system is to achieve its full potential and provide maximum service on an economical basis, artificial restrictions upon development of the service should be avoided except to the extent demonstrated to be essential.

4. In considering what pattern of ownership and management would be appropriate for the domestic satellite system, the objective must first be identified. We believe that the prime objectives are system efficiency and economic viability.

System efficiency must begin with a plan. A system plan must be developed by someone. It cannot be developed by a committee. There must be a central responsibility for developing a plan, subject to FCC approval, for designing that plan around user requirements, moving it forward, initiating the procurement for equipment, and arranging and supervising a construction program. The central responsibility must be far more substantial than mere authority to chair a meeting of users or the privilege of mediating among discordant user requirements. Frankly, we must reject any premise that fragmented responsibilities are the best assurances of a broadly consented plan. On the contrary, we think such a course would make progress impossible.

We believe that Comsat is the only entity that combines the requisite capability and detachment for this central responsibility, with respect both to planning the satellite system and operating it when it is built. At least in its initial phases, we see the role of the domestic satellite system as one primarily devoted to handling bulk traffic both in a broad distribution mode as in the case of television and in a rather limited interconnection mode for other services. Thus we cannot visualize any interference by Comsat in the integrity or operation of the terrestrial carrier switched network. The complementary relationship between that network and the satellite system has been alluded to earlier.

Operating responsibility and ownership are, of course, related. For reasons of operating experience, of capability and of the public policy and legal dictates of the 1962 Satellite Act, we believe it is imperative that Comsat should own and operate the domestic satellites. Unlike the international system, there is no political necessity to share ownership, since the whole domestic system would lie within U. S. jurisdiction.

With respect to the ownership and operation of terrestrial facilities, we would distinguish between receive/only antennas and transmit/receive stations. As to the latter, legalities aside, we would favor as a matter of policy a freedom of choice of the ultimate user (broadcaster, publisher or whomever), subject to FCC approval, to operate his own receive/only antenna or to be serviced through facilities of the satellite system. With regard to the former, the 1962 Act is explicit in restricting ownership to Comsat, the carriers, or combinations thereof. Regardless of ownership, however, the transmit/receive stations are of vital technical and operational concern to the owner and operator of the satellites and must be controlled by him to avoid misuse of the satellites and preserve the integrity of the system.

The case is obvious for ownership and operation of these stations by the same entity owning the satellites. In the Intelsat consortium, only the United States assigns the ownership of earth stations differently from the ownership interest in the space segment. In the new Canadian domestic system,

ownership of satellites and earth stations is integral. To reject the obvious solution in favor of a complex mixture of divided ownership and responsibility requires reasons which dominate those of simplicity and system integrity. The FCC found such reasons in 1966 in ordering a sharing of ownership of the six U. S. earth stations then programmed for use with Intelsat satellites. Under this arrangement, Comsat is 50% owner of each station and various carriers own various amounts of the several stations, while Comsat acts as system manager of the consortium, governed by a committee of the owners, called ESOC.

Recognizing the widely divergent carrier and other user interests which will be involved in U. S. domestic satellite services, some elements of government have thought, and continue to think, of going even further than the ESOC formula and of trying to satisfy the entire mix of interests through a matching mix of ownership and control of the system. This line of thinking, if carried too far, will hobble, and could destroy, the system, even on the drawing board.

The 1966 FCC order argued that the ESOC pattern of shared ownership and control would supply a motivation to the carriers to promote the use of satellite circuits and to contribute to the technology of the satellite system. Nothing of the sort has happened. The carriers' motivations remain as they were. They prefer to use circuits through facilities which they own and control, the investment in which is large and wholly in their rate base. Moreover, some of the ESOC carriers have apparently viewed ESOC rather as a cartel, by which the system of stations is held on a leash, their construction, use and their terms of service controlled by the voting power of the carriers, to whom individual corporate profits and the prosperity of a competitive transmission mode -- cables -- are all-important. During the past year, two of them have gone further in actively seeking to spall off individual stations from the centrally managed system, which is possible under the 1966 order treating individual stations separately from the system. The logical end result would be that the U. S. voice in the organs of Intelsat would become a cacaphony as it is so widely elsewhere in the world communications scene.

There are other difficulties flowing from this conflict. Our intention here, however, is not to try to use your Committee as the forum in which to air all the ills of the organization of U. S. telecommunications which hinder the development

of satellite use. Rather, we wish mainly to illustrate why fractionation of control of a domestic satellite system has very little merit, in the real world, as a means for accommodation of conflicting interests which will inevitably remain in conflict.

The requirements of system-wide pricing of service should be a powerful inhibition upon a sharing of ownership of individual earth stations. Services must be priced so as to promote and optimize traffic on the system as a whole, including routes to remote areas where traffic is thin.

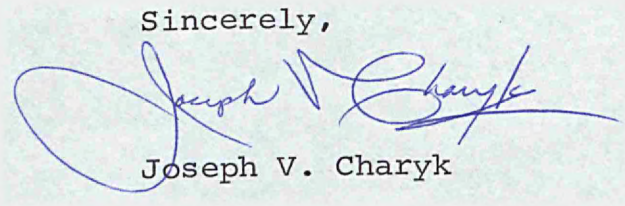
System pricing of service in a domestic satellite system will be heavily handicapped if, for example, a Hawaiian station, an Alaskan station and a station in California each should have a distinct group of owners and ownership shares. The revenue requirement of each station must then be viewed separately and must ultimately rest upon the isolated traffic associated with that station or upon subsidy by another set of station owners. Neither is a satisfactory or stable solution. System pricing would be automatic and workable in domestic service if Comsat were the sole owner of the major ground stations, since there would then be no fixed claim on the revenue of each particular station by an owner of that facility alone.

Nevertheless, it is recognized that under the 1962 Act the FCC has the responsibility to determine earth station ownership as among the carriers, Comsat or combinations thereof as will best serve the public interest, convenience and necessity. Were a decision to be made in the direction of shared ownership for reasons felt to be dominant over the considerations outlined above, it would be essential to adopt a form of sharing that would least obstruct system pricing of the service and management of the system. This would only be possible, if all major earth stations were regarded as a single system of properties for ownership purposes, so that a carrier's ownership share, based upon that carrier's traffic in relation to total system traffic, would be an undivided interest in the system of stations, rather than in an individual station. Thus, no carrier would have special concern for the revenue derived from an individual station property or for any reasonable disparity between the earning potential of a particular station and that of another station.

Apart from ownership, it should be amply clear from the ESOC experience in international service that management responsibility for the major domestic stations, as for the domestic system as a whole, should rest in Comsat.

The public interest has very substantial and unique guarantees of Comsat's responsiveness. Three of its fifteen directors are appointed by the President of the United States, with the advice and consent of the Senate, as watchdogs of the public interest, not subject to shareholder election. No carrier offers similar built-in advocates of the public interest. In addition, Comsat alone has statutory answerability not merely to the FCC, but to the President of the United States, the Congress, and to NASA, all of whom have grave responsibilities for satellite communications. No other entity is subject to such a broad sweep of public interest regulation, touching technical development, procurement, planning, service and other aspects of satellite utilization. These unique features of the 1962 Satellite Act give Comsat a unique qualification for the responsibility of planning and operating the domestic satellite system. Above all, that responsibility should be assigned promptly and supported by authority sufficient to the size and novelty of the task.

Sincerely,



Joseph V. Charyk

JOINT COUNCIL ON EDUCATIONAL TELECOMMUNICATIONS
1126 Sixteenth Street N.W., Washington, D.C. 20036 202 / 659-9740

October 9, 1969

Dr. Clay T. Whitehead
Staff Assistant to the President
The White House
Washington, D. C.

Dear Dr. Whitehead:

The Joint Council on Educational Telecommunications wishes to submit additional comments regarding the matter of domestic communications satellites, supplementing its letter of September 19,1969

At our Annual Board Meeting on September 29th, the question of an independent communications system for education and other members of the public sector was discussed in considerable detail. The Board heard a report by Mr. Edmund M. Pease, who has recently served as Group Leader for the Management Systems and Data Automation Organization Study of the U.S.Army Material Command.

Mr. Pease's study concluded that data communications via satellite, combined with utilization of advanced technologies in electronic data processing, can provide the only viable means by which the Army's information needs can be met. Further, it appears that both the technologies and the cost-benefits are equally applicable to educational communications. For example, it is Mr. Pease's conclusion that computer-assisted instruction at approximately twenty-five cents per student-terminal-hour can be made possible by the combination of advanced satellite and computer techniques.

The benefits for the United States Army, and for American education, will be possible only if non-profit systems are established. While projected costs indicate that the educational community could pay the costs of space and ground hardware, computers and classroom terminals, and still realize substantial savings in the ever-increasing costs of education, these savings appear to be possible only in a system which stands outside the common carrier market.

Our belief, stated in our letter of September 19th, that the option for an independent, noncommercial domestic satellite system must be maintained is now greatly strengthened. In fact, it is our current opinion, on the basis of further evidence, that such a system is not only viable, but necessary.

In order to provide further documentation, the Joint Council, alone and with others, expects to gather data, promote new studies, and otherwise explore in detail the implications of domestic satellites for education in all its

forms. In addition, the Joint Council, with its fellow-members of the Satellite Task Force (the Ford Foundation, the Corporation for Public Broadcasting, the National Association of Educational Broadcasters and National Educational Television) will continue to seek opportunities to use present and planned NASA Applications Technology Satellites to demonstrate to the educational community and the public the advantages and cost-effectiveness which communications satellites can provide.

As President of the Joint Council on Educational Telecommunications, I wish to emphasize that the JCET believes that an independent, noncommercial satellite system holds promise of great public benefit, and that no decision which precludes such development should be countenanced.

Thank you for the opportunity to make these additional comments. All evidence which has been, or will be assembled by the Joint Council will, of course, be available to the Administration, the Congress, the Federal Communications Commission, and other interested parties.

I hope, on a future trip to Washington, to have the opportunity to meet with you and to discuss the work of the Commission on Instructional Technology, on which I recently served, as well as the work of the JCET.

Sincerely,

C. R. Carpenter
President

CRC.m

JOINT COUNCIL ON EDUCATIONAL TELECOMMUNICATIONS
1126 Sixteenth Street N.W., Washington, D.C. 20036 202 / 659-9740

September 19, 1969

Dr. Clay T. Whitehead
Staff Assistant to the President
The White House
Washington, D. C.

Dear Dr. Whitehead:

Thank you for the opportunity to comment in the current White House inquiry regarding domestic satellite communications. Our discussions of this matter with the Corporation for Public Broadcasting and the Ford Foundation, and our mutual efforts in the work of the Satellite Task Force, indicate that our common concerns will be well reflected in the submissions which you will be receiving from them. Nonetheless, the matter of domestic satellites is of such importance that we should be remiss if we did not avail ourselves of the opportunity you have offered to respond directly. Rather than present yet another series of detailed responses to the questions you have suggested, we should prefer, in less formal manner, to underscore what appear to be the basic considerations which apply to educational and other noncommercial applications.

We believe that noncommercial applications require special study within their own frame of reference. Their technical requirements, as well as their public benefits, may differ markedly. For example, television transmission to low-cost community center ground terminals (as in ATS-F) may be neither attractive nor desirable within the commercial context, but might offer substantial public benefit in noncommercial applications. The NAS panel at Woods Hole has pointed out that such service could have great value, not only in areas of this country lacking in infrastructure, but also in serving such special needs as those of the medical profession, even where terrestrial facilities are plentiful.

In computer communications, some have indicated that the growing number of computers is likely to so diminish teleprocessing costs that satellites will have little impact. (The GE filing in Docket 16495 appears to indicate a contrary view.) What is true for the use of computers by business and industry may not, however, apply to such educational applications as computer-assisted instruction, inter-university research, and the like. At present, there seems substantial evidence that interconnection costs are a major constraint to the expansion of CAI, and that satellite communications might be most useful.

In short, noncommercial needs may not be congruent with requirements of a commercial service. The dedication of "free channels for educational and instructional television," offered by Comsat in its Pilot Proposal, while unquestionably desirable, may not, alone, be adequate to the task of realizing the full benefits which noncommercial satellite services could offer.

Worthy of fullest exploration is the idea that an independent noncommercial satellite system may be desirable. Such a system might, or might not, share space and ground hardware with a commercial system, but each system would be free to pursue its own goals with a minimum of compromise and confusion. Precedent exists on the ground, where noncommercial broadcasting exists outside of the framework of its commercial counterpart. To a wide spectrum of noncommercial users, it would offer the opportunity to design a system based upon their own needs, and to escape the present constraints of service-oriented tariffs and block allocations which prevent the small user from achieving economies of scale. Many noncommercial applications, not presently viable, might become attractive.

To the common carrier, such a noncommercial satellite system might be seen as engaging in the polar opposite of cream-skimming, relieving the common carrier of the necessity of serving noncommercial users below cost.

We are not suggesting here that such a noncommercial system should be established, but only that such an option should not be prematurely foreclosed. Hard, practical, questions need fuller examination, chief among them what volume of traffic might be expected, and how the costs of such a system might be met. Here, as one of your questions suggests, is an area in which research that can be carried out only by the Government would resolve uncertainties.

The system viability clearly increases as noncommercial uses are aggregated. Mr. John W. Macy, in his letter to the President, has urged the convening of a conference on telecommunications technology as a means toward the solution of domestic problems. Such a conference could provide a beginning in assessing the needs for noncommercial satellite communications, not only of Public Broadcasting and education, but of all of the public sector, including the programs of such Departments as Health, Education and Welfare, the Interior, Commerce, and Transportation. It might be possible to share space or ground facilities for communications with those for scientific research. Satellite technology could provide Creative Federalism a new bridge between Federal and State and local programs and agencies.

In short, not merely Public Broadcasting, nor educational telecommunications, would be served, but rather the broadest spectrum of public communications needs. The interest in satellites of the people of Alaska, and of the Lister Hill Center for Biomedical Communications, clearly points in this direction. Whether the ultimate system, should one prove practicable, would be user-supported or government-owned, Federally-sponsored programs would likely be among its chief beneficiaries, and only the Federal Government, representing all of the people, can undertake the exploration of its potential values.

As I pointed out in my letter of May 26th, "an examination of social and educational programs is already underway. So, too, we are already in the process of attempting to shape new communications policy to cope with emerging technology. What a White House Conference would do is to converge these two currents . . . ."

To the possibilities already suggested--free channels for education provided by a commercial system, a satellite system for all users operated by a new non-profit entity, and a possible joint venture by commercial and noncommercial interests--must be added the concept of parallel commercial and noncommercial systems.

To call attention to such a possibility is not to deny the potential values of other alternatives, but only to urge that the feasibility, costs, and benefits of each configuration be given appropriate study and consideration.

Thank you for the opportunity to comment in this matter.

Sincerely,

Frank W. Norwood
Executive Secretary

FWN.h

Corporation for Public Broadcasting
Suite 630
1250 Connecticut Avenue, N. W.
Washington, D. C. 20036
(202) 223-2228-9

September 8, 1969

John W. Macy, Jr.
President

Mr. Clay T. Whitehead
Staff Assistant
The White House
Washington, D. C.

Dear Mr. Whitehead:

The Corporation for Public Broadcasting is extremely interested in the development of a system of domestic satellites for various communications needs, particularly as they relate to public radio and television.

We very much appreciate your letter of August 19, 1969 with the enclosed questionnaire, and for extending to the Corporation for Public Broadcasting an opportunity to express its views on the general subject of domestic satellites.

Please be assured of our desire to cooperate fully with the White House. Within the next several days we will submit our comments to you.

Sincerely yours,

John W. Macy, Jr.

John W. Macy, Jr.
President

Corporation for Public Broadcasting

1250 Connecticut Avenue, N.W., Washington, D.C. 20036, Phone: 202-223-2228/9

September 29, 1969

Mr. Clay T. Whitehead
Staff Assistant
The White House
Washington, D. C.

Dear Mr. Whitehead:

With further reference to your letter of August 19, I enclose the comments of the Corporation for Public Broadcasting as you requested.

We very much appreciate the opportunity extended to the Corporation to comment on the inquiry relating to the complex subject of domestic communications satellites.

Please be assured of our willingness to cooperate with the White House in any way possible.

Sincerely yours,

John W. Macy, Jr.

John W. Macy, Jr.
President

enclosures

1345 Avenue of the Americas, New York, New York 10019, Phone: 212-582-2020

COMMENTS OF THE CORPORATION FOR PUBLIC BROADCASTING

September, 1969

COMMENTS OF THE CORPORATION FOR PUBLIC BROADCASTING

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Comments of the Corporation for Public Broadcasting

The Corporation for Public Broadcasting is pleased to be given this opportunity to comment on many of the complex issues now confronting the Government concerning the general subject of domestic satellite communications.

The Corporation for Public Broadcasting wishes to state at the outset that it continues to associate itself with and generally support, as it has in the past, the views of the Ford Foundation, National Education Television and Radio Center, the Joint Council on Education Telecommunications, and the National Association of Educational Broadcasters, all of which submitted comments to the FCC Docket #16495 in the matter of the establishment of domestic noncommon carrier communication satellite facilities by nongovernment entities.

This document, submitted also on behalf of NAEB, NET and JCET, is concerned almost exclusively with these problems as they relate to the growth and development of a viable public broadcasting and communications service. No comments are included concerning direct satellite broadcasting. Specific responses to each question attached to

the White House letter dated August 19, 1969, are included and made a part of the total response to the present inquiry.

SUMMARY AND RECOMMENDATIONS

The Corporation for Public Broadcasting is a unique entity which has been assigned by Congress the all-important task of:

(a) facilitating the full development of educational broadcasting in which programs of high quality are made available to noncommercial educational television and radio broadcast stations;

(b) assisting the development of a system of interconnection to be used for the distribution of educational television or radio programs;

(c) assisting in the establishment and development of one or more systems of noncommercial educational television or radio broadcast stations throughout the United States; and,

(d) carrying out it purposes and functions and engaging in its activities in ways that will most effectively assure the maximum freedom of the noncommercial educational television or radio broadcast systems and local stations from interference with or control of program content or other activities.

