

MAR 23 1972

MEMORANDUM FOR

Mr. Noble Melencamp
The White House

Attached is the final draft of the President's report
to the Congress on the Nation's activities under the
Communications Satellite Act of 1962.

CL
Clay T. Whitehead

Attachment

cc: Comsat
WH Memos
Melencamp
DO's Chron
DO's Records
Pres
Thornell

Whitehead ✓

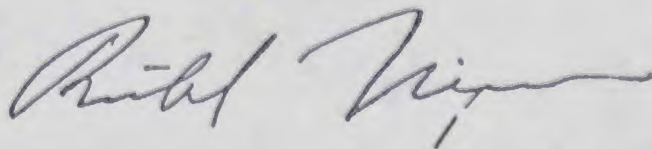
TO THE CONGRESS OF THE UNITED STATES:

In the relatively short span of seven years, communications by satellite has changed the world forever. We now live, in one very real sense, much closer to other peoples and to faraway events.

The fast-developing science of satellite communications must rate as one of the true marvels of the 20th century -- a technological triumph that is bringing greater understanding to a world badly in need of closer ties and deeper insights.

As one might expect, the seven years since the launching of the first communications satellite, Early Bird, have been filled with important developments in this new field. The year 1971 was one of particular accomplishment, since it marked the completion of two years of multilateral negotiations which produced the governing instruments for the International Telecommunications Satellite Consortium. When the resulting Definitive Agreements come into force, possibly in 1972, that will signal the start of a new era for this highly successful organization.

It is my pleasure to report to the Congress on our activities and accomplishments in 1971 under the Communications Satellite Act of 1962. I am certain the Congress will share my fascination and satisfaction with the speed in which participation in satellite communications is spreading across the world as a new and constructive force among nations and peoples.



THE WHITE HOUSE,

APR 5-1972

Comout

Friday 3/10/72

3:30 Checked the White House to see how they want the draft of the President's Annual Report on Communications Satellite Act of 1962 submitted to them.

Noble Melencamp's office (Rose Anne Herold) advised that they would like 6 copies of the report with a transmittal memo to the President ----- to the attention of Mr. Noble Melencamp.

They will then circulate it for staffing out.

Tuesday 4/4/72

11:50 Ron Geisler called to say they are getting ready to send the 1971 Comsat Report up to the Hill and need 30 copies for transmittal.

2226

We advised that it was our intention to have the original returned to us so that we might print the required number of copies. But time was so short now that perhaps they could xerox copies for transmittal. He said they could easily do that. Will send the original to us for printing.

Wednesday 4/5/72

10:50 Tom Jones called to say the Comsat Report is on its way to the Hill. They will send us a xerox of the transmittal.

Asked if they would return the original to us as we needed that in order to have the report printed. He said they have to retain the original there, but they would let us have it for the printing.

We will then return it to Tom Jones for their records.

Mr. Thornell advises Pat has the instructions and will check with the printer when she takes it over for printing to see how long it will take the printer.

We will then let Mr. Jones know -- so he won't worry.

4/6/72

3:40 Pat in Mr. Thornell's office took the original of the Comsat Report to the printers, who advise they will have it printed up in about 10 days.

4/7/2

11:50 Called Tom Jones' office to let them know the above; and that we will return the original to him as soon as we get it back.

April 19, 1972

To: Mr. Tom Jones
The White House
Room 3 Old EOB

From: Eva Daughtrey

Here is the original of the Comsat Report returned as promised. I apologize for the mess the printers made of it.

We have 50 copies of the printed report ready for you, but Mr. Geisler suggested sending only 5 since it had already been sent to the Hill. If you need any additional, we'll be glad to send them to you.

Thanks for all your help.

Enclosures

EDaughtrey 4/19/72

Comsat

March 8, 1972

To: Tom
From: Abbott

Per your request, I have read the attached draft of the President's annual report on the Comsat Act of 1962. It is factually accurate and O. K.

If there is time, one or two additions might help it, such as including that the new INTELSAT IV satellite over the Gilbert Islands was brought into service in time to carry the TV coverage of the China trip. But it is fine as is.

A Washburned 3/8/72

cc: Mr. Whitehead
Mr. Washburn
DO Records
DO Chron

Consent

Monday 4/5/71

3:40 Marcel Beitel in the House of Representatives
Clerk's office called to say they are ready to print
the President's Message on Telecommunications
(however, after talking with him found it is the
annual report for 1970 on Communications Satellite.)