The Corporation views this mandate as an unfulfilled obligation to the American people, for much remains to be accomplished. It approaches the future, nevertheless, with confidence and an ever-increasing awareness of its responsibilities and of the great need for a flexible and economically viable system of public broadcasting and communications.

The technological explosion of the past decade has generated great pressures to utilize new techniques as quickly as possible for the common good. CATV, high speed data transmission and multiple use of computers, lasers and wave guide technology are subjects of great interest to the Corporation. It is essential that, wherever applicable, these new technologies be integrated within the developing public broadcasting system.

Now, we approach the era of domestic satellites. This new technology, which has attracted the imaginations of the public and commercial segments of our society, is destined to truly revolutionize domestic communications. The Corporation believes in this new science, and it is committed to a policy which will seek to have it utilized to the fullest for the benefit of all engaged in noncommercial broadcasting and communications.

The Corporation believes the recent developments concerning domestic satellites, and the various inquiries associated with the subject, to be directly related to its task of creating a first-class interconnected system of public broadcasting stations - one which requires national priorities equal, at the very least, to its commercial counterparts. In any realistic appraisal of the Corporation's ability to relate to the proposed satellite system, it is important to remember it is a public non-profit entity with very limited funds, and these funds are required for a variety of purposes. As it cannot compete in the marketplace in a manner similar to its commercial broadcasting colleagues, it must, by its very nature, rely on Government and the regulatory processes to a very great degree.

It is from this frame of reference that the Corporation respectfully submits the following broad recommendations:

(1) The Corporation vigorously advocates it be allowed free and unlimited access to the entire domestic system authorized by the Government with a permanent priority equal to commercial users.

(2) The Corporation maintains a generally flexible attitude toward structure provided, however, that whatever system design is authorized full consideration is given to the special and different needs of public broadcasting and public communications.

(3) ATS experimentation should be immediately encouraged in addition to any proposed initial test system.

(4) Authorizations for ownership of the domestic satellite system, however structured, must include opportunities for investment by new entities.

(5) Control of the new system, and this is meant to include both space and terrestrial ground station segments, must be separated from and unrelated to the present corporate structure of the common carrier industry.

(6) Rates for using the new system must be distinguished from terrestrial rates for present common carrier facilities.

(7) Irrespective of any decisions made concerning the economic and institutional structure of the new industry, the Government must have a continuing role in such matters as regulation, rates and research.

(8) The Corporation strongly recommends an imaginative approach to the entire complex subject of domestic satellites, which would include the possibility of public ownership of a part of the domestic system.

General Considerations:

Satellite technology has now advanced to a point where it is now possible to actively plan for a fully operational domestic satellite system for the United States within the next few years. The Corporation is aware of the great significance of this new technology and to the extent it has the necessary funds to do so it wishes to participate actively in its development.

While a sense of urgency in these matters is required, it is equally as important that whatever system design is selected full consideration be given to the overall needs of the public and educational broadcasters. Commercial and economical considerations should not be permitted to prevail to the extent that the noncommercial interests be assigned to an inferior position. During this critical period in domestic affairs, the mandate of the Corporation for Public Broadcasting, given to it by the Congress, to create a new and vitally needed communications service for all segments of society must not be impaired.

Noncommercial broadcasting has two great needs, co-equal in importance:

First, to become a national network, under circumstances it can afford, and

Second, to have sufficient funds for programming.

Properly structured, a domestic satellite system can contribute immensely to meeting these needs. Improved communications to various segments of our society will help in solving many of the domestic problems now confronting the country.

The Corporation maintains a flexible position concerning the matter of structure provided, however, the clearly defined needs of public and educational radio and television communications are recognized and made an integral part of any domestic satellite system. This point cannot be overemphasized. The Corporation, and indeed the entire public service broadcasting community, has a continual need for sufficient funds with which it can accomplish its mission. This mission is interpreted to include the use of computer technology and the application of high speed data transferal techniques to serve the widely based public and education communities. Any satellite system design which acknowledges and accommodates the requirements of the Corporation for Public Broadcasting is, therefore, generally acceptable.

The Role of Government

Irrespective of any decisions made concerning the economic and institutional structure of this new industry, it

is suggested that the Government should have a continual role in domestic space. The Executive and the Congress must be involved to assure a realistic balance between competition and regulation; the Federal Communications Commission and the Office of Telecommunications Management to determine and recommend the proper utilization of the spectrum and to supervise the development of outer space for domestic purposes. The regulation of satellites, particularly in the areas of access and rates, must not be made in isolation from regulations now in force concerning the terrestrial communications industry. There is an intimate relationship between the two. This fact implies the need for Government participation, particularly in the early days.

More specifically, decisions concerning the role the Corporation shall have in domestic satellites must be viewed in the context of the predicament it is now burdened with in its relationship with AT&T. (See later references and appendix in detail.)

A clarification of national purpose is required. Up to the present, the dominant consideration has been to evaluate domestic satellites in terms of commercial feasibility. Strong authority is needed to assure a fair balance between public service and commercial use of satellites.

Unless the importance of government planning is recognized, opportunities to use domestic satellites properly for educational purposes, and here the term is used in its broadest sense, may very well be lost forever.

There is, of course, an ample legal basis to support the recommendation that the Government must actively participate in the planning, the overall supervision, and the regulation of any domestic communications satellite system.

Historical Background

In August of 1966 the National Association of Educational Broadcasters, responding to FCC Docket #16495, stated:

> "Throughout its history NAEB has actively promoted research and planning for full utilization of all forms of communications media for the advancement of education in this country. Throughout the 1950s and 1960s it has been in the forefront of efforts to secure a fair share of VHF and UHF television channels on a reserved basis to provide a viable ground-based national system of educational television. It has earnestly encouraged the development and utilization of such supplementary media as the Instructional Television Fixed Service, closed circuit television, and audio visual media of all forms and varieties. In light of the rapid developments in the technology of communications, the educational community is committed to the philosophy that all of the advantages of communication technology must be used in some measure for the expansion of education. This philosophy carries over into the new technologies engendered by the space age."

The Joint Council on Educational Telecommunications and the National Education Television and Radio Center have also submitted relevant statements of policy to the FCC.

The Ford Foundation submitted to the FCC both a legal brief and a technical study on August 1, 1966, and on December 16, 1966. A second legal brief was submitted on April 3, 1967, and on September 18, 1967, a second technical study was submitted. The Corporation for Public Broadcasting cites these documents as examples of proposals it supports.

The essence of the Ford Foundation plan is that huge savings will be realized by commercial broadcasters by the use of distribution satellites, particularly when compared to present day terrestrial network costs, and that such savings should be applied to the development of public broadcasting. Considerable evidence to support this premise was made a part of the Ford Foundation submission to the FCC. The idea, first suggested by Ford, of a people's dividend in return for the vast sums invested in the various space programs is one which the Corporation finds persuasive.

The CPB Proposal Concerning NASA-ATS

Clearly there is an urgent need to move forward in developing a domestic satellite system. Honest men continue to differ over the many complex issues involved. Some of the debate has tended to obscure the extraordinarily important possibilities of satellites for the CPB, with the result that the prognosis for the immediate future has not been very encouraging. It is for all these reasons the Corporation welcomed the recent opportunity to engage in a period of experimentation with Applications Technology Satellites (ATS) under the aegis of NASA.

The Corporation for Public Broadcasting attended a meeting of NASA on June 13, 1969, and had the following to say (in part):

> "We appear today representing a wide range of views in the public and educational broadcasting community whose interest in the use of satellites dates back to 1962 and the subsequent Ford Foundation proposal of August, 1966. The proposals advanced represent a consensus of views of the Corporation for Public Broadcasting, the Ford Foundation, National Association of Educational Broadcasters, National Educational Television, and Joint Council on Educational Telecommunications. These groups all share a joint resolve and a common excitement about the unique opportunity offered by the potential use of satellites.

While public broadcasting is aware of the significance of this meeting for itself, the use of satellites for broadcasting in general and educacational communication has a much wider impact. The ultimate beneficiaries will be all the broadcasters and the American public.

The ATS experiments will enable the broadcasting industry and the public to become familiar with this aspect of the satellite technology. At present, neither the national viewing and listening audience nor the multitude of communities of interest in the public and commercial broadcasting endeavors has accumulated any experience with domestic satellite relaying.

The experiments proposed by the Corporation will establish a body of knowledge relating to the operation and control of a domestic satellite system complementary to the technical information that has been gathered by NASA over the past several years. In addition, the Corporation hopes to provide a vehicle through which the inventive capacities of others can explore and evaluate the particular capabilities of satellite relaying in domestic applications.

The use of ATS satellites as set forth herein will provide the American public with a daily demonstration of the application of space technology. While there is nothing more dramatic than placing a man on the moon or taking pictures of Mars, it is through the ability to demonstrate that this technology will affect every-day life that we can assure those who question the direction and expense of the space program. The fact that unused technical capacity of an already existing satellite that has outlived its original purpose can be utilized for broader public interests is visible proof of the daily application of space technology and to what extent space dollars can be applied for the general benefit of society."

Specifically, the Corporation, speaking for all public and educational broadcasting interests, proposed four related satellite experiments:

a. Transcontinental Interconnection
b. Radio Network
c. Satellite Cities Demonstration
d. Remote Production Capability

The Transcontinental Interconnection Experiment

In the Transcontinental Interconnection proposal, our initial priority is to demonstrate that transcontinental distribution is feasible and a major step forward in the growth of noncommercial broadcasting. We proposed that a relay link be inaugurated between the east and west coasts utilizing ATS III as the distribution mechanism.

Since January 1969 public broadcasting has been utilizing for two hours a day, five days a week, an interconnected distribution system for national programming through traditional terrestrial facilities. This system is expensive in the context of the resources available and extensive new facilities will be required to make it function effectively. Efforts to establish a more permanent system are under way at present, but the current estimates

of the cost of such a system are still far beyond the means of the public broadcasting community.

The Radio Network Experiment

One of the most dramatic and promising proposed experiments is to give noncommercial radio the opportunity of establishing a national interconnected network.

At present, noncommercial radio does not have access to a national network because of a lack of funds. However, the potential of existing satellite communication facilities suggests that such interconnection could be accomplished rapidly and without excessive capital or operating costs. By utilizing the VHF capability of the ATS, an inexpensive receiving facility can be established at individual noncommercial radio stations throughout the United States. In addition, at selected points transmitting stations will be constructed and then utilized to transmit radio programs throughout the noncommercial radio system to demonstrate the need and the practicality of a noncommercial radio network in the United States as outlined in the Public Broadcasting Act of 1967.

The state of the art, the cost parameters, and Public Broadcasting's ability to make timely response to NASA

all urge that our plans for ATS be firmly rooted in the overall needs of noncommercial radio and television. It is equally important, however, that we not lose the opportunity to capitalize upon the potential spin-offs which our plans for Public Broadcasting can provide. A wide variety of communications dividends may be available at small incremental cost.

For example, while Public Broadcasting needs will attract our priorities, we intend to experiment with the needs of other users of satellite services, such as:

> A Talking Newspaper for the Blind, a project in which the Library of Congress is actively interested.
>
> A Teletype Network for the Junior Colleges. Already being explored by the American Association of Junior Colleges, a dedicated Terrestrial system appears too expensive for the limited budgets and time-limited use of the Junior Colleges, but practical via shared-time participation in our experiment.
>
> A Kellogg Center Network, which would link for voice and data a number of the nation's continuing education centers, and make possible "decentralized meetings" in which professional groups and other users could gather in smaller numbers at near-home locations, but still participate in national discussions.

Two-Way Radio Medical Conferences, a technique pioneered by Albany Medical College's WAMC, the satellite would permit doctors in hospitals at any location in the United States to participate.

Remote Computer Access, a matter under study by NSF. The satellite could bring computer assisted instruction to the elementary school of Ft. Yukon, data processing to the lab of the Southern Negro College, records keeping to the school superintendent in Northern Utah.

The Satellite Cities Demonstration Experiment

As a natural extension of the transcontinental experiment, the Corporation proposed a demonstration of both the distribution and programming capabilities of satellite technology.

We proposed to designate a group of cities within the United States as satellite demonstration cities. These cities would receive programs directly from the satellite either as part of a network origination or a delay pattern to demonstrate the ultimate distribution capability of a satellite system. Furthermore, some of the cities would be utilized as production centers with the capability of transmitting by satellite directly to the other satellite cities. In this way, program material produced by the local production centers would be made available to all satellite cities. While whole programs produced at the various centers would

be distributed in this fashion, it is also possible to piece portions of programs together by utilizing the satellite as a switching center.

We contemplate that six cities would participate in this demonstration. The exact number of cities that will have transmitting capability will be based on funds available and estimates by manufacturers as to the construction costs of transmitting and receiving terminals.

In our view, a meaningful test of this nature should also address the needs of the academic, educational and disadvantaged communities in the various cities. While the selection of the satellite cities would primarily be based upon geographic location and production capability, we would actively seek the participation of universities, public educational and social agency authorities, and, in particular, organizations concerned with the problems of disadvantaged communities. The possibility of establishing receiving capacity on an Indian reservation as suggested by the Report of the President's Interdepartmental Task Force on Communications Policy will be explored. In essence, the opportunity to use the ground facilities for the distribution of instructional and cultural programs for

specialized audiences could offer dramatic evidence that satellites have the potential to make a profound impact on the educational and social problems of the nation.

The Remote Production Capability Experiment

The Remote Production Capability Experiment would explore and evaluate the use of mobile transmitting stations which can be transported to remote and relatively inaccessible areas on short notice to pickup and relay events which are not now available to the national audience.

Present national communication facilities cannot transmit from remote areas efficiently and at low cost. In order to broadcast events that occur in such areas, significant lead time is required to construct new transmission facilities at a cost that often makes it unreasonable to cover the event.

Existing technology would enable us to place a portable transmitter on a vehicle accompanied by a television mobile unit and then transmit to the satellite. In this way, the capacity of all broadcasters to react to dynamic and unpredictable situations would be significantly enhanced.

We recognize that use of mobile transmitting facilities must include careful consideration of the potential for

interference to existing terrestrial microwave systems. However, the Corporation believes the need for this type of service is sufficiently urgent and the promise sufficiently bright that the experiment must be undertaken. Since the problem has been most identified in the urban areas of the country, we proposed to initially conduct the experiment in distant areas that normally are not heavily penetrated by conventional microwave facilities and, therefore, less likely to raise the interference issue. It is precisely these areas that broadcasters have difficulty reaching with television facilities. Such a test will contribute a great deal toward determining the technical limits of the use of mobile transmitters with domestic satellites.

Regional Experimentation

Where feasible and where present ATS technology permits, experiments in regional and intrastate communications will be conducted. These experiments should go a long way toward demonstrating how flexible domestic satellites are in reduced geographic areas of the country. These tests will also explore the flexibility inherent in domestic satellites when integrated into existing terrestrial communications facilities on a regional basis.

Frequencies

Early in 1965 the Federal Communications Commission advised the Director of Telecommunications Management and NASA that NASA's use of appropriately coordinated 4 and 6 GHz frequencies was approved for use in the ATS prpgrams at Rosman, North Carolina, and Mojave, California. As the ATS program was viewed as experimental and temporary, authorizations for frequencies were limited to a two-year period. It was recognized that subsequent renewals would be required throughout the life of the program. Subject to authorization by the Federal Communications Commission and coordination with NASA, it is expected that the experiments described in the CPB June 13th, 1969, proposal will be conducted in the 4 and 6 GHz bands.

The Need for Experimentation

Where so much remains to be known about the use or implementation of domestic satellites, the Corporation contends a substantial period of experimentation with ATS is necessary. We favor the immediate agreement to begin an additional initial program, however.

Satellites in the ATS series are available now for experimentation by a wide variety of potential end users.

Future ATS activity should be substantially diverted to this type of experimentation. Not to take advantage now of the technical expertise and the acknowledged know-how of NASA is tantamount to wasting national resources.

The Corporation rejects the argument that no further experimentation is needed now for the scientists and technologists have been experimenting with satellites for years. The Corporation submits that it needs intensive experimentation to determine in a positive way what benefits will develop from using domestic satellites. The focus of a reasonable amount of space research should be reoriented from outer space to earth to accomplish this.

Now is the time for an entirely new approach to this complicated subject, a truly unique opportunity to avoid repeating the mistakes made in the past concerning the telecommunications industry. The problems - and there is some doubt we have clearly identified all of them - which have been endlessly debated will not be solved by more debate.

In any event, the establishment of a newly-constructed initial project of a permanent system would require three or four years, or more. Considerable planning is required

and any permanent structure must be related to developments arising out of the international Space Conference scheduled for 1971. As an interim procedure, therefore, the Corporation strongly supports ATS experimentation. The NASA-ATS potential presents a rare opportunity for Government and industry to work closely together to solve a national, and perhaps international, problem of major importance.

The goal of providing the American people with the most efficient and economical satellite telecommunications system will not be attained unless a period of experimentation by those who will use the end services of such a system precedes the final establishment of a permanent one.

The Satellite Task Force

Following the NASA meeting, a Satellite Task Force was formed to coordinate with NASA and other interested agencies all domestic satellite activity on behalf of the public and educational broadcasting interests. The Satellite Task Force counts among its active members at the present time the Corporation for Public Broadcasting, The Ford Foundation, the National Association of Educational Broadcasters, the Joint Council on Educational Telecommunications, and the National Education Television and Radio Center.

Since the June 13th meeting, the Satellite Task Force has continued to refine its proposals submitted to NASA and, assuming these joint proposals are accepted by NASA, it confidently expects to begin a series of experimental tests in the near future. Recent developments indicate the Satellite Task Force will assist ATS experimentation in Alaska. The Satellite Task Force has received recent inquiries from Guam to participate in the ATS program. Representatives of the Canadian Government have been advised the Satellite Task Force welcomes their interest in a joint experimental program utilizing ATS technology.

(a) Flexibility and Economy

Although the debate continues over such matters as ownership and structure of a domestic satellite system, most observers agree that economy and flexibility are two benefits to be gained from the use of satellites for domestic communication purposes.

Flexibility is perhaps more evident than economy, for we do not know for certain what economies, if any, will accrue out of the use of satellites. We cannot know this, for no one has ever used satellites in a long-term way in a domestic environment. Speaking to this point at the

NASA June 13th meeting, representatives of the Canadian Government intimated projections of large savings of money through the use of satellites are very much exaggerated. As the Canadians are one to three years ahead of the United States in developing satellites for domestic purposes, their point of view requires close scrutiny.

The Corporation supports the NASA-ATS proposal and seeks to utilize ATS technology for experimentation to determine through practical experience precise and accurate evaluations of these projected benefits of economy and flexibility.

Invitations to Government Agencies

The Corporation would welcome the active participation of any interested government agency in whatever experimentation it is permitted to conduct over ATS. Invitations to do so have been extended to the FCC and to HEW.

International Considerations

World wide communications continue to expand at a significant rate. The United States, through the USIA, the Corporation for Public Broadcasting, and many private companies, has a vital political, educational and economic stake in its orderly development. While the technical

feasibility of distribution satellites for television and radio broadcasting is not universally accepted, most observers believe distribution satellites are destined to be utilized more and more intranationally as well as internationally. COMSAT, the prominent member and manager of INTELSAT, is now engaged in negotiations with some 67 countries. It is expected that the INTELSAT meetings to be held in November of this year will result in a slightly diminished position for COMSAT. However, many binding agreements have already been entered into and the United States, through COMSAT, is a party to them. It is essential, therefore, that any determination concerning a domestic system must be made with a view toward not disturbing or infringing upon COMSAT's relationship with INTELSAT.

Present space law would seem to indicate that, subject to coordination with INTELSAT, the orbital areas required for domestic systems using synchronous satellites is available to all on a first arrived, first served basis. Canada is presently considerably advanced in its plans for a permanent domestic system. Latin American countries are lagging far behind Canada and the United States. It is important, therefore, that the U.S.A. continue its historical "good

neighbor" policy towards its neighbors to the south when it creates its own domestic system. Ultimately, when the Latin American countries develop domestic systems, it may be possible with advanced technology for the United States to share its satellites for such purposes.

Regulatory and Tariff Constraints

Earlier it was stated that the Corporation envisaged a continuing role for the Government in the economic and institutional structure of any domestic satellite industry. This would appear to be particularly important in tariff and regulatory matters. It would be an unfortunate consequence of contemporary attitudes in the common carrier industry if the Corporation's association with the domestic communications satellite system were to be equated with present common carrier practices.

There are regulatory and tariff constraints which continue to plague the entire public broadcasting community. The FCC Rules and Regulations establish tariff and regulation schemes which are appropriate for commercial purposes but inhibit the public broadcaster from deriving the economies of scale which would accrue from the right to use a single communication capability for multiple purposes.

Artificial percentages of time for open and closed circuit-shared use are required by AT&T.

It was the intent of the Congress to provide a means of lessening or eliminating the financial burden of interconnection when it stated in the Public Broadcasting Act of 1967, Title II, Subsection (h)

> "(h) Nothing in the Communications Act of 1934, as amended, or in any other provision of law shall be construed to prevent United States communications common carriers from rendering free or reduced rate communications interconnection services to grantees of or contractors with the Corporation and local noncommercial educational television or radio broadcast stations, subject to such rules and regulations as the Federal Communications Commission may prescribe."

The Corporation's experience with the common carriers during the past several trial months has been discouraging. AT&T's view that public broadcasting has a lower priority than commercial services has resulted in a periodic series of preemptions of the public broadcasting interconnection structure. In addition, individual public broadcasting stations have been preempted to satisfy commercial demands of AT&T. If this situation continues, the opportunity for the Corporation to create a national interconnected network will be very substantially diminished.

The Corporation suggests these circumstances appear to arise from a misinterpretation by AT&T of the intent and meaning of the Public Broadcasting Act of 1967 and various FCC policy statements.

The August 25, 1969, letter to the Federal Communications Commission, attached as an appendix to this document, makes clear the position of the Corporation for Public Broadcasting concerning the matter of regulatory and tariff constraints which inhibit the growth and development of a public broadcasting interconnected network.

The Corporation concludes that its experience in the terrestrial common carrier area is pertinent to the present inquiry and strongly recommends the intent of Congress be considered when authorization is given to develop a domestic satellite system.

Corporation for Public Broadcasting proposal:

Public broadcasting exists. It has unlimited potential for enrichment and enlightenment - for improving the quality of American life. Thousands of dedicated and talented men and women are devoted to its growth and they have inspired many legitimate innovations and successes.

Compared to commercial broadcasting, however, with its average evening viewing audience of approximately 105 million

people, public broadcasting is small. Roughtly one third of the nation's population does not have access to public television. During the important evening hours, the audience for public television rarely exceeds three million people.

Common carrier facilities to establish a public television and radio network exist, but the costs involved are excessive and beyond the financial capacity of the Corporation which, as the chosen instrument of Congress, has responsibilities for funding program development and production and for other related matters.

Over the span of the past several months, the Corporation has financed the interconnection of regional and national stations. Because of the high cost of interconnection, this activity has substantially decreased the capacity of the Corporation to develop both interconnection facilities and programs simultaneously. Funds which the Corporation believes should be more productively allocated to program production have had to be directed to the important requirement to establish national networking facilities.

There are now no permanent national network facilities for instructional television. Although it is a fundamental

principle that the basic element in a nation-wide public broadcasting system must be the local station, national networking facilities are required to supplement local programming, mainly with programs too expensive for local budgets. The ability to "network" a program as well as the prestige of belonging to a network are important to the stability of the public broadcasting community. A sense of a coordinated "oneness" prevails.

It is apparent that the great promise of public television cannot be realized without proper institutional arrangements to accomplish the task. As the present inquiry implies, institutional arrangements are intimately related to financial considerations.

From the very beginning, the impact of domestic satellites on the public broadcasting community was considered at all levels of Government. The view that a domestic system must include provisions for use by public broadcasters was accepted virtually unanimously. Government leaders, foundations, and many elements in the private sector advocated free access for public broadcasters to whatever domestic system authorized.

This, then, is the open issue to which we now refer:

The Corporation vigorously advocates that it be allowed free and unlimited access, with a permanent priority equal to commercial interests, to whatever satellite system is authorized by the Government. This proposal is the essence, indeed the very core, of our response to the White House inquiry.

BENEFIT TO THE PUBLIC FROM THE ECONOMIC AND SERVICE POTENTIAL OF SATELLITE TECHNOLOGY

1. What specific services that are not now available would be made possible and economically feasible through satellite technology?

No complete response to this question is possible, for with the availability of a domestic satellite system, freely accessible to all who desire to use it, new and unique services will be discovered and integrated into the total communications capacity in the United States.

The emphasis should at all times, however, be placed upon the total needs of the public television and radio community. Assuming the complex frequency assignment and electronic interference problems are resolved, the Corporation believes the following services will be made possible and economically feasible now:

(a) The development of a transcontinental interconnection of public television stations.

(b) A national network of public radio stations.

(c) The capacity to expand by a considerable amount two-way remote facilities to and from relatively isolated communities in the United States.

(d) A significant increase in the use of multiple access and remote computer facilities for a wide variety of educational purposes.

(e) The development of regional and intrastate interconnection of public television and radio stations.

2. What specific services now being offered could be provided more effectively or more efficiently through satellite technology, and what economic savings would accrue?

No network of radio stations exists. A nonintercon-nected duplicated tape radio network of approximately 160 educational radio stations has attempted to remedy this serious deficiency. The duplicated tape procedure is expensive, time consuming, inefficient and old fashioned. A satellite system for radio network broadcasting would make a dramatic impact upon educational stations throughout the country.

Stanford University is engaged in a program for computer assisted instruction for elementary schools. Expensive common carrier facilities are required to link the participating schools in McComb, Mississippi; Quincy, Massachusetts; suburban Pittsburgh, and Palo Alto. Satellite technology would provide Stanford University with an opportunity to involve more schools to its program.

In the absence of any experience with domestic satellites, it is not possible to give an accurate projection of savings. Studies do indicate, however, that with satellite technology both aforementioned services can expect very substantial savings.

3. What institutional, technical, and economic arrangements, taken as a whole, appear most likely to assure full benefit to the public of domestic satellite potential?

   (a) A recognition of the unique position of public television and radio and its needs and of the services it provides.

   (b) A rational solution to the frequency assignment problem.

   (c) A permanent guarantee of free access to satellites, with appropriate priorities, by the public television and radio system.

(d) A period of ATS experimentation to resolve the problem of how to use satellites domestically prior to the establishment of a permanent system.

(e) An opportunity for public broadcasting to recommend specific design parameters of satellites and ground stations to meet its needs.

4. What specific services and systems appear to offer the most immediate economic potential and how can they best be provided?

(a) A system which at the very least includes dedicated channels for public broadcasting.

(b) A system that views educational broadcasting as a unique entity requiring from time to time facilities different from those of commercial broadcasters.

LEARNING ABOUT THE PROBLEMS AND POSSIBILITIES OF SATELLITE SERVICES

1. What information about technological capabilities and performance of satellite systems is needed to resolve uncertainties about the technical and economic feasibility of potential systems?

We require the following:

(a) A clear cut determination of what frequencies will be made available and to whom.

(b) Experiments relating to the reliability of satellite systems and ground stations which will be subjected to considerably more instantaneous switching demands than any present international system.

(c) Experiments to determine how serious the interference problem is near the big cities, in the country and what can be done to solve the problem.

(d) Experiments in the actual frequencies recommended to be used in the permanent system prior to the establishment of such a system.

(e) Experiments to evaluate modulation techniques for voice and data transmission (FM).

2. What information about operational uncertainties is needed?

(a) Generally, the answers to (1) above apply.

3. What information about economic and market characteristics is needed?

(a) To what extent will existing long line and microwave systems be required as standby for satellites and/or to supplement satellites in other situations?

(b) To what extent, if any, do these problems differ in various sections of the country

and/or for specific program operational requirements?

(c) To what extent, if any, will rates for satellite use be related to existing terrestrial rates?

3. Specifically, what information on technological developments are needed over the next few years with respect to tradeoffs among spectrum utilization, orbit location, and cost to permit utilization of communications satellite capabilities?

(a) The potential tradeoffs must first be clearly and accurately identified and then publicized to all interested parties. Some doubt exists that this has ever been accomplished.

(b) Orbit location technology relates to frequency, size of antenna, satellite and booster rocket and to the power of the satellite. Continued study directed toward diminishing the total requirement for orbiting slots for domestic use appears to be highly desirable. Political constraints concerning orbit location will tend to become more clearly defined over the next ten years. Studies directed toward anticipating these political constraints may provide the

impetus to proceed in different directions with technological research.

5. What of the above information can be obtained best by further research, experimental trials, or a pilot operational system?

   (a) The Corporation favors continued research into the entire complex subject of domestic satellites with a particular emphasis on applications or user research.

   (b) The Corporation strongly supports an interim period of experimentation, open to all potential end users, and a separate program utilizing the ATS facilities already available for experimentation and offered for such a purpose by NASA. Experimentation of the type recommended could lead immediately to a permanent full blown domestic satellite system.

   (c) The Corporation maintains ATS capacity now available, if used for immediate experimentation in a joint effort between Government and a wide variety of potential end users, is capable of providing answers to most, if not all, known problems.

INCENTIVES FOR INNOVATION BY COMMUNICATIONS FIRMS TO DEVELOP NEW TELECOMMUNICATIONS SERVICES AND MARKETS

1. What Government policies would be most effective in promoting development of new telecommunications services and markets by the private sector?

   (a) A policy which does not seek to maintain the status quo toward retaining the present common carrier monopoly to exploit outer space for domestic communications purposes.

   (b) A policy which recognizes that the space required for synchronous orbiting of satellites for domestic communications is truly one of our nation's greatest natural resources.

   (c) A policy which recognizes that private entities other than common carriers have a right to participate as shareholders in the domestic system if they so desire.

   (d) A policy which encourages the private sector to recognize that a fully operating and viable public television and radio system, as a matter of national priority, is good for the country and therefore good for the private sector.

(e) A policy which relates, to the extent applicable, a domestic system with our international obligations in space and which seeks to retain our traditional "good neighbor" approach to Latin American countries and to Canada.

(f) A policy which invites the widest possible use of this new technology for the common good by all segments of society.

2. What research and development can be carried out by private enterprise to speed the development of economically viable domestic communications satellite applications?

(a) Although the Government and private industry have spent millions of dollars on various research projects to learn more about domestic communications satellite applications in such areas as aeronautical and sealane navigation, meteorology, geology, agriculture, and very high speed data transmission, much of this research has been inhibited by the lack of Government policy. Once policy is established, private enterprise should continue to invest large sums of money in research which can be clearly related to an operating system.

(b) Private industry should be provided with opportunities to work with the interested Government agencies in the development of nuclear energy powered orbiting satellites.

(c) The Bell System experiments in wave guide technology may result in lower priced terrestrial communications. These experiments should be carefully investigated before embarking on long-term large capital expenditure in a satellite communications program.

(d) Quasi-laser link communications systems are now undergoing experimental feasibility tests. Laser technology is developing rapidly. Again, these developments must be considered in relation to domestic satellites.

3. Is there research that can be carried out only by the Government that would resolve uncertainties or impediments to technological or market innovation by the private sector?

(a) The Government should fund studies to clearly identify promising satellite system concepts and clearly identify promising terrestrial system concepts with a view toward formulating

an all-encompassing plan, to be implemented in a logical sequence, if necessary over a five, ten or twenty-year period, to create a fully technically integrated space and terrestrial communications service.

(b) The Government should fund studies on potential uses and users. This should include such areas as state and city use and national use for civil defense. The relationship of domestic satellites to air pollution control, law enforcement, education, and various Government services are areas which clearly require intensive Government research.

(c) The Government should fund studies to determine the relative merits of and the technological requirements for single purpose systems and multi-functional systems.

(d) Continued Government research into identifying the critical problems associated with domestic satellites in such widely separated areas as interference, narrow beam design, shared and combined use of the spectrum, the relationship

of international systems to our domestic system(s) and the various tradeoffs and options, is required.

(e) Through NASA and other interested Government agencies, the Government should fund a continuing study into nuclear powered satellites, the potential for utilizing orbiting satellites to serve some domestic needs, and into the huge expenditure for booster rockets to determine where savings of time and money can be made.

4. Given appropriate economic incentives and institutional arrangements, what new services, markets, or technologies could the private sector likely develop in the foreseeable future?

(a) The General Electric proposals concerning MADS, Multiple Access Digital Services, and MAVS, Multiple Access Video Services, are examples of new services which appear very promising.

(b) The McCall Corporation proposals concerning experimental television programming, collation and transmission of data from multiple access computers and data processing centers,

and transmission of graphic material, both text and illustration, from editorial offices to regional printing facilities, are additional examples of new markets and services capable of being developed by the private sector in the near future.

5. What institutional arrangements with respect to ownership and operation of communications satellites will offer the best balance between the rate of innovation and nondisruptive growth of the communications industry?

FCC Docket #16495 has been pending before the Commission since early 1965 when the American Broadcasting Company proposed it be authorized to construct its own domestic satellite system. This docket is concerned with the problem of structure and ownership of the entity eventually to be formed to develop the domestic system. The thirty-four major organizations which responded to the FCC inquiry differ substantially on how to achieve optimum benefits for the public from space technology. Many believe the answer to this root question, (5, above), will to a large degree supply solutions to the remainder.

It is not the purpose of this document to reassert all the arguments and proposals of the past. While the Corporation is generally flexible in its approach to this problem,

it believes, nevertheless, the Ford Foundation concept of a people's dividend has very much to commend it. The Corporation has observed that many perceive merit to the idea of a Broadcaster's Non-Profit Satellite Corporation which could function as a specialized common carrier, a non-profit common carrier or as a cooperative controlled by its noncommercial and commercial users.

A domestic system designed specifically to the requirements of both noncommercial and commercial broadcasters, to cater to their total communications requirements, would provide the CPB with immediate economies.

Inquiries are raised about the degree of integration required between a domestic satellite system and the existing terrestrial long line and microwave system. The Corporation rejects the argument that one total system is the most advantageous for all. It is true that each system must be technically compatible, but our instincts compel us to shy away from integration if that implies a maintenance in space of the status quo of the common carrier industry. Authorizations for ownership of the domestic satellite system should be flexible and, however structured, must provide opportunities for investment by new entities;

control must be separate, unrelated and distinct from the present corporate structure which now controls the common carrier industry, and rates, while they will ultimately be determined in the market place by and for commercial users, must be distinguished from terrestrial rates. Rate integrity should follow system integrity.

In any event, whatever institutional arrangements with respect to ownership and operation of communications satellites are finally determined into, free and unlimited access to domestic satellite channels and send and receive ground stations for the public broadcaster must be included and made a permanent part of this law.

DEGREE OF REGULATORY CONTROL AND IMPEDIMENTS TO TECHNICAL AND MARKET INNOVATION

1. What type and degree of economic regulation (such as rate-base regulation, limits on entry of new firms, authorized user limitations, or limits on services offered) is now clearly necessary during the initial phases of domestic commercial satellite communications? What technical regulation, such as spectrum utilization, interference standards, or service standards?

   (a) If the idea of noncommercial access to satellite communications is to be maintained, noncommercial users should stand outside any limits on entry, authorized user limitations, and the like.