225-4470

They have it in page proof and want to know if
Mr. Whitehead wants to look it over before he gets it
finally printed. Their previous records showed
that Col. Olsson wanted to check it out.

Checked with Tom Jones and he said that since the
President sent it up to Congress, it would not be
possible to make any changes in it unless the President
did so; therefore, no reason for our looking it over.

cc: Mr. Thornell

Continued

Thursday : 4/11/71

The House passed and the Senate passed Report was NOT released yesterday. The bill was then able to get through to Sen. Clements. Whether it was released today.

Consent

Tuesday 3/30/71

12:30

Diane Sawyer called from San Clemente to say they are releasing the 1970 "Annual Report on Activities under the Communications Satellite Act of 1962" today.

Tom Jones called back to say this was incorrect. It is being released tomorrow. He requested 35 copies of the Report, which have been picked up.

cc: Mr. Lamb

Comsat

THE WHITE HOUSE
WASHINGTON

March 4, 1971

TO: Eva Daughtery

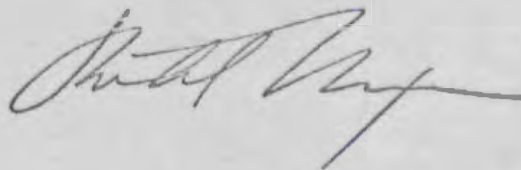
Per phone conversation.

William J. Hopkins

TO THE CONGRESS OF THE UNITED STATES:

In 1970 the activities and accomplishments of the United States under the Communications Satellite Act of 1962 enhanced the peaceful use of outer space and fostered the spirit of international cooperation. The International Telecommunications Satellite Consortium has made significant progress in the establishment of a global satellite communications system and I take this opportunity to reaffirm the commitment of the United States to support the Consortium in this worthwhile commercial enterprise.

It is my pleasure to report to Congress, as required by section 404 (a) of the Communications Satellite Act, on these activities and accomplishments.

A handwritten signature in dark ink, appearing to be "John F. Kennedy", written in a cursive style.

THE WHITE HOUSE,


March 1971.

11 FEB 1971

Comsat ✓
WH Memos
Ehrlichman
Chron
Pres
NSC
State

MEMORANDUM FOR MR. JOHN EHRLICHMAN

This is the final draft of the President's report to the Congress on the Nations' activities under the Communications Satellite Act of 1962. This draft has been reviewed and approved by the Department of State and the National Security Council Staff.



Clay T. Whitehead

JMThornell/ec/11Feb71

Rose Anna Harold

2594

OFFICE OF TELECOMMUNICATIONS POLICY
WASHINGTON

2/11

~~50~~ 5

Eva,

Please call John (Campbell)^{sp?}
and find out how many
copies of the report should
be sent to the White House.

I have the original. (5 cpy to
Hopkins' office)

Please forward Tom's
memo and appropriate
number of the report
to Flanigan's office.

Jack F

OFFICE OF TELECOMMUNICATIONS POLICY
WASHINGTON

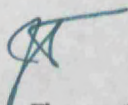
2/11/71

CTW

DoS has given approval via telephone with a promise of a concurrence memo and the NSC has signed off on the report.

Attachment A to the Report has been completed however it has not been reduced and printed and the sheet in this draft has a minor error.

If this draft meets with your approval, it is ready for submission to the White House.

A handwritten signature in blue ink, appearing to be 'J. Thornell', with a stylized flourish extending from the top right.

J. Thornell

Thursday 2/11/71

Comsat
W. H. Memos
Ehrlichman
Pres.
NSC
State
Chron

3:35 Checked with Rose Ann Herold in Mr. Hopkins' office. Since this is for submission for approval (and not a final printed copy), they suggested we send 5 copies over -- to Hopkins' office and they would get it to John Campbell and Peter Flanigan.

Under Section 404(b) they submit their report to the President, the Congress and the public all at the same time. It does not have to come through the White House for submission by the President. (This year's report was dated April 20, 1979.) A copy submitted to the President would only have to be acknowledged.

Comsat

Wednesday 7/15/70

9:20 John Campbell says there is an annual report of Comsat which is apparently in our office -- Flanigan's office had said we had indicated on June 19th that we would be sending it to them for Flanigan's signature. But no one could find it.

Checked with Central Files. The June 19th letter which Flanigan sent was an acknowledgment of a letter to the President from Comsat sending a copy of their annual report dated April 20, 1970 -- Tom checked it with Plummer.

In December (per Section 404(a) of the Communications Satellite Act of 1962), the President has to submit his report to the Congress on the activities and accomplishments under the Communications Satellite Act -- Plummer's office has always worked with Comsat in preparing the report for the President.