Aside from this, public interest seems to dictate that rate base should be clearly visable and founded upon the costs and economies of satellite technology, and not submerged into more complex rate base which includes nonsatellite connected terrestrial costs (as would be the case if AT&T were to integrate satellite facilities with its existing ground system complex).

(b) Concerning interference standards: Consideration should be given to applying interference reduction techniques to present, as well as future, frequency users. Presently, here as elsewhere, the FCC uses the "last man in" approach. New users must provide protection to those already using the frequency, even thought it might be simpler and less expensive to have the original users do the protecting. Compromises and tradeoffs will ultimately have to be made, however. In satellite terms, effective frequency sharing may require that terrestrial microwave users do some adapting

(relocation, shielding, etc.) as well as the satellite users.

2. Under reasonable projections of the economic and technological potential of satellite services, what regulatory policies appear most desirable for the long run?

   (a) Regulation which promotes the ability to use satellite facilities for the widest range of communications is most likely to maintain flexibility and offer economies on a broad scale. To the extent feasible, "raw bandwidth" or "bandwidth in bulk" should be available to the user to be used for any form of communication at any time he deems appropriate. Present "service-based tariffs" of the terrestrial common carriers, nor "block allocation of frequencies" assigning each block to specific uses or users, need necessarily be applied here. On an exclusive or shared basis, block allocations to satellite communications, may be necesary or desirable, but, within such allocations, multiple use, channel combination and channel splitting, time sharing among classes of service and different forms of traffic should all be encouraged to the maximum degree feasible.

3. Is it desirable to have regulatory policies with respect to telecommunications via satellite that are distinct and different from policies for terrestrial systems?

   (a) Yes and no. If the question means "should terrestrial common carrier regulation be extended to satellites?", the answer would be negative. If the satellite is seen as an expansion of all communications under the purview of the FCC, there are policies which would also apply here. One is the need for access by public interest groups to the means of communications as already embodied in the FCC regulations reserving FM and TV channels, and in the Public Broadcasting Act.

4. To what extent can competition, together with general regulatory guidelines, foster a more responsive industry than is possible with very detailed regulations?

   (a) Competition, whatever its virtues, cannot be expected to provide adequate safeguard to the public interest. Noncommercial services, including Public Broadcasting, must depend upon the regulatory framework, rather than the competition of the market place.

CONCLUSION

It is very possible decisions will be made this year which will determine the structure and the operational parameters of an American domestic satellite system. It is apparent that the development and utilization of this new technology must be in an orderly manner. If there is an unimaginative approach to problem-solving and a rigid adherence to the status quo of the terrestrial communications environment, the domestic satellite system will not be able to signal the beginning of an entirely new era in national communications. Strong and informed government leadership is required.

The Corporation for Public Broadcasting and the public and educational broadcasting community are eager to assist in the development of this new service and to participate in its beneficial use. The eagerness to participate and to be involved is not restricted to satellites, however. The Corporation specifically believes in order to sustain its position of leadership in noncommercial communications it has the responsibility for exploring all new technological developments to determine their use or application to the services it provides. CATV, high speed data transmission, laser and quasi-laser technology, remote use of multiple

access computers, and wave guide technology are areas of interest which demand the Corporation's close attention. Direct broadcasting from satellites is another subject which must ultimately require study.

The factual basis for the current view of the CPB may change as the overall technology develops, experience increases, and the flow of new information is applied to solve the many unresolved questions.

The Corporation for Public Broadcasting is prepared to make whatever contribution it possible can to assure timely and full benefit to the public of satellite technology.

# # #

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John W. Macy, Jr.
President

August 25, 1969

Mr. Ben F. Waple
Secretary
Federal Communications Commission
Washington, D. C. 20554

Dear Mr. Waple:

Pursuant to Section 5(e) of the Administrative Procedure Act, as amended, and Section 1.2 of the Commission's Rules and Regulations, the Corporation for Public Broadcasting respectfully requests that the Commission issue a declaratory ruling in order to remove uncertainty concerning free or reduced rate interconnection service for noncommercial educational broadcasting.

As the Commission has been advised from time to time, continuing negotiations have been conducted between the American Telephone and Telegraph Company (AT&T) and the Corporation for Public Broadcasting (the Corporation) both with respect to extensions of the special experimental tariff offering presently effective on a limited basis, and with respect to the establishment of a regular interconnection system to meet the needs of noncommercial educational broadcasting for the long term.

In response to specifications submitted by the Corporation of interconnection requirements for a 91-point network, serving approximately 180 noncommercial educational broadcasting stations, seven days per week, fourteen hours per day, involving approximately 22,000 route miles of facilities, with five transmitting locations for regional networks and three additional for nationwide network, AT&T in April of this year proposed to provide the service requested at a cost of approximately $6,000,000 to $7,000,000 annually, described as "about 50% of the charges which would apply at commercial tariff rates now scheduled to become effective in October 1969" (Letter

from Mr. Walter B. Kelley, Assistant Vice President, April 29, 1969). As the basis for these charges, AT&T states:

> "In light of the public interest considerations involved, we would propose that the charges to CPB would reflect only the cost of the additions to existing facilities necessary to the service and of a very limited amount of new basic route construction. For all but a few points where a basic route does not exist, no costs would be included for the use of basic route facilities, such as land, buildings and towers. Charges for operation would be calculated on the basis of 'out-of-pocket' costs."

In its April proposal, AT&T estimated that it would be possible to provide regular service at about 15 locations initially, a total of about 70 locations by December, 1970, and the complete network by early 1971. During the transition period, it would provide regular service as soon as feasible on a pro-rata charge, and serve the remaining stations as facilities permit by extending the present trial tariff arrangements. AT&T also served notice that the likelihood of preemptions would be greatly increased in the fall of 1969 because of the increase in the number of stations, hours, and days.

Since April there have been continuing negotiations in an attempt to lower the cost of service. There is attached hereto a letter dated August 14, 1969, from Mr. R. B. Nichols, Assistant Vice President of AT&T, to Mr. Ward B. Chamberlin, Jr., Vice President of the Corporation, summarizing AT&T's latest proposal which quotes a figure of approximately $4.4 million annually for service to 65 locations enabling interconnection to be extended to a total of approximately 160 stations using previously established systems. This would be a full period service comparable to that provided for commercial customers. Both New York City and Washington, D. C., would be designated as origination centers. We would be limited in flexibility since this system is routed in an

east to west direction and any special feeds of live originations from the interior or the west coast would require that we lease special lines from these locations to New York City. The proposal is for a system that would enable the various regional networks to use portions of the system at specified time periods to transmit their own programs to their member stations.

We would also note at this point the continuing problems encountered when operating with a system which is subject to preemptions due to facilities being unavailable. This service was totally preempted on the evenings of July 16 and 17 and July 20 through 24 during and immediately following the Apollo 11 moon landing. During this period public television had no national interconnection system to use to cover this historic event in any fashion whatever. In addition, we continue to have individual stations preempted from service on short notice due to facilities being used by commercial customers for sports events. This has occurred most frequently in Minneapolis, Minnesota, and Austin, Texas, in recent weeks.

Thus, service under the present arrangements, which were never considered to be more than temporary, continue to be unsatisfactory both from our point of view and that of AT&T.

The negotiations outlined above with respect to the cost of long range service indicate the apparent position of AT&T that rates for interconnection for noncommercial educational broadcasting stations should be adequate to cover the costs of supplying the service, at least on a short-run or long-run incremental basis, and that the stations are subject to lower priorities than commercial broadcast stations.

It is the position of the Corporation that AT&T operates under a misconception of the basic policy of the Public Broadcasting Act and the applicable principles, requirements, and policy of the Commission's Report and Order in Docket No. 18316, FCC 69-371 (1969). With respect to the proposed charges for service, AT&T's position is inconsistent with and contrary to the Commission's declaration in the Report and Order, par. 11:

> "Consistent with the policy of the Public Broadcasting Act, it is reasonable and appropriate that all costs, including the cost of new construction, shall be treated as related to common carrier interstate service and as such shall be included in the carriers total interstate rate base and operating expenses. It should also be made clear that, although the language of Section 396 (h) is permissive, the national policy expressed is that the public interest is served by the expansion of noncommercial educational broadcasting service to the public through free or reduced rate interconnection common carrier services for educational broadcast stations."

AT&T's position is also inconsistent with par. 12 of the rate-making principles and factors adopted by AT&T and the other parties participating in Phase I-B of Docket No. 16258 that the rate level of a category of service may be lower than long-run incremental costs or avoidable costs where "supported by a determination by the Commission that it is required in the public interest." (Tr. Vol. 179. p. 22334, lines 11-17). At the last meeting of the Board of Directors of the Corporation, on May 23, 1969, it was the sense of the Board that interconnection service should be provided free of charge.

AT&T's position that public broadcasting interconnection has a lower priority and is subject to preemption where facilities are not available, is not in accord with the Commission's Report and Order, par. 9, requiring that service to public broadcasting be "comparable in all material respects with service furnished commercial users at published tariff rates with the only difference in treatment being the free or reduced rate."

To remove these uncertainties, therefore, the Corporation requests that the Commission issue the following declaratory rulings:

> 1. Any provision for interconnection service which permits preemption or a lower priority for public broadcasting is contrary to the requirement of law that free or reduced rate interconnection service shall be comparable in all material respects with service furnished commercial users at public tariff rates with the only difference in treatment being the free or reduced rate.

2. It is required in the public interest that free or reduced rate interconnection common carrier services be provided for public broadcasting and that all costs therefor, including the cost of new construction, shall be treated as related to common carrier interstate service and as such shall be included in the carrier's total interstate rate base and operating expenses.

3. The carriers should proceed expeditiously to equip themselves with the facilities necessary to fulfill the interconnection objectives of the Public Broadcasting Act of 1967.

4. Interconnection service should be available to public broadcasting on the same facility basis as such services are available to commercial interests, including where necessary the equal allocation of facilities for such period of time required by the carriers to equip themselves with adequate facilities to meet all requirements.

5. All grants to carriers under Section 214 and all radio license grants to carriers under Title III of the Communications Act of 1934, as amended, shall be conditioned upon compliance with these declaratory rulings.

If any further information is desired in connection with these matters, we shall be pleased to furnish the information, and to be available for consultation.

Very truly yours,

John W. Macy, Jr.

John W. Macy, Jr.
President

enc.

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF TELECOMMUNICATIONS MANAGEMENT
WASHINGTON, D.C. 20504

OFFICE OF THE DIRECTOR

September 18, 1969

MEMORANDUM FOR DR. CLAY T. WHITEHEAD

Subject: Domestic Satellite Communications

Reference: (a) Your memorandum establishing Working Group on Domestic Satellite Communications, August 5, 1969

(b) Your letter requesting views of twenty-three non-Government organizations, August 19, 1969

This memorandum summarizes the current position of the Director of Telecommunications Management concerning domestic satellite communications, with particular regard to the current effort to "present Administration recommendations to the FCC on guidelines for the use of satellites for domestic communications by commercial organizations."

I believe the new technology of satellite communications offers unique means for enhancing the capability (operational and economic) of telecommunications throughout the United States. The significant achievements, largely unpredicted, in the deployment and operation of the Global Commercial Communications Satellite System by the INTELSAT Consortium help to illustrate the potential benefit of this rapidly advancing technology. Unfortunately, application of satellite technology in domestic communications has not been comparable. I have expressed previously the view, and continue to feel, that there is a pressing need for the United States to begin as soon as possible to investigate through practical applications how and to what extent satellites can contribute to domestic telecommunications services. Thus, I am anxious to assist in promoting the early implementation of a meaningful program toward the use of satellite technology in domestic telecommunications.

Your working group has a real challenge to develop appropriate recommendations in a field involving complex technical, economic, social and political issues. Based upon the experience of this office in dealing with national policy for satellite communications during the last few years, I feel obligated to inform you regarding certain fundamental policy issues (factors) which have great importance and inherent

constraints on extending satellite communications into the domestic scene. It is mandatory that these crucial issues be treated and meaningful and enlightened national policy be established, if the early availability of operationally dependable and economically viable domestic commercial telecommunications services by satellite are to be realized. The following list outlines the important factors which, in my view, must be considered in planning for the use of domestic satellite communications:

-- The potential role and relationship of any domestic satellite telecommunications services to the domestic transmission network, the potential contribution of satellites to the capability (operational and economic) of that network, and the methodology of system integration to be adopted.

-- The impact of the enormous infrastructure of the domestic transmission network on the development of a viable role for domestic services by satellite.

-- The capability of satellites to perform what might be called distribution type services where service (particularly broad band) is needed from one to many points simultaneously. The impact of this capability upon the existing control systems of the broadcast networks needs serious consideration.

-- The requirements for frequency spectrum and orbital slots (limited and valuable international resources) including related experimentation to fill information voids regarding propagation. Preparatory efforts for the 1971 Space World Administrative Radio Conference are also germane and U.S. decisions in the domestic satellite field can impact strongly on the outcome of that conference.

-- The international implications of introducing domestic satellite communications, particularly with regard to the United States role in and obligations to the International Telecommunications Satellite Consortium (INTELSAT).

Use and Role of Satellite Communications

As a first step in determining possible applications of satellite technology, the potential use and intended role of a particular proposed service should be formulated in light of user needs, market trends and existing telecommunications services. It is important that the advantages and disadvantages of a proposed satellite application and ownership structure be evaluated in terms of impact on the domestic terrestrial network as well as the advantages or disadvantages (operational and economic) to the nation.

The status of satellite communications can be characterized as being in the operational development phase. It is fair to state that this field is relatively immature as compared to the highly developed existing domestic telecommunications. Notice should be taken that the major problems which exist in the international telecommunications field (limited capacity, routing and reliability) do not exist in the domestic field. Accordingly, there is great uncertainty of the economic viability of satellite communications in direct competition with other highly developed means which are innovating rather rapidly and steadily achieving cost reductions.

Although much enthusiasm has been expressed for domestic satellite communications, no convincing economic analysis has been submitted to the Federal Communications Commission that would justify more than one domestic satellite communication system in the foreseeable future. The proposals for separate, fully dedicated, broadcast and data transmission systems contain plans and economic estimates which fail to present convincing operational and economic benefits and fail to present compelling rationale for the unrestrained establishment of separate systems.

I feel the multiple purpose space segment approach offers a logical method for introducing and integrating satellite communications domestically. If we are to realize an enhancement of the domestic public network through the addition of a satellite communications transmission and distribution system, the system design requires an integrated systems approach. Conceptually, this approach would enable the common carriers to augment their domestic public switched and private line networks and, simultaneously, would allow other dedicated user networks to have direct access to the multiple purpose space segment. This orderly, reasoned and technically sound systems approach for domestic satellite communications would avoid undesirable proliferation of satellites unnecessarily using valuable frequency spectrum and orbit slots and would optimize operational and economic benefit to users, both private and Government. It would avoid the charge or negate it that the U.S. is preempting (hogging) the radio frequency spectrum without due consideration of its economy or of the needs of other nations.

Frequency Spectrum and Orbital Slots

The United States is engaged currently in extensive planning looking toward participation in a World Administrative Radio Conference for Space Telecommunications, scheduled to be convened under the auspices of the International Telecommunication Union in Geneva, Switzerland, on June 7, 1971, for a duration of six weeks.

In May of 1969, the Administrative Council of the ITU met to establish the agenda to be used at the foregoing conference. The fifth item on the agreed agenda reads as follows: "To consider the feasibility at this time of coordinated frequency planning for radiocommunication satellites, including those placed on the geostationary orbit, and to take such action as is deemed appropriate."

There is a strong desire among certain other Administrations, particularly the Soviet Bloc and lesser developed nations, for allocating frequencies and orbital slots among Administrations in accordance with a pre-agreed plan. If such a concept were to be adopted internationally, and such might come to pass if any country were to indicate a "stampede" for a large number of satellite systems, the United States could use only "allotted" frequencies and orbital slots and would be restricted severely in the use of U.S. owned satellite systems.

The United States philosophy with respect to orbital slot and frequency plans for geostationary satellites is that, due to the nature, magnitude and variability of the parameters associated with geostationary satellites (antenna directivity, power, types of modulation, bandwidth, antenna polarization, etc.), rigid technical rules should not be established for the assignment of frequencies or geostationary orbital slots. Rather, it is the consensus that, given proper technical criteria, such systems can be engineered in such a manner as to make the maximum number of provisions which geometry and the state-of-the-art will afford and at the same time provide for a flexible formula which will permit nations to take advantage of advancements in the state-of-the-art as they evolve.

Accordingly, the United States, in its Preliminary Views for the World Administrative Radio Conference for Space Telecommunications,[1/] has put forward a position that calls for frequency spectrum and orbit slot

1/ See FCC Docket 18294, Fifth Notice of Inquiry and Department of State Document (August 1969) "Preliminary Views of the United States of America for the World Administrative Radio Conference for Space Telecommunications."

coordination but not for development of "allotment" plans. Also, in the International Radio Consultative Committee (CCIR) efforts, looking toward the space WARC, an intensive technical study is underway on the orbital/frequency assignment problem. In support of this effort, an experiment is about to be undertaken nationally to fill voids in the propagation information area bearing on frequency sharing criteria in the portion of the spectrum between 4 and 8 GHz. The major objective of this experimentation is to gather information that can be used to: (a) determine the extent to which satellite systems and terrestrial relay stations can, in fact, share communication bands below 10 GHz and (b) to develop realistic sharing criteria for these bands. Until these experiments are completed, the United States will be hampered in its ability to put forward frequency sharing proposals with the degree of confidence necessary to obtain international support for its views and the frequency allocations needed. More importantly, a decision to approve domestic satellite communications systems involving numerous earth stations cannot be taken with confidence while such information voids exist.

The value of orbit slots cannot be overstated, particularly when adjacent slots are utilized with satellites operating in the same frequency band. One obvious method of minimizing limitations of orbit slots and frequency sharing with terrestrial systems is to plan for use of frequencies above 10 GHz. Hopefully, the Preliminary Views of the United States concerning the allocations of certain frequency bands for the exclusive use of satellite communications will be sustained in the WARC during 1971. However, the economic viability of satellite communications systems above 10 GHz has not been verified. Uncertainty does exist as to the consequence of atmospheric attenuation and the requirements for redundant earth stations to ensure operationally reliable service.

International Implications

The DTM views concerning the implementation of a domestic communications satellite system in relation to the institutional framework of the International Telecommunications Satellite Consortium (INTELSAT) are included in a memorandum to you on April 4, 1969. The memorandum in part stated:

> "Accordingly, I feel Alternative 1 (INTELSAT provided space segment, U.S. financed) is the option this nation should adopt at this time, reserving its position on the ultimate operational

Domestic Communications Satellite System until such time as the essential technical and economic factors are resolved. This alternative provides the optimum basis for supporting our foreign policy and promoting the United States interests which include:

-- Promotion of the United States policy contained in the Communications Satellite Act of 1962.

-- Implements the United States commitment made by the President in his message of August 14, 1967.

-- Promotes the growth of the INTELSAT Consortium.

-- Protects the interests of the COMSAT Corporation.

-- Avoids establishing a precedent which could cause undesirable proliferation of separate systems outside INTELSAT.

-- Provides a graceful way to meet the needs of INTELSAT members without forcing the U.S. to provide launch services to other nations.

-- Maintains a policy consistent with NSAM 338.

"A conclusion is drawn that in this early time frame of satellite development there are significant advantages in the use of INTELSAT space segment capacity for the early initiation of domestic communications by satellite. Additionally, it is concluded that this will tend to develop more rapidly the full utilization of satellite communications in the most highly useful and economical way."

Conclusion

I feel your working group should consider the factors enumerated above in its evaluation of various policy alternatives and in the formulation of Administration recommendations to the FCC. Finally, I continue to believe that the approach for introducing and integrating satellite technology into the domestic telecommunications environment should be

of an evolutionary process. Logically, a modest beginning in the nature of a "pilot project" or "interim network" would help to establish the utility of satellite communications in domestic applications.

Specific comments concerning the five alternatives outlined in the draft paper you distributed at the August 15, 1969, meeting of the working group will be furnished under separate memorandum.

J. D. O'Connell

J. D. O'Connell

cc: Chairman Hyde

GENERAL TELEPHONE & ELECTRONICS CORPORATION
730 THIRD AVENUE, NEW YORK, N.Y. 10017

TELEPHONE | AREA CODE 212
551-1000

JAMES J. CLERKIN, JR.
EXECUTIVE VICE PRESIDENT-TELEPHONE OPERATIONS

August 22, 1969.

Mr. Clay T. Whitehead
Staff Assistant
The White House
Washington, D. C.

Dear Mr. Whitehead:

Your letter of August 19, 1969 to Mr. Leslie Warner, regarding Governmental consideration of alternative policies for the timely introduction of satellites to domestic commercial communications, has been referred to me for reply as Mr. Warner is out of the country on a business trip.

We will study the comments in your letter and the issues attached thereto and will give you any comments we have by mid-September.

Sincerely yours,

James J. Clerkin Jr.

JAMES J. CLERKIN, JR.

cc Mr. L. H. Warner

JJC:hm

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JAMES J. CLERKIN, JR.
EXECUTIVE VICE PRESIDENT - TELEPHONE OPERATIONS

September 16, 1969

Mr. Clay T. Whitehead
Staff Assistant
The White House
Washington, D. C.

Dear Mr. Whitehead:

Your letter of August 19, 1969 to Mr. Leslie H. Warner has been referred to me for reply.

Extensive comments have been filed on behalf of the General System in response to the Federal Communications Commission inquiry in Docket No. 16495 concerning domestic communications satellite facilities. In addition certain comments have been filed on behalf of the General System with Congressional committees who, in the period since March of 1966, have also been investigating this matter. We are enclosing copies thereof for your consideration in the hope that they may prove useful to you.

While these comments may not be entirely responsive to all of the issues under consideration by your group, since the matter has been under consideration by the FCC for a substantial period and we anticipated that certain policy matters would be resolved by them, we have not done further research which would permit us to give more definitive answers to your questions.

Sincerely yours,

James J. Clerkin, Jr.

JAMES J. CLERKIN, JR.
Executive Vice President--
Telephone Operations

Enclosures

(Aug 16, 1966 ltr to Sen Pastore - attached
FCC submissions available in my office. WEH)

GT&E SERVICE CORPORATION
730 THIRD AVENUE, NEW YORK, N. Y. 10017

August 16, 1966

Hon. John O. Pastore
United States Senate
New Senate Office Building
Room 3213
Washington, D. C.

ATTENTION: Nicholas Zapple, Esq.

Re: Private Domestic Communications Satellites

My dear Senator Pastore:

This is in reference to your announcement, as Chairman of the Communications Subcommittee of the Senate Committee on Commerce, of hearings relating to the recent Ford Foundation proposal for a private, non-common carrier, domestic non-profit satellite communications system.

As you know, the overall question of the Federal Communications Commission's power to authorize non-governmental non-common carrier entities to construct and operate communications satellite facilities for the purpose of meeting their private or specialized domestic communications requirements is the subject of that Commission's inquiry in Docket No. 16495. Initial comments of various parties, including the Ford Foundation and this corporation, were filed with the Commission on August 1, just a little more than two weeks ago.

For the reasons set forth more fully in our Comments and Brief filed in that inquiry, a copy of which is enclosed herewith, we are of the opinion that existing legislation does not empower the Federal Communications Commission to authorize non-governmental non-common carrier entities to construct and operate domestic communications satellite facilities.

In its legal brief and comments filed therein, however, the Ford Foundation takes a contrary view of the powers of the Commission. In particular, the Ford Foundation filing contends that the national and public interest would be served by authorizing a non-profit corporation to establish and operate communications satellite facilities for national non-commercial and commercial television.

Accompanying the Ford Foundation filing is a detailed, imaginative proposal for a "Broadcasters' Non-Profit Satellite Service" to evidence the fact that satellite communications may permit a revolution both in the technology and in the economics of television. This proposal was not presented with a view to its adoption by the Commission but rather as a means of urging the Commission to

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D. C. 20554

In the Matter of	)	
	)	
Establishment of domestic non-common carrier communication-satellite facilities by non-governmental entities.	)	DOCKET NO. 16495

COMMENTS OF GT&E SERVICE CORPORATION

GT&E Service Corporation, for and on behalf of the telephone operating companies of the General System, respectfully submits the following comments in response to the Commission's Notice of Inquiry (FCC 66-207) released March 3, 1966:

1. For the reasons set forth in the accompanying brief, it is the position of GT&E Service Corporation that the Commission, as a matter of law, is not empowered to authorize non-governmental non-common carrier entities to construct and operate communication-satellite facilities for the purpose of meeting their private or specialized domestic communications requirements.

2. Even if the Commission legally had such power, it is the position of GT&E Service Corporation that all persons or entities in the United States, other than the United States Government and ComSat, should be prohibited from constructing and operating communication satellites. The number of channels available for satellite communications is finite. The Commission is charged with the responsibility for seeing that the channels are used in the manner which is most consistent with the public interest, convenience and necessity. The United States is not the only nation interested in making use of this

limited number of channels. As a practical matter, it is absolutely essential that all space communications, other than certain government communications, be directed through the ComSat satellites. As the number of channels in use approaches the maximum feasible number, this Commission would find itself hard pressed to properly allocate their use if several entities were then maintaining their own private communication satellites. In order for the Commission to continue to maintain proper regulation, it is essential that non-governmental space communications be restricted to the ComSat system.

3. Further, the Commission cannot favor one large private user over other similarly situated users, all of whom could thereafter require and obtain private satellites. Moreover, if the Commission were to permit private users to have their own satellites, surely the individual common carriers should be entitled to their own satellites. Such a result would be contrary to the purpose and intent of the Communications Satellite Act of 1962. The result of permitting such private satellite communications systems by all such large users would mean a serious weakening of the common carriers and a consequent increase of rates to the smaller users. The logic of this position has heretofore been adopted by the Commission at paragraph 31 of its Memorandum Opinion and Statement of Policy in Docket No. 16058, issued July 21, 1966.

Respectfully submitted,
GT&E SERVICE CORPORATION

By _____
GEORGE E. SHAFFER
General Attorney

By _____
DONAL F. McCARTHY
Senior Attorney

730 Third Avenue
New York, New York 10017

July 29, 1966

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D. C. 20554

In the Matter of	)	
	)	
Establishment of domestic non-common carrier communication satellite facilities by non-governmental entities	)	Docket No. 16495

REPLY COMMENTS OF
HAWAIIAN TELEPHONE COMPANY

Initial Notice of Inquiry

The Commission's Initial Notice of Inquiry was limited to the question whether non-common carrier, non-governmental entities could establish satellite facilities.

In its initial Comments and Brief filed August 1, 1966, Hawaiian Telephone Company (Hawaiian) submitted that as a matter of law, the Commission has no power to authorize non-common carrier, non-governmental entities to construct and operate communications satellite facilities for domestic purposes, that any such authorization would be inconsistent with the policies and goals set forth in the Satellite Act, and that, as a matter of policy, it would not be in the public interest to authorize such entities to construct and operate communications satellite facilities.

Having studied the comments of other parties in this proceeding, Hawaiian reaffirms its prior position.

The authorization of private satellite systems would not be in the public interest because it would divert bulk business from the common carriers and thus increase the overall cost of service to the public. Private satellite systems would necessarily be wasteful of the frequency spectrum which should be conserved and utilized for the benefit of all the public. The requirements of particular users, including commercial and educational TV, can be met most efficiently and with the least cost by serving them through the regular common carriers whose facilities are already dedicated to the public use.

Supplemental Notice of Inquiry

Hawaiian responds to the Commission's Supplemental Notice of Inquiry as follows:

(a) Plans for using Communications Satellite Facilities to meet Domestic Needs.

Hawaiian has no present plans for using communications satellite facilities to meet "domestic" needs, assuming the term "domestic" in the Commission's Notice of Inquiry and Supplemental Notice refers to continental United States. It is possible that if a domestic system results in several gateways for overseas communications that Hawaiian will use some of the domestic system for haul to the closest gateway. As the Commission is aware, Hawaiian has plans and has filed

Section 214 applications for the use of communications satellite facilities between continental United States and Hawaii and between Hawaii and other points in the Pacific. At the present time it does not appear that use of satellite facilities for communications between points within the State of Hawaii (for example, from one island to another) would be practicable.

(b) Legal Restrictions on Commission's Power to Authorize Common Carriers to Construct and Operate Communications Satellite Facilities for Domestic Communications Services.

Hawaiian finds no such legal restrictions in either the Communications Act or the Communications Satellite Act.

(c) Under what Circumstances should the Commission Issue such Authorization, and to Whom?

Since Hawaiian has no present plans for use of communications satellite facilities to meet domestic needs, it expresses no opinion on this question at the present time.

(d) Ford Foundation Proposal.

Hawaiian believes that the type of entity and service contemplated by the Ford Foundation proposal may not be licensed under present statutes, both because the Commission does not have power to authorize non-common carrier, non-government entities to construct and operate their own satellite facilities and because any proposal to require one segment

of the public (commercial television customers) to subsidize another segment of the public (educational television customers) would be discriminatory and would result in an unjust and unreasonable preference which is contrary to existing law. The Ford Foundation proposal contemplates a domestic satellite operation which would provide services for a charge to all commercial television broadcast stations and networks. Thus, it would be a "common carrier for hire". At the same time it would provide similar services to educational television broadcasters free of charge. This would be an unjust and unreasonable preference under Sections 201(b) and 202(a) of the Communications Act.

Further, Hawaiian submits that it would not be in the public interest to authorize a new entity such as that proposed by the Ford Foundation, when the requirements of commercial and educational TV can be met more efficiently and at less cost and with greater conversation of the frequency spectrum by use of the existing facilities of ComSat and the regular common carriers.

Respectfully submitted,

HAWAIIAN TELEPHONE COMPANY

By /s/ Warren E. Baker

Warren E. Baker
Chadbourne, Parke,
Whiteside & Wolff
One Farragut Square South
Washington, D. C. 20006

Marshall M. Goodsill
Hugh Shearer
Anderson, Wrenn & Jenks
P. O. Box 3196
Honolulu, Hawaii 96801

Attorneys for Hawaiian Telephone Company

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D. C. 20554

In the Matter of the Establishment of domestic non-common carrier communication-satellite facilities by non-governmental entities.	)))))	DOCKET NO. 16495

FURTHER COMMENTS OF
GT&E SERVICE CORPORATION

GT&E Service Corporation respectfully submits the following additional comments in response to the Commission's Supplemental Notice of Inquiry (FCC 66-926) released October 21, 1966:

1. For the reasons set forth in its Brief filed herein on August 1, 1966 and supplemented by its Reply Brief filed herein on December 16, 1966, it is the position of GT&E Service Corporation that the Communications Satellite Act of 1962 (the "Satellite Act") defines and limits the powers of this Commission with respect to United States non-governmental participation in both international and domestic communications by satellite. From this it follows that:

a. This Commission, as a matter of law, is not empowered to authorize non-governmental, non-common carrier entities to construct and operate communication-satellite facilities for the purpose of meeting their private or specialized domestic communications requirements;

b. The Communications Satellite Corporation ("ComSat") is the only non-governmental entity which may be authorized by this Commission to construct, own and operate communications satellites for purposes of domestic communications; and

c. Only ComSat and those communications common carriers which are authorized by this Commission are eligible to apply for an ownership interest in any existing or proposed satellite earth station.

2. In its previous filings herein, GT&E Service Corporation advocated that only the United States Government and ComSat should, as a matter of policy, construct and operate communications satellites; that with respect to satellite earth stations, an ad hoc, case-by-case determination by the Commission whether to authorize a particular "authorized" carrier, or ComSat, or ComSat and one or more "authorized" carriers jointly, would provide a desirable degree of flexibility in the initial stages of development of domestic satellite systems; that there is a recognized public interest in making the benefits of new technology available to all communications users and not just the relatively few large-volume users; that this consideration favored the general purpose carrier over the special purpose carrier in connection with any particular application of satellite technology to domestic communications, for it is only in this manner that the continued growth and health of the present and future public communications network, a national resource, may be assured; and that the existence of long-distance, domestic terrestrial communications facilities of high capacity posed problems of electromagnetic interference which in themselves favored development of domestic satellite communications on an integrated basis with existing terrestrial facilities. GT&E Service Corporation continues to urge these considerations as being of prime importance in the formulation of policies for domestic communications satellites.

3. In its Supplemental Comments filed herein on December 16, 1966, GT&E Service Corporation urged that the interests of the Ford Foundation in finding a means of financing the needs and promise of educational television was a matter clearly beyond the scope of the Commission's original inquiry herein and more appropriately to be considered by another forum, such as Congress, which would be more capable of evaluating the relative need for and alternate modes of obtaining public support and funds. It now appears that both Congress and the executive branch will be actively engaged in the formulation of long-range policies both for educational television and for domestic satellite communications. Thus in his fourth message to Congress on health and education on February 28, 1967, President Johnson recommended that Congress enact the Public Television Act of 1967, which, among other things, would create a corporation for public television one of whose first tasks, according to the President, would be:

> "...to study the practicality and the economic advantages of using communication satellites to establish an educational television and radio network. To assist the corporation, I am directing the administrator of the National Aeronautics and Space Administration and the Secretary of Health, Education and Welfare to conduct experiments on the requirements for such a system, and for instructional television, in cooperation with other interested agencies of the Government and the private sector.
>
> "Formulation of long-range policies concerning the future of satellite communications requires the most detailed and comprehensive study by the executive branch and the Congress. I anticipate that the appropriate committees of Congress will hold hearings to consider these complex issues of public policy. The executive branch will carefully study these hearings as we shape our recommendations."

To this end the Communications Subcommittee of the Senate Committee on Commerce has announced that it would hold hearings on the proposed

Public Television Act of 1967 commencing April 11, 1967. In view of these developments it would appear desirable for the Commission to defer any determination of the matters covered by this inquiry pending resolution of the broad-reaching policy questions now under review by both the executive branch and Congress.

Respectfully submitted,

GT&E SERVICE CORPORATION

By W. R. Jarmon
W. R. JARMON
Vice President

730 Third Avenue
New York, New York 10017

April 3, 1967

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D. C. 20554

In the Matter of the Establishment of domestic non-common carrier communication-satellite facilities by non-governmental entities.	)))))	DOCKET NO. 16495

REPLY BRIEF OF GT&E SERVICE CORPORATION

GT&E Service Corporation, for and on behalf of the telephone operating companies of the General System, respectfully submits the following comments (1) in reply to various comments submitted in response to the first question set forth in the Commission's Notice of Inquiry (FCC 66-207), released March 3, 1966 herein and (2) in response to the questions set forth in paragraphs 3(b) and 3(d) of the Commission's Supplemental Notice of Inquiry (FCC 66-926), released October 21, 1966 herein:

I.

1. In its Brief submitted herein on August 1, 1966, GT&E Service Corporation set forth its position that this Commission, as a matter of law, is not empowered to authorize non-governmental, non-common carrier entities to construct and operate communication satellite facilities for the purpose of meeting their private or specialized domestic communications requirements.

2. The basis for this position, briefly stated, was (a) that with regard to space communications, either domestic or international, the Commission's powers under the Communications Act of 1934 (the "Communications Act") are to be exercised in accordance with the Communications

Satellite Act of 1962 (the "Satellite Act") and (b) that the powers conferred upon this Commission by the Satellite Act relate solely to the Communications Satellite Corporation ("ComSat") and other communications common carriers.