Comsat

June 19, 1970

Dear Mr. Charyk:

The President has asked that I thank you for the copy of the Annual Report on the Activities of the Communications Satellite Corporation. You can be proud of the accomplishments that COMSAT has made in the short time since it has come into existence. I hope you will pass on to your Board of Directors and employees our sense of pride in your accomplishment.

Sincerely,

Peter Flanigan
Assistant to the President

Mr. Joseph V. Charyk
President
Communications Satellite Corporation
950 L'Enfant Plaza, S. W.
Washington, D. C. 20024

cc: Mr. Flanigan
Mr. Whitehead
Central Files

CTWhitehead:ed/jm

COMMUNICATIONS SATELLITE CORPORATION

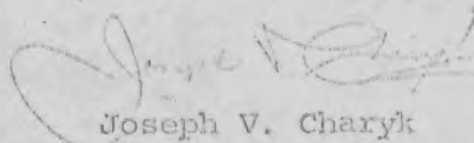
JOSEPH V. CHARYK
President

June 3, 1970

My dear Mr. President:

Pursuant to the Communications Satellite Act of 1962 (Title 4, Section 404(b)), I am herewith submitting the Annual Report on the activities of the Communications Satellite Corporation.

Respectfully yours,



Joseph V. Charyk

The President
The White House
Washington, D.C.

Comsat

February 19, 1970

MEMORANDUM FOR BOBBIE GREENE

Regarding Mr. Plummer's objection to the Keogh draft letter forwarding the Annual Report of the Communications Satellite Act of 1962, I have two comments:

1. The technical correction in the first paragraph prepared by Mr. Plummer is correct and should be adopted.

2. It would be appropriate to mention the INTELSAT Consortium in the President's letter, but not nearly to the extent that Plummer proposes. I suggest Mr. Keogh merely integrate the word INTELSAT somewhere in the second paragraph of his draft in a way that reflects on the success of the INTELSAT effort. It would be decidedly inappropriate, however, to include any reference to the internal workings of INTELSAT or the International Conference that is now under way.

Clay T. Whitehead
Staff Assistant

Attachments

cc: Mr. Flanigan
Mr. Whitehead
Central Files

CTWhitehead:red

THE WHITE HOUSE
WASHINGTON

To: Peter Flanigan

1) Has Intelsat been mentioned in any of the other Transmittal Letters or messages you've dealt with, thus counteracting Plummer's objection to Presidential omission?

2) Is there any reason relative to telecommunications reorganization for not mentioning Intelsat?

Bobbie Greene

THE WHITE HOUSE
WASHINGTON

February 18, 1970

MEMORANDUM FOR: PETER FLANIGAN ✓
DR. KISSINGER
BILL TIMMONS

Attached at Tab A you will find a transmittal letter to Congress for the Annual Report of the Communications Satellite Act of 1962. This letter was prepared by Mr. Keogh.

At Tab B you will find a memorandum from W. E. Plummer, Acting Director of the Office of Telecommunications Management. Plummer objects to the elimination from the transmittal letter of a reference to the INTELSAT Consortium or the INTELSAT global system. A reference was included in the draft text submitted by the Office of Telecommunications Management before revision by Mr. Keogh. That initial draft may be found at Tab C.

Would you approve or disapprove the inclusion of a reference to the INTELSAT Consortium or the INTELSAT global system in the letter of transmittal to Congress? Please respond by Friday, February 20 at 10:00 a.m.

Thank you.

Bobbie Greene
BOBBIE GREENE

TO THE CONGRESS OF THE UNITED STATES:

On July 20, 1969, from the Oval Office in the White House, I spoke by telephone with Neil Armstrong and Edwin Aldrin on the surface of the Moon. This historic conversation was transmitted by the medium of communications satellite. Under Section 104(a) of the Communications Satellite Act of 1962, I am sending to the Congress this seventh report on the program that made that Moon phone call possible.

Telephone communication between Earth and the Moon, while certainly the most dramatic use, is only one of many ways in which satellite communications can now be employed. This report reflects the steady progress being made toward an improved global communications network. Already we see major improvements in international telecommunications capabilities -- improvements that will ultimately benefit all of the world's people.

The Communications Satellite Act speaks of the contribution to be made to "world peace and understanding" by a commercial communications satellite system. Just as this system has enabled men to speak to each other across the boundary of outer space, so, I am convinced, it will in future years help men to understand one another better across boundaries of a political, linguistic and social nature. World peace and understanding are goals worthy of this new and exciting means of communication.