3. None of the comments and briefs of others who have made filings in this proceeding serve to refute the position advanced by GT&E Service Corporation.

4. One aspect of the matter, however, might be clarified. Some filings (see CBS Brief, pp. 3-4) have sought comfort and assurance in the statement of Senator Church, appearing at page 16362 of volume 108 of the Congressional Record (August 13, 1962), regarding the phrase "or if in the national interest" in §102(d) under the declaration of policy and purpose of the bill. But this statement of Senator Church must be read in context. For on the same page (16362) and immediately following the portion quoted by CBS, Senator Church goes on to say:

> "However, when it comes to the operative language of the bill itself, the all-important phrase 'or if otherwise required in the national interest' has been left out. The pertinent part of the bill, section 201(a)(6), reads:
>
> "(a) The President shall--
>
> "(6) take all necessary steps to insure the availability and appropriate utilization of the communications satellite system for such general governmental purposes as do not require a separate communications satellite system to meet unique governmental needs;
>
> "It will be seen, Mr. President, that the substantive part of the bill not only creates one monopoly, but requires the Government to use it, excepting only such Government use of a separate system as may be required to meet 'unique governmental needs.' All of the testimony before the Senate Foreign Relations Committee--that given by both the Secretary of State and the Secretary of Defense--bears out the fact that a very narrow definition is being given to the term 'unique governmental needs.' The legislative history on this

bill, made before the committee, makes it clear that this term is meant to embrace only functions of a highly classified nature, extremely restricted in their scope. In effect, the gateway meant to be left open in the bill's declaration of policy and purpose, is slammed almost shut in the substantive language of the bill itself.

"The amendment would correct this serious defect in the bill, by making the language of section 201(a)(6) conform with the language used in the last clause of section 102(d), adding 'or if otherwise required in the national interest' to the substantive provisions of the bill."

Further on, on p. 16363, Senator Church twice tried to reassure Senator Kefauver, as follows:

"The purpose of the amendment is to make the substantive language contained in section 201(a)(6) conform to the declaration of purpose contained in the preamble, in section 102(b), so that it will be perfectly clear that if future developments should, for one reason or another--now difficult to foretell--lead us to conclude it is either in the national interest or required for purposes of meeting unique governmental needs to establish an alternative system, passage of the bill would not preclude the Government from so doing."

and again as follows:

"Mr. CHURCH. Again I say to the Senator, if the amendment were agreed to, it would make the substantative language of the bill conform to the language in the preamble, and therefore would leave it open to the Government to establish an alternative system, either to meet unique governmental needs, or if otherwise required in the national interest. That would seem to me to be a sufficient answer to the Senator's inquiry."

This was also the understanding of the cosponsor of the Church amendment, Senator Lausche (108 Cong. Rec. 16363):

"The amendment which has been offered by the Senator from Idaho and myself provides that the Government may set up its own satellite communications system to supply unique needs, which means the transmission of coded and secret messages, and may set up a separate satellite communications system when the nationalinterest requires it."

Certainly if this amendment was deemed necessary to clarify the power of Government to set up a separate satellite communications system when the national interest requires it, there is no basis in the legislative history

of the Satellite Act for the contention that the declaration of policy in §102(d) somehow empowered the Commission to authorize non-governmental, non-common carrier, entities to establish their own communication satellite facilities for the purpose of meeting their private or specialized domestic communications requirements which momentarily may appear to be "in the national interest."

II.

5. As noted above, GT&E Service Corporation, in its Brief submitted herein on August 1, 1966, set forth its position that the Satellite Act not only governs the nature and extent of United States participation in international communications satellite services but also governs the nature and extent of non-Governmental domestic communications satellite services. Consistent with this position, GT&E Service Corporation asserts, with respect to the question set forth in paragraph 3(b) of the Commission's Supplemental Notice of Inquiry herein, that it is to the Satellite Act that one must look for legal restrictions on the Commission's power to authorize any communications common carrier or carriers to construct and operate communication satellite facilities for domestic communications services.

6. The Satellite Act is clear that only ComSat shall be authorized to construct and operate the space segment. The only legal restrictions on the power of the Commission to authorize any particular communications common carrier or carriers to construct and operate satellite earth stations would be those set forth in §201(c)(7) of the Satellite Act. Thus it is incumbent upon the Commission to determine, by application of

the "public interest, convenience, and necessity" standard, whether ComSat and/or one or more "authorized" communications common carriers,[1] should be authorized to construct any particular satellite earth station.

III.

7. Paragraph 3(d) of the Commission's Supplemental Notice of Inquiry herein raises the question whether the type of entity and service contemplated by the Ford Foundation proposal may be licensed under present statutes. The proposal advanced by the Ford Foundation in this proceeding would require this Commission to authorize a non-profit corporation to establish and operate domestic communications satellite facilities, including both the space segment (i.e., the satellites) and associated satellite earth stations, for the purpose of transmitting national non-commercial television (denoted as ETV by the Ford Foundation) and commercial television signals.

8. GT&E Service Corporation has set forth above its position that the Satellite Act governs the Commission's powers with respect to domestic communications satellite services and facilities. It is clear

---

[1] This Commission has said that "the term 'authorized carrier' denotes a more narrow class of persons or entities than the term 'communications common carrier.' The characteristic which distinguishes an authorized carrier from a communications common carrier is the function of providing communication services via satellite. While Section 103(7) of the Satellite Act affords a communications common carrier the opportunity to acquire the status of a carrier authorized to provide communication-satellite services, it does not follow that a mere declaration of intent on the part of such an entity automatically entitles it to such status. What is required is an appropriate application and an appropriate instrument of authorization issued from this Commission." FCC 66-1135.

that, under the Satellite Act, the non-profit entity proposed by the Ford Foundation cannot be licensed by this Commission under present statutes.

WHEREFORE, GT&E Service Corporation respectfully submits that the Satellite Act defines and limits the powers of this Commission with respect to United States non-governmental participation in both international and domestic communications by satellites; that this Commission, as a matter of law, is not empowered to authorize non-governmental, non-common carrier entities to construct and operate communication-satellite facilities for the purpose of meeting their private or specialized domestic communications requirements; that ComSat is the only non-governmental entity which may be authorized by this Commission to construct, own and operate communications satellites for purposes of domestic communications; and that only ComSat and those communications common carriers which are authorized by this Commission are eligible to apply for an ownership interest in any existing or proposed satellite earth station.

Respectfully submitted,

GT&E SERVICE CORPORATION

By _____
GEORGE E. SHERTZER
General Attorney

730 Third Avenue
New York, New York 10017

December 16, 1966

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D. C. 20554

In the Matter of the Establishment of domestic non-common carrier communication-satellite facilities by non-governmental entities.	)))))	DOCKET NO. 16495

SUPPLEMENTAL COMMENTS OF
GT&E SERVICE CORPORATION

GT&E Service Corporation, for and on behalf of the telephone operating companies of the General System, respectfully submits the following comments (a) supplementing its previously filed comments in response to the Commission's Notice of Inquiry (FCC 66-207) released March 3, 1966 and (b) in response to the Commission's Supplemental Notice of Inquiry (FCC 66-926) released October 21, 1966:

1. For the reasons set forth in its Brief filed herein on August 1, 1966 and supplemented by its accompanying Reply Brief, it is the position of GT&E Service Corporation that the Communications Satellite Act of 1962 (the "Satellite Act") defines and limits the powers of this Commission with respect to United States non-governmental participation in both international and domestic communications by satellite. From this it follows that:

a. This Commission, as a matter of law, is not empowered to authorize non-governmental, non-common carrier entities to construct and operate communication-satellite facilities for the purpose of meeting their private or specialized domestic communications requirements;

b. The Communications Satellite Corporation ("ComSat") is the only non-governmental entity which may be authorized by this Commission to construct, own and operate communications satellites for purposes of domestic communications; and

c. Only ComSat and those communications common carriers which are authorized by this Commission are eligible to apply for an ownership interest in any existing or proposed satellite earth station.

2. In paragraph 3(a) of its Supplemental Notice of Inquiry, the Commission requests a description, to the extent available, of existing plans for using communications satellite facilities to meet domestic needs. GT&E Service Corporation has previously advised the Commission of its inability to provide the Commission with meaningful estimates, in terms of specific circuit quantities, of the extent of domestic utilization of communication satellite circuits within the next fifteen years which would not be based on information and estimates prepared by the principal long line carrier. It is evident, moreover, that General System plans for use of communications satellite facilities for domestic needs must necessarily depend upon the satisfactory resolution of several factors, among which are the following:

a. The legal and regulatory pattern established by this Commission and/or Congress for the provision of domestic common carrier communications services;

b. The growth and development of General System communications operations; and

c. The development of equipment and techniques which would further limit the possibility of electromagnetic interference between satellite and terrestrial microwave facilities.

3. Even though it is difficult to delineate with precision General System plans for domestic use of communications satellite facilities on a circuit by circuit basis, the General System is confident that it has a role -- indeed a significant role -- to play in domestic satellite communications. It may be recalled that prior to the introduction of the Administration bill that ultimately led to the Satellite Act, the General System stood alone in actively contending both before this Commission and before Congressional Committees that satellite communication facilities would be used to satisfy domestic communications requirements and, therefore, that the domestic carriers should not be excluded from an opportunity to participate in the full development of this technology.

4. It must not be overlooked that there is more to domestic use of satellite communications than the provision of additional high volume, low cost communications channels between specific points. This new technology, if properly integrated into the existing nationwide communications common carrier network, will not only result in lowered

costs and higher quality long distance transmission of vast quantities of voice, data and video, it also will permit the establishment of radically new service offerings vitally affecting and changing the nature of local telephone exchange service and indeed the way of life in the American home. As Dr. Leonard S. Sheingold recently said,

> "By the year 2000, telephone facilities should be conveying tremendous amounts of diversified information to and from the home -- utility meter data for billing purposes, automated supermarket orders placed through pushbutton dial codes, banking and credit information, and similar services.
>
> "A truly 'new' city could assure that all of these services were available, as well as video telephones for every family, electronic delivery of mail, newspapers, and magazines through facsimile machines in the home, and telephone selection of special educational television programs for the individual home console.
>
> "Most of us will live to witness a communications satellite linked to a ground facsimile system transmitting letters and newspapers to virtually any location on earth within a matter of minutes. Similarly, we shall see electronic systems used in urban centers to measure and regulate air-pollution levels.
>
> "Before this capability can be properly utilized to benefit the city of the future, however, the system concepts must be established together with technical, financial, and legal details."

5. In paragraph 3(c) of its Supplemental Notice of Inquiry, the Commission requests comments on the question as to the circumstances under which the Commission should authorize, as a matter of policy, any communications common carrier or carriers to construct and operate communication satellite facilities for domestic use, having due regard to five enumerated factors. In responding to this request, GT&E Service Corporation finds it necessary to differentiate between the space segment of any domestic communications satellite system and the associated satellite earth stations. With respect to the space segment, GT&E Service

Corporation reiterates its position, set forth in its August 1, 1966 filing herein, that only the United States Government and ComSat should be empowered to construct and operate communications satellites.

6. With respect to satellite earth stations it would appear that §201(c)(7) of the Satellite Act, by requiring the Commission to make a determination, on the basis of the public interest, convenience and necessity standard, whether to authorize a particular "authorized" carrier, or ComSat, or ComSat and one or more "authorized" carriers jointly, but without preference to either ComSat or the carriers, provides a desirable degree of flexibility in the initial stages of development of domestic satellite systems. The Commission's recently adopted interim earth station policy, applicable to international satellite communications, under which ComSat, due to its primary responsibility for the establishment of the system, would have a 50% ownership interest in the stations and the remaining 50% interest is apportioned among the interested carriers in proportion to their expected use of the particular earth station, would also appear to be a desirable starting point with which to undertake the development of domestic satellite systems. This would be particularly true if the Commission gave recognition to the fact that, not only may we be entering "a new era where current use may not be indicative of future use" and where the effects of policy decisions concerning competitive service offerings may not be fully apparent, but also that strict application of an ownership related to use standard -- without affording recognition of the contribution made to the nationwide system by those carriers providing the tributary and "feeder" facilities -- would tend to create and perpetuate the very dominance by the single, large, long-haul toll carrier which the draftsmen of the Satellite Act sought to avoid.

7. With respect to several of the enumerated factors set forth in paragraph 3(c) of the Supplemental Notice of Inquiry, GT&E Service Corporation submits that it would be impossible -- even if desirable -- to formulate at this time hard and fast policies with respect to the relative weight to be given to these considerations in connection with the Commission's consideration of any particular application or set of applications. What is recommended is an ad hoc, case-by-case approach.

8. This is not to say, however, that some generalizations may not be made. Thus, for the present and immediate future, it appears that communications satellite facilities may have a comparative advantage, from the standpoint of circuit cost and quality, over existing terrestrial facilities, in the provision of long-haul, one-way services, such as video and high-speed data. Consequently, applications for use of satellite facilities to provide such services would appear, for the present and immediate future, to have priority over applications for use of satellite facilities for short-haul, lower density, two-way services. But all is relative and meaningful generalization is difficult in the absence of a specific, factual application.

9. With respect to the factor set forth in paragraph 3(c)(2) of the Supplemental Notice of Inquiry, GT&E Service Corporation maintains that there is a recognized public interest in making the benefits of new technology available to all communications users and not just the relatively few large volume users. This consideration would tend to favor the general purpose carrier over the special purpose carrier in connection with any particular application. Indeed, it is only in this manner that the continued growth and health of the present and future public communications network,

a national resource, may be assured. Moreover, means should be devised, as they have been in the international satellite communications area, for the continued establishment of rates in such a fashion as to reflect a composite of the various costs of furnishing the service by various facilities.

10. With respect to the factor set forth in paragraph 3(c)(3), it is obvious that, unlike the international communications area, there are existing, long-distance, domestic terrestrial communications facilities of high capacity which can be utilized to provide certain of the services which otherwise could be provided by means of satellite facilities. It is also obvious that, in part due to this existing and ever-increasing terrestrial network, the problems of electromagnetic interference pose a definite limitation upon the unrestricted domestic use of satellite facilities. These considerations also would tend to favor development of domestic satellite communications on an integrated basis with existing terrestrial facilities, rather than to superimpose over said facilities, a multiplicity of special purpose satellite systems. Moreover, considerations of national security would favor such integration.

11. GT&E Service Corporation submits that ideally it would be desirable for the domestic communications satellite system to be entirely separate and apart from the facilities of the global system. However, limitations imposed by electromagnetic interference problems and other factors may make this idea unattainable. The mere fact, however, that the same earth station may be used both for domestic and for international satellite traffic does not mean that the global system, as such, would be utilized for domestic traffic. Separate satellites could and should be utilized for domestic operations.

12. GT&E Service Corporation submits that the authorization of qualified communications common carriers and ComSat to construct and operate communication satellite facilities for domestic communications services, in accordance with the statutory scheme of the Satellite Act, would be consonant with the policies and goals set forth in the Satellite Act. Moreover, such authorization would appear to violate no obligations of the United States Government as a signatory to the Executive Agreement Establishing Interim Arrangements for a Global Commercial Communications Satellite System. ComSat and the United States Government are more qualified, however, to provide guidance to the Commission in this area.

13. Some separate comments seem appropriate on the proposal advanced by the Ford Foundation in its August 1, 1966 filing herein. The Ford Foundation's primary interest is in finding a means of financing the needs and promise of educational television. This is a matter clearly beyond the scope of the inquiry originally proposed by the Commission in this proceeding. It would appear, moreoever, that this matter should more appropriately be considered by another forum, such as Congress, which is more capable of evaluating the relative need for, and alternative modes of obtaining, public support and funds. To utilize any financial savings to be derived from the commercial utilization of space technology in domestic communications for the benefit of one particular sector or segment of the public, i.e., the educational broadcasters, is a radical departure from recognized practice and policy in the regulated communications industry and does not appear to further the Congressional policy set forth in §102(b) of the Satellite Act to reflect "the benefits of this new technology in both quality of services and charges for such services."

14. It being understood that the Ford Foundation is filing revisions to its August 1, 1966 technical proposal, comments thereon, if deemed appropriate, will be filed with our further comments on February 1, 1967.

Respectfully submitted,

GT&E SERVICE CORPORATION

By W. R. Jarmon

W. R. JARMON
Vice President

730 Third Avenue
New York, New York 10017

December 16, 1966

Before The

FEDERAL COMMUNICATIONS COMMISSION

Washington, D. C. 20554

In the Matter of	)	
	)	
Establishment of domestic non-common carrier communication satellite facilities by non-governmental entities	)	Docket No. 16495

BRIEF OF
HAWAIIAN TELEPHONE COMPANY

HAWAIIAN TELEPHONE COMPANY (Hawaiian) submits the following brief in response to paragraph 4(a) of the Commission's Notice of Inquiry in this docket released March 3, 1966.

As a matter of law, the Commission has no power to promulgate policies and regulations looking towards the authorization of non-governmental entities (other than the communications common carriers and ComSat) to construct and operate communications satellite facilities for the purpose of meeting their private or specialized domestic communications requirements.

It seems obvious that the Communications Satellite Act of 1962 (Satellite Act) was intended as a comprehensive piece of legislation to cover all participation by United States entities in communications satellite systems. See

Section 102(c). It was intended to apply to the domestic, as well as the international field. See Section 102(d). It does not contemplate any United States participants in the space segment other than ComSat.

With respect to United States participation in the satellite system, the Communications Satellite Act established ComSat as a monopoly to represent the United States' interest, at least in the space segment of the satellite system. President Kennedy's letter to Congress dated February 7, 1962 states that the system is by nature a "Government-created monopoly." Similarly, Deputy Attorney General Katzenbach's letter to Senatore Pastore dated May 7, 1962 states that the establishment of the communications satellite system "involves the creation of a monopoly." The Commission has held in Docket No. 16058 (Paragraph 20 of Memorandum Opinion and Statement of Policy released July 21, 1966) that ComSat has a virtual statutory monopoly position with respect to the operation of the space segment of the commercial communications satellite system, at least insofar as international common carrier communications services are concerned.

The whole thrust of the Satellite Act is towards a single commercial communications satellite system, not a multiplicity of systems. See Sections 102(a), 103(1) and

201(a)(1), all of which refer to a single commercial communications satellite system. There is no reference of any kind to another communications satellite system to be constructed and operated by anyone other than ComSat except in Section 102(d) which provides:

> "(d) It is not the intent of Congress by this chapter to preclude the use of the communications satellite system for domestic communication services where consistent with the provisions of this chapter nor to preclude the creation of additional communications satellite systems, if required to meet unique governmental needs or if otherwise required in the national interest." 47 U.S.C. § 701(d), Pub.L. 87-624, Title I, § 102, Aug. 31, 1962, 76 Stat. 419.

The purpose of this section is described in Senate Report No. 1584 (June 11, 1962, to accompany H. R. 11040) as follows:

> "Subsection (d) originally read that it is not the intent of Congress to preclude the creation of additional communication satellite systems, if required to meet unique governmental needs or if otherwise required in the national interest. The committee amended this subsection to provide also that nothing in this act shall preclude the use of the system for domestic communication services where consistent with the provisions of the act. This clarification was made to avoid any possible inference that may be drawn from the other provisions of the bill that Congress had made a policy determination that use of the system be limited to international communications. While it is unlikely that the system will be usable initially for domestic services in the United States because of technical and economic limitations, it is conceivable that eventually use of the system for domestic services may become feasible and entirely consistent with the act" (p. 14).

It is clear from the language of Section 102(d) and from the Committee Report that additional communications satellite systems would be limited to those required to meet unique governmental needs or otherwise in the national interest. A proposal such as the one by American Broadcasting Company for a domestic satellite system to be utilized for its own purposes does not meet this test. It is also clear from the language of Section 102(d) and from the Committee Report that "the communications satellite system" described in the Act could be used for domestic communications services.

Finally, there is nothing in the Satellite Act which gives the Commission power to authorize any private entity other than ComSat or the communications common carriers to construct and operate any portion of the communications satellite system. Sections 201(c)(9) and (10), for example, refer to additions to be made by ComSat or the carriers with respect to the facilities of the system or the satellite terminal stations. There is no reference of any kind to additions or new systems to be established by parties other than ComSat or the carriers, with the exception of the

separate governmental system which is referred to in Sections 102(d) and 201(a)(6).

Respectfully submitted,

HAWAIIAN TELEPHONE COMPANY

/s/ Omar L. Crook

By_____
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Attorneys for Hawaiian
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August 1, 1966

FOR ACTION	INITIAL	ANS. BY DATE
AUG 2 - 1966		
FOR INFO	INITIAL	FILE
		FOLLOW UP
		TO DATE

Before the

FEDERAL COMMUNICATIONS COMMISSION

Washington, D. C. 20554

In the Matter of	)	
	)	
Establishment of domestic non-common carrier communication-satellite facilities by non-governmental entities	)))	Docket No. 16495

COMMENTS OF
HAWAIIAN TELEPHONE COMPANY

HAWAIIAN TELEPHONE COMPANY (Hawaiian) submits the following comments in response to the specific questions set forth in the Commission's Notice of Inquiry in this docket released March 3, 1966. Since the proceeding is not concerned with the question of whether communications common carriers may be authorized to construct and operate communications satellite facilities for domestic purposes (see paragraph 4(a) of the Notice of Inquiry), the reference to non-governmental entities in the following comments means non-governmental entities other than communications common carriers, including ComSat.

(a) As a matter of law, the Commission has no power to authorize non-governmental entities to construct and operate communications satellite facilities for domestic purposes. A separate legal brief on this matter is attached.

(b) Any such authorization would be inconsistent with the policies and goals set forth in Section 102 of the Communications Satellite Act of 1962 (Satellite Act), particularly the policy to establish, as expeditiously as practicable, a commercial communications satellite system which will be responsive to the public needs and requirements; the policy in favor of efficient and economical use of the electromagnetic spectrum, the policy towards the reflection of benefits in the new technology in both the quality of service and charges for the service (see also Section 201(c)(5) with respect to economies made possible by a communications satellite system), and the policy to maintain and strengthen competition in the provision of communications services to the public. One or more private satellite systems owned and operated by non-governmental entities for their private or specialized domestic communications requirements would compete and interfere with the global communications network, would authorize portions of the frequency spectrum for private purposes, would divert business from ComSat and the common carriers, would interfere with the reflection of the benefits of satellite technology in quality of services and charges for services, and would weaken competition in the provision of communications services to the public.

(c) As a matter of policy, it would be contrary to the public interest to authorize non-governmental entities of the type under consideration to construct and operate satellite communications facilities because:

(1) The amount of the frequency spectrum is limited. "The limited frequency spectrum must be properly utilized and managed." (Statement of James D. O'Connell, Hearings before the Committee on Aeronautical and Space Sciences, United States Senate, 89th Cong., 2d Sess., January 25 and 26, 1966, p. 94). Private satellite systems would necessarily be wasteful of the frequency spectrum which should be conserved and utilized for the benefit of all of the using public, not for a few large private users.

(2) The American Broadcasting Company (ABC) proposal (which the Commission returned without action) evidently contemplated a receiving station in Hawaii owned by ABC or an affiliate. The existing satellite earth station in Hawaii or additions thereto or new stations constructed by ComSat and/or the carriers will be available to provide the services contemplated. ComSat has

been discussing a domestic satellite system with AT&T and Western Union. If such a system is established, service to Hawaii may be included. It is premature at this stage to comment on the specific provisions which will be available for direct TV broadcasting to Hawaii, but Hawaiian believes that any need for such a service can and will be provided by ComSat and the communications common carriers.

(3) As a full service common carrier with an obligation to serve all of the using public, Hawaiian has a fundamental objection to the siphoning off of its revenues by large users who propose to operate their own private communications systems. This can only result in increasing the costs to the general public for message and exchange services. Hawaiian expects to provide private line facilities for the television networks within the scope of its general tariff offerings as soon as satellite facilities are available. Basically, Hawaiian's objections here are the same as it made in Docket 16058 with reference to non-carrier entities as authorized users of ComSat. Hawaiian's pleadings

in that proceeding are incorporated herein by reference and made a part hereof. Hawaiian's ability to reduce rates because of the availability of satellite facilities depends on its having the full range of both satellite and cable business.

(4) The authorization of a private satellite system would result in no potential benefits to the public. Clearly, a private satellite system for large users would increase the over-all cost of service to the public and likely would have a degrading effect on service because of its use of the limited frequency spectrum.

(d) The importance of coordinated and efficient use of the electromagnetic spectrum and the technical compatability of any satellite system with the existing communications facilities is emphasized in the Satellite Act. See Sections 102(b) and 201(a)(7). Senate Report No. 1584 (June 11, 1962, to accompany H.R. 11040, p. 8) points out under "Legislative History" that there is one electromagnetic spectrum, that the spectrum is finite and uniformly distributed throughout the universe, that it is always and already distressingly crowded, and that all telecommunications

services, both present and potential, must use frequencies, and in a manner that does not interfere with other services. In Hawaii the frequency assignment is especially difficult because of the unique geographical situation and the limited land areas available for earth stations. See Hawaiian's comments in Dockets 13522, 15722 and 16406. The location chosen for the ComSat earth station at Paumalu, Oahu, was the best found on the Island of Oahu, from an interference standpoint, after an extensive survey of many possible sites. It is a matter of record that even this site precludes the use by Hawaiian of the 3700-4200 Mc/s and 5925-6425 Mc/s common carrier bands in the northwestern portion of the Island of Oahu and the southeastern portion of the Island of Kauai. An earth television receiving station in Hawaii operating in the 3700-4200 Mc/s band could prejudice future common carrier operations. Available frequencies in the 5925-6425 Mc/s band will be exhausted in the vicinity of Honolulu by 1972, and it will then be necessary to use the 3700-4200 Mc/s band for common carrier microwave facilities. If a satellite receiving station using this band has been located on Oahu, future use by Hawaiian of this band for its terrestrial facilities would be likely to cause harmful interference to such receiving station. Accordingly, it is essential as a practical matter for the Commission to exercise control over

location of receiving stations, as well as transmitting stations, so their existence does not preclude the necessary expansion of Hawaiian's common carrier microwave facilities in the future. Items 3 and 4 of paragraph (d) of the Notice of Inquiry should be expanded to include consideration by the Commission of the location of new satellite earth stations with respect to both the existing and future common carrier microwave complex, at least in Hawaii.

Respectfully submitted,

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August 1, 1966

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D. C. 20554

In the Matter of	)	
	)	
Establishment of domestic non-common carrier communication-satellite facilities by non-governmental entities.	)	DOCKET NO. 16495

COMMENTS OF GT&E SERVICE CORPORATION

GT&E Service Corporation, for and on behalf of the telephone operating companies of the General System, respectfully submits the following comments in response to the Commission's Notice of Inquiry (FCC 66-207) released March 3, 1966:

1. For the reasons set forth in the accompanying brief, it is the position of GT&E Service Corporation that the Commission, as a matter of law, is not empowered to authorize non-governmental non-common carrier entities to construct and operate communication-satellite facilities for the purpose of meeting their private or specialized domestic communications requirements.

2. Even if the Commission legally had such power, it is the position of GT&E Service Corporation that all persons or entities in the United States, other than the United States Government and ComSat, should be prohibited from constructing and operating communication satellites. The number of channels available for satellite communications is finite. The Commission is charged with the responsibility for seeing that the channels are used in the manner which is most consistent with the public interest, convenience and necessity. The United States is not the only nation interested in making use of this

limited number of channels. As a practical matter, it is absolutely essential that all space communications, other than certain government communications, be directed through the ComSat satellites. As the number of channels in use approaches the maximum feasible number, this Commission would find itself hard pressed to properly allocate their use if several entities were then maintaining their own private communication satellites. In order for the Commission to continue to maintain proper regulation, it is essential that non-governmental space communications be restricted to the ComSat system.

3. Further, the Commission cannot favor one large private user over other similarly situated users, all of whom could thereafter require and obtain private satellites. Moreover, if the Commission were to permit private users to have their own satellites, surely the individual common carriers should be entitled to their own satellites. Such a result would be contrary to the purpose and intent of the Communications Satellite Act of 1962. The result of permitting such private satellite communications systems by all such large users would mean a serious weakening of the common carriers and a consequent increase of rates to the smaller users. The logic of this position has heretofore been adopted by the Commission at paragraph 31 of its Memorandum Opinion and Statement of Policy in Docket No. 16058, issued July 21, 1966.

Respectfully submitted,
GT&E SERVICE CORPORATION

By _____
GEORGE E. SHEFFER
General Attorney

By _____
DONAL F. McCARTHY
Senior Attorney

July 29, 1966

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Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D. C. 20554

In the Matter of	)	
	)	
Establishment of domestic non-common carrier communication-satellite facilities by non-governmental entities.	)	DOCKET NO. 16495

BRIEF OF GT&E SERVICE CORPORATION

GT&E Service Corporation, for and on behalf of the telephone operating companies of the General System, respectfully submits the following comments in response to the first question set forth in the Commission's Notice of Inquiry (FCC 66-207), released March 3, 1966 herein, regarding the construction and operation of communication-satellite facilities by entities for the purpose of meeting their private or specialized domestic communication requirements:

1. The Commission does not have the power, under the Communications Satellite Act of 1962 (the "Satellite Act"), to authorize non-governmental non-common carrier entities to construct and operate communication-satellite facilities for the purpose of meeting their private or specialized domestic space communications requirements. The powers conferred upon this Commission by the Satellite Act relate solely to the Communications Satellite Corporation ("ComSat") and other communications common carriers. Thus, Section 201(c) of the Satellite Act provides that the Commission shall:

> "(1) insure effective competition. . .in the procurement by the corporation and communications common carriers of apparatus, equipment and services required for the establishment and operation of the communications satellite system and satellite terminal stations. . ..

"(2) insure that all present and future authorized carriers shall have nondiscriminatory use of, and equitable access to, the communications satellite system and satellite terminal stations. . .;

"(3) . . .require the establishment of . . . communication [with particular foreign points] by the corporation and the appropriate common carrier or carriers;

"(4) insure that facilities of the communications satellite system and satellite terminal stations are technically compatible and interconnected operationally with each other and with existing communications facilities;

"(5) prescribe such accounting regulations and systems and engage in such ratemaking procedures as will insure that any economies made possible by a communications satellite system are appropriately reflected in rates for public communication services;

"(6) approve technical characteristics of the operational communications satellite system to be employed by the corporation and of the satellite terminal stations;

"(7) grant appropriate authorizations for the construction and operation of each satellite terminal station, either to the corporation or to one or more authorized carriers or to the corporation and one or more such carriers jointly, as will best serve the public interest, convenience, and necessity. . . .

"(8) authorize the corporation to issue any shares of capital stock, . . . or to borrow any moneys, or to assume any obligation in respect of the securities of any other person, upon a finding that such issuance, borrowing, or assumption is compatible with the public interest, convenience, and necessity and is necessary or appropriate for or consistent with carrying out the purposes and objectives of this chapter by the corporation;

"(9) insure that no substantial additions are made by the corporation or carriers with respect to facilities of the system or satellite terminal stations unless such additions are required by the public interest, convenience, and necessity;

"(10) require, in accordance with the procedural requirements of section 214 of the Communications Act of 1934, as amended, that additions be made by the corporation or carriers with respect to facilities of the system or satellite terminal stations where such additions would serve the public interest, convenience, and necessity; . . . ." [Emphasis added.]

Nowhere in the Satellite Act is the Commission empowered to authorize any

persons other than communications common carriers and ComSat to construct and operate communication-satellite facilities.

2. The Commission does not have the power under the Communications Act of 1934, as amended (the "Communications Act"), to authorize non-governmental, non-common carrier entities to construct and operate communication-satellite facilities for the purpose of meeting their private or specialized domestic communications requirements. With regard to space communications, the Commission's powers under the Communications Act are to be exercised in accordance with the Satellite Act. Thus, Section 201(c) of the Satellite Act introduces the above-referenced itemization of the Commission's powers as follows:

> "(c) the Federal Communications Commission, in its administration of the provisions of the Communications Act of 1934, as amended, and as supplemented by this Act, shall --"
> [Emphasis added.]

Moreover, Section 401 of the Satellite Act provides that whenever the application of the provisions of the Satellite Act shall be inconsistent with the application of the provisions of the Communications Act, the provisions of the Satellite Act shall govern.

3. Support for this interpretation may be found in the legislative history of the Satellite Act. In its initial inquiry in Docket 14024 and in testimony before Congressional committees in 1961, the Commission took the position that it already had ample powers in the field of space communications under the Communications Act. See, e.g., Hearings on Space Communications and S. J. Res. 32, Before the Communications Subcommittee of the Senate Committee on Commerce, 87th Cong., 1st Sess. 7-8, 78 (August 1, 1961). It soon became evident, however, that the problems concerning the economics, technology and utilization of space communications could not be resolved solely within the framework of the operating methods and values of the United States. As

noted in the February 25, 1962 staff report of the Senate Committee on Aeronautics and Space Sciences at page 1:

> "It is now realized that the interest in communication satellites goes far beyond those who are interested in communications alone. As part of the overall space program of the United States, the communication satellite program becomes an important part of the U.S. foreign policy. It has a vital bearing on the stature of U.S. technology in the eyes of the world and the effect of success or failure in this U.S. program on cooperation with other governments in general."

Consideration of these broader aspects resulted in new legislation -- the Satellite Act. No provision is made in the Satellite Act for privately-owned non-common carrier satellite or ground facilities, either domestic or international. Since the whole scheme of the Satellite Act was to provide for an orderly and coordinated development of space communications, it is evident that the omission of any reference to privately-owned non-common carrier communications facilities was intentional, the purpose of Congress being to limit non-governmental participation in space communications to ComSat and communications common carriers. See in this connection the June 11, 1962 Report of the Senate Commerce Committee at page 10:

> "It is important that the roles of private enterprise and the Government be defined at this time and that an appropriate instrumentality be created by which such national policies are to be effected."

The same report also states, at pages 11-12, that the powers and responsibility of the President, NASA, and the Commission with respect to ComSat are included in the statute because of "the need for Federal coordination, planning and regulation in order to carry out the purposes of the legislation." In discussing the Commission's responsibility for regulation, the report points out, at page 12, that the Commission will have authority to regulate both ComSat and the common carriers "insofar as they may be authorized by the Commission to

construct and operate satellite terminal stations. . .Thus, there will be comprehensive regulation of all entities engaged in providing communication satellite facilities." (Emphasis added.)

4. The Satellite Act sets forth the pattern for non-governmental participation in satellite communications, whether such communications be deemed to be international or domestic in scope. In testimony before various Congressional committees -- among them, the House Committee on Interstate and Foreign Commerce, the Subcommittee on Communications of the Senate Commerce Committee, and the Senate Committee on Aeronautical and Space Sciences -- on the various satellite communications bills in 1962, the Commission evidenced its concern that any legislation adopted not unnecessarily restrict or prejudice the adaptability of the satellite system to domestic use at some future date. See, e.g., Hearings on S. 2650 and S. 2814, Before the Senate Committee on Aeronautical and Space Sciences, 87th Cong., 2d Sess. 205 (February 28, 1962). The Congress adopted this suggestion and provided in Section 102(d) of the Satellite Act that it was "not the intent of Congress by this Act to preclude the use of communications satellite system for domestic communication services where consistent with the provisions of this Act." (Emphasis added.) The June 11, 1962 Report of the Senate Commerce Committee stated, at page 14, that the Committee had added this language in order to:

> ". . .avoid any possible inference that may be drawn from the other provisions of the bill that Congress had made a policy determination that use of the system be limited to international communications. While it is unlikely that the system will be usable initially for domestic services in the United States because of technical and economic limitations, it is conceivable that eventually use of the system for domestic services may become feasible and entirely consistent with the act."

5. It was not the intention of Congress to leave the door open to

a proliferation of private non-common carrier satellite systems when it provided, also in Section 102(d), that the Satellite Act was not intended "to preclude the creation of additional communications satellite systems, if required to meet unique governmental needs or if otherwise required in the national interests." While private users may wish to include themselves among the beneficiaries of this provision, it is clear that the separate systems spoken of in the above Section include only governmental systems owned and operated by and for the benefit of the United States Government. (See in this connection the July 24, 1961 Statement of the President on Communications Satellite Policy, which appears at page 25 of the Senate Commerce Committee Report of June 11, 1962.) This provision has been so interpreted by this Commission. (See Memorandum Opinion and Statement of Policy released July 21, 1966 in Docket No. 16058 at paragraph 25.)

6. To permit a private user to construct and maintain its own domestic satellite system would be inconsistent with the expressed legislative intent. In its July 21, 1966 Statement of Policy in Docket No. 16058, the Commission decided on the policy that direct access to ComSat is generally to be limited to communications common carriers, since ComSat's role is that of a carrier's carrier. Leasing of ComSat's channels directly to private users was ruled out, subject only to possible future exceptions. Even the United States Government has been barred from routine direct arrangements with ComSat. The Commission pointed out that the statutory plan envisions a coordinated communications network, making use of satellite facilities together with cable, microwave and other facilities. Communications for "general governmental purposes" are to be channeled through the carriers in order to effectuate this idea of coordinated network. If the United States Government is to be generally barred from leasing channels directly from ComSat, it follows a fortiori that a private non-common carrier entity should be barred from maintaining its own satellite system.

WHEREFORE, GT&E Service Corporation, for the reasons set forth above, respectfully submits that the Commission, as a matter of law, is not empowered to authorize non-governmental non-common carrier entities to construct and operate communication-satellite facilities for the purpose of meeting their private or specialized domestic communications requirements.

Respectfully submitted,

GT&E SERVICE CORPORATION

By George E. Sheitzer

GEORGE E. SHEITZER
General Attorney

By Donal F. McCarthy

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July 29, 1966

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D. C. 20554

In the Matter of	)	
	)	
Establishment of domestic non-common carrier communication-satellite facilities by non-governmental entities	)	DOCKET NO. 16495

FURTHER COMMENTS OF GENERAL SYSTEM

GT&E Service Corporation ("General"), for and on behalf of the telephone operating companies of the General System, respectfully submits the following comments in response to the Commission's Order (FCC 67-989) released August 29, 1967, which invited comments on the proposal of the Communications Satellite Corporation ("ComSat") for a Pilot Demonstration Program:

1. In its comments heretofore filed herein dated July 29, 1966, December 16, 1966 and April 3, 1967, General has consistently asserted that the Communications Satellite Act of 1962 was applicable to domestic as well as international satellite communications. Thus, General's previous filings herein have contemplated that ComSat should be the entity owning and operating the space segment of any domestic communications satellite system and that ownership of associated earth stations would be determined on the basis set forth in the Satellite Act--to wit, the carriers or ComSat or both.

2. In its comments of April 3, 1967, General suggested that FCC action be deferred in view of pending legislative proposals before the Congress. It has since become evident, however, that Congress will not resolve this question in connection with its consideration of the Public Television Act of 1967. (See, for example, Hearings Before the

House Committee on Interstate and Foreign Commerce, 90th Cong., 1st Sess., Ser. No. 90-9, at 231-232, 235 (1967).

3. Accordingly, legislative consideration of the Public Television Act of 1967 no longer should serve to postpone Commission consideration and implementation of the ComSat Pilot Demonstration Program.

4. In the meantime the views of the President have been made clear. In his message on communications policy of August 14, 1967 the President noted that the space segment of a communications system is international by its very nature and emphasized that we should take no action in the establishment of a domestic system which is incompatible with our support for a global system. This pronouncement by the President is consistent with the views heretofore advanced in this proceeding by General. To the extent that the ComSat Pilot Demonstration Program would result in the operation of the space segment of the pilot program by ComSat in a manner consistent with existing legislation and international arrangements, the ComSat Pilot Demonstration Program would likewise be in accord with and in furtherance of the views of the President. ComSat's stated intention to own the facilities, as a trustee and on an interim basis, pending final determination of such questions as the ultimate ownership of the ground terminals and related terrestrial communications facilities, would permit this nation to move forward with a domestic satellite system consistent with our international obligations. It would also afford the means for this Commission as well as the Presidential task force to have available to it information

and experience on the basis of which the major policy questions under consideration can be more readily and expeditiously resolved.

Respectfully submitted,

GT&E SERVICE CORPORATION

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By _____
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September 15, 1967.

CERTIFICATE OF SERVICE

I hereby certify that on the 15th day of September, 1967, I served a copy of the foregoing Comments of GT&E Service Corporation upon the persons named below, by mailing by United States mail, postage prepaid, a true and exact copy thereof to them addressed as follows:

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DONAL F. McCARTHY

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D. C. 20554

In the Matter of Establishment of domestic communications satellite facilities by non-governmental entities.	)	Docket No. 16495

FURTHER COMMENTS OF
HAWAIIAN TELEPHONE COMPANY

Pursuant to the Commission's Order adopted August 28, 1967, Hawaiian Telephone Company ("Hawaiian") files these further comments with respect to ComSat's pilot demonstration program.

Hawaiian has participated in this proceeding from the beginning and reaffirms the position set forth in its Initial Comments and Brief filed August 1, 1966 and in its Reply Comments filed December 16, 1966, As indicated in the Reply Comments, if a domestic satellite system results in several gateways for overseas communications, Hawaiian may make some use of the domestic system for haul to the gateway closest to the Mainland termination of the call.

Hawaiian supports ComSat's proposal for a pilot demonstration program for a domestic communications satellite system. Hawaiian believes that the pilot program should contribute to further developments in the art of satellite

communications without prejudicing the ultimate decisions on the issues which have been raised in this proceeding. Under ComSat's proposal, ComSat would acquire specific sites and the necessary equipment as trustee for the party or parties who are ultimately chosen to acquire, own and operate long distance domestic facilities (Reply Statement of March 31, 1967, p. 12). The proposal is stated to be without prejudice to the ultimate decisions by Congress and the Commission as to the conformation of a domestic satellite system or systems and as to the identity of the operator or operators (Reply Statement dated March 31, 1967, p. 3). It is proposed that the facilities of the pilot program would be interconnected with the facilities of the appropriate terrestrial carrier at an interface located at the earth station (Response dated July 26, 1967, p. 39).

In order not to undermine the basic carrier's carrier concept adopted by the Commission in the Authorized User Matter (Docket 16058, Memorandum Opinion and Statement of Policy released July 21, 1966 and Memorandum Opinion and Order released February 8, 1967), it is important that users of the domestic satellite system be limited to the terrestrial carriers in all ordinary circumstances and that the procedure specified in the Authorized User decision covering any request

by ComSat for authorization to provide services directly to any non-carrier user should be followed. Any authorization to ComSat to institute its pilot demonstration program should make it clear that the principles of the Authorized User decision are applicable to the domestic satellite system as well as to the international system.

Respectfully submitted,

HAWAIIAN TELEPHONE COMPANY

By /s/ Warren E. Baker
Warren E. Baker
Its Counsel

Dated: Washington, D.C.
September 18, 1967

CERTIFICATE OF SERVICE

I hereby certify that on the 18th day of September, 1967, I served a copy of the foregoing Further Comments of Hawaiian Telephone Company upon the persons named below, by mailing by United States mail, postage prepaid, a true and exact copy thereof to them addressed as follows:

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Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D. C. 20554

In the Matter of	)	
	)	
Establishment of domestic non-common carrier communication-satellite facilities by non-governmental entities	)	DOCKET NO. 16495

FURTHER COMMENTS OF GENERAL SYSTEM

GT&E Service Corporation ("General"), for and on behalf of the telephone operating companies of the General System, respectfully submits the following comments in response to the Commission's Order (FCC 69-158) released March 3, 1969, which invited comments on certain Additional Comments of the General Electric Company ("GE"):

1. In its comments most recently filed herein dated September 15, 1967, General restated its consistent position in previous filings herein that, as a matter of law, the Communications Satellite Corporation ("ComSat") should be the entity owning and operating the space segment of any domestic communications satellite system and that ownership of associated earth stations should be determined on the basis set forth in the Communications Satellite Act of 1962--to wit, the carriers or ComSat or both. General's position relative to ComSat's ownership is of course founded on the more basic position that satellite communications, whether international or domestic, are a common carrier function.

2. Just as General has previously stated and restated its position herein, so have the other parties to this proceeding, including GE. Now comes the new GE filing, promising much and giving little.

3. The basic thrust of the GE document is that a new and remarkable range of record services can be provided by non-common carriers or by newly developed competing common carriers. However, the service to be provided is, generally speaking, the same service that has either always been provided or is presently being planned by common carriers. For example, GE envisions multiple access digital services (MADS). The statement is made that record services provided under MADS "would be provided via satellite...eliminating most of the present hierarchy of switching on the terrestrial network, and realizing substantial and significant economies." (GE Additional Comments, p. 7) But the foregoing quotation completely overlooks the fact that any domestic satellite system must operate in an environment the outer limits of which are described by the fact that there will be a limited number of earth stations requiring some form of microwave or hardwire surface carriage to get the signal from the earth station to the ultimate recipient.

4. Unless technology becomes sophisticated enough to permit an almost limitless number of earth stations using a new arrangement of the frequency spectrum, we must necessarily continue to regard satellites as a "great cable in space", serving merely as a flexible alternative to other means of carrying signals over great distances. This concept is criticized by GE (GE Additional Comments, p. 6, para. 14 and fn. 2) but is never explained away.

5. The GE filing is permeated with errors and misleading drawings and tables. To touch upon one example, the estimated common carrier revenues from communications-oriented computer installations for 1976 and 1978, set forth in table 4 on page 31, are more than 10 times greater than estimates appearing in an independent study of the computer

communications market which was made available to General in late 1967 as part of the preparation for General's comments in FCC Docket 16979 (Inquiry into regulatory and policy problems presented by the interdependence of computer and communication service and facilities).

6. To cite another example, the descriptive language and diagrams appearing on pages 35 through 38 overstate the number of switching steps through which long distance telephone calls must proceed over the public switched network and grossly oversimplify the number of steps involved in GE's proposed satellite scheme. Moreover, the arrangement contemplated by these oversimplified diagrams would mean putting into each end office switching equipment with similar configurations to that which is now found in just a few primary offices. Instead of decreasing communications investment, it would multiply it. 1/

7. Among the many other errors in the filing is an inappropriate reference in paragraph 86, page 33, to high quality television picture and "hi-fidelity" audio that would be achieved under the GE plan. In fact, however, the quality of the signal ultimately delivered to the viewer and listener is limited not so much by the quality of transmission as by the quality of the instrument receiving the signal and converting it to picture and sound. Thus the inherent limitations of the television set would ultimately control the quality of both picture and sound.

1/ Implicit in the GE document is the theory that there is virtue in conveying telecommunications without making use of the public switched network. In fact, the switched network bears several valuable features that make it fully consistent with the future of communications. Thus, it is accessible everywhere in this country. Moreover, it provides the most efficient means yet devised for the collection and distribution of communications from and to over one hundred million terminals.

8. To plumb the inaccuracies of the GE document to their full depth, however, it would be best to consider in some detail a single subject discussed in that document. For example, GE predicts that its concept of satellite operations would benefit a service of the future, "Telemail", which would "have terminals very similar to the typewriter located, for instance, on the desk of the business or professional man's secretary. Upon typing a letter the secretary would be able to press a button, whereupon the letter would be transmitted to the selected receiver party and typed out on the latter's typewriter." (GE Additional Comments, pp. 17-18) Isn't this TWX? What is the relevance of this concept to the domestic satellite? The concept of Telemail, which may or may not be a technological advance, relates to a terminal device, but not to a means of transmission, which is what a satellite is. Telemail is the same as, or powerfully similar to, a service that is already being provided by conventional cables cum microwave. To describe it in a domestic satellite document is not to revolutionize communications. In fact, its description in the GE Comments is misleading since the need for continued hard-wire facilities, even in conjunction with satellites, is ignored in the Telemail context[2/]

9. Telemail is conceived of as essentially a carrier of business-to-business correspondence. Considerable space is devoted to a measurement of the mail of this type which is now carried by the

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[2/] The same vice crops up again in the "Basic Technical and Operational Description" (GE Additional Comments, pp. 34 ff.) wherein it is "demonstrated" that a call over the proposed GE system would involve merely the satellite, the earth station and local loops, in contrast with the more elaborate routing used in the switched network of the common carriers.

Post Office Department (GE Additional Comments, pp. 26-28). There is a flat statement that Telemail can do the job (Conceivably it can.) and that it can do it, ultimately, at 10¢ per 600 words. Page 24 contains a table showing how remarkable Telemail will be in a price comparison with Telex or TWX. However, the unfounded Telemail pricing statements defy credence.

10. It is submitted that, while projections for the next five or ten years can reasonably be made for Telex and TWX, since these are existing services subject to existing cost patterns which can be extrapolated to yield a relatively valid future estimate, the untried Telemail, which is at the moment a rough concept, does not appear as a plausible competitor. Flat statements regarding the great cost saving, unless supported by something in the way of documentation, should be disregarded. It is further submitted that the marvelous cost-cutting techniques which will be available to the promoters of Telemail will similarly be available to the common carriers.

11. The foregoing objections illustrate General's basic quarrel with the GE document: lack of relevance. The concepts advanced are interesting and worthy of discussion. But is this proceeding the proper context in which to discuss them? It is submitted that this proceeding is inappropriate. General is not basically opposed to Telemail, MADS and the rest. However, the parties focus here on legal and technical questions of choice regarding satellites----on choosing the type of satellite, on choosing the controlling party or parties, on choosing between private or public use, etc. We are not looking at precisely what messages will be transmitted nor what machines shall be used to introduce the message into the communication system to which the

satellite will be connected.

12. Nor can we now premise ownership or control of the satellite or satellites on a multi-frequency, multi-ground-station technology which is currently beyond our reach. The age of the communication satellite is now. The Commission's answers to the proposals before it should be based upon our current technology which will enable the United States to launch a domestic communications satellite if design and construction are begun now.

Respectfully submitted

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April 14, 1969

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I hereby certify that on the 14th day of April, 1969, I served a copy of the foregoing Comments of GT&E Service Corporation upon the persons named below, by mailing by United States Mail, postage prepaid, a true and exact copy thereof to them addressed as follows:

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EARL D. HILBURN
EXECUTIVE VICE PRESIDENT

August 28, 1969

Clay T. Whitehead, Ph.D.
Staff Assistant
The White House
Washington, D. C.

Dear Dr. Whitehead:

Mr. McFall, our President, has asked that I respond to your letter of August 19 concerning a number of policy questions associated with domestic applications of communications satellites.

As I'm sure you are aware, this is an extremely complex matter, and it is impossible to comprehensively cope in a brief reply with the various technological, economic and policy implications of the provocative questions that you have raised. On the other hand, realizing that you intend to complete your work on or about October 1, I felt that it was more important to give you a prompt, although necessarily abbreviated, response to your letter, rather than take the time to recast voluminous submissions that we and others have made to the Federal Communications Commission with regard to Docket #16495, wherein this matter has been treated in considerable detail.

If it will help you or the members of your working group, we would be pleased to expand upon any of the answers to your questions, or to meet with you for further general discussions of this vital issue.

Sincerely,

Earl D. Hilburn

EDH:es
Encs.

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BENEFIT TO THE PUBLIC FROM THE ECONOMIC AND SERVICE POTENTIAL OF SATELLITE TECHNOLOGY

1. Question: What specific services that are not now available would be made possible and economically feasible through satellite technology?

   Answer: As stated on pages 7 and 8 of our submission to the Commission of April 11, 1969 with regard to the General Electric Company filing, there are few, if any, services that have been proposed for possible use of a domestic satellite that are not presently available via conventional terrestrial facilities.

2. Question: What specific services now being offered could be provided more effectively or more efficiently through satellite technology, and what economic savings would accrue?

   Answer: The Western Union Telegraph Company offers a wider variety of communications and related services, a total of 59 different offerings including: video, facsimile, telephone, record message and data services, than any other common carrier. From our experience with these, plus analysis of the operating expenses of other carriers as published by the FCC, it can be generally stated that the cost of providing domestic intercity transmission facilities is generally less than 10% of the total expense associated with providing any given service. The remaining costs are those that are associated with depreciation of the capitalized costs of the terminal and central office equipment, its installation maintenance and operation, local loops or circuits to the city exchange or wire and repeator rooms, amortization of system engineering costs, selling or marketing expense, etc., etc. Since this is the case, there would not be any dramatic reductions in the price to the public of any service, even if the intercity transmission costs were to be significantly reduced, as this action alone would not greatly affect the total cost of providing the service. Although the percent reduction in total cost of providing any of the services will only minimally benefit from the use of satellite circuits, the total dollar value of that saving is sufficient to warrant early establishment of such services.

3. Question: What institutional, technical, and economic arrangements, taken as a whole, appear most likely to assure full benefit to the public of domestic satellite potential?

   Answer: As indicated on page 17 of our comments of December 12, 1966, in connection with FCC Docket #16495 and reiterated throughout our reply brief of our filing of April 3, 1967 relating to the Ford Foundation proposal, Western Union has taken the position that a shared-use common system would appear most likely to assure full benefit to the public in terms of early use of domestic satellites.