THE WHITE HOUSE,

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

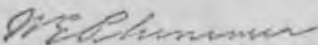
Date: February 12, 1970

Subject: Annual Report on Activities and Accomplishments under the
Communications Satellite Act of 1962

To: Mr. William J. Hopkins

A xerox copy of the letter of transmittal of the subject report which was signed by President Nixon was provided this office February 11. It is noted that this version of the letter of transmittal is substantially different than the draft provided you in our original submission on the 19th of January. Unfortunately, the text of the version prepared in the White House is not technically accurate with respect to the use of satellite communications during the President's conversation with the astronauts on the surface of the Moon. Accordingly, a revised version using the basic format of the letter signed by the President and which is technically accurate is attached for appropriate use.

We also note that the letter of transmittal does not contain reference to the INTELSAT Consortium or the INTELSAT global system. In view of the pending international negotiations with our partners from 72 nations, we feel that such an omission in the President's letter to the Congress could be interpreted unfavorably by our partners in the Consortium. If it is agreed to insert references to the INTELSAT Consortium and its global system, text can be found in the original draft furnished to you on January 19.


W. E. Plummer
Acting Director

Attachment

TO THE CONGRESS OF THE UNITED STATES:

On July 30, 1969, from the Oval Office in the White House, I spoke by telephone with Neil Armstrong and Edwin Aldrin on the surface of the Moon. This historic event was simultaneously televised to the world through the medium of communication satellites. Under Section 404(a) of the Communications Satellite Act of 1962, I am sending to the Congress this seventh report on the program that helped bring this historic event to millions of people throughout the world.

Communications between Earth and the Moon, while certainly the most dramatic use, is only one of many ways in which satellite communications can now be employed. This report reflects the steady progress being made toward an improved global communications network. Already we see major improvements in international telecommunications capabilities -- improvements that will ultimately benefit all of the world's people.

The Communications Satellite Act speaks of the contribution to be made to "world peace and understanding" by a commercial communications satellite system. Just as this technology has enabled men to speak to each other across the boundary of outer space, so, I am convinced, satellite communications will in future years help men to understand one another better across boundaries of a political, linguistic and social nature. World peace and understanding are goals worthy of this new and exciting means of communication.

*7th. Report covering 7 years
This 7th report has been highly
successful in bringing to people
the progress of satellite technology
to people of many nations*

TO THE CONGRESS OF THE UNITED STATES

There have been many significant accomplishments in commercial satellite communications during the 1960's. These include important milestones:

- Demonstration of the feasibility of satellite communications for practical uses;
- Enactment of the Communications Satellite Act of 1962;
- Establishment of the Communications Satellite Corporation;
- Creation of the International Telecommunications Satellite Consortium (INTELSAT); and
- Establishment and operation of a Global Commercial Communications Satellite System.

These unprecedented achievements were facilitated by the policy of the United States to make the services attainable through communications satellite technology available to the nations of the world. The outstanding success of INTELSAT is the product of enlightened international cooperation between the participating member nations of the Consortium. Through this cooperative effort was created the INTELSAT system which is today providing international telecommunication services to much of the world.

The rapid progress toward establishment of the global system and the accelerated application of advanced technology have demonstrated the basic soundness of the institutional arrangements in the interim multilateral agreement. This progress has been the result of INTELSAT's effective decision making performance and COMSAT's accomplishments in planning and execution, as Manager for INTELSAT. These achievements are a tribute to human creativity and international cooperation in surmounting the substantial impediments (technical, social, political and economic) normally encountered in the introduction of a new technology.

The full impact of our progress was graphically portrayed when I sat in The White House in July and talked to Neil Armstrong and Edwin Aldrin on the surface of the Moon, an experience shared with people throughout the world through the medium of satellite communications.

The challenges ahead are to address further the complex factors facing modern society and to formulate meaningful national and international policy to exploit the growing opportunities offered by satellite communications technology. A specific task ahead for the United States is the successful completion of the INTELSAT Conference in 1970 leading to a multilateral agreement on Definitive Arrangements. The objective of the United States in this regard is to build upon the achievements of the Consortium since the Interim Arrangements were established in 1964.

Under section 404(a) of the Communications Satellite Act of 1962, I am transmitting to the Congress this seventh report on the national program, which is successfully advancing satellite communications technology. This report reflects the steady progress being made toward implementing the policy declared by the Congress in the Act to establish, as expeditiously as possible, a commercial communications satellite system, as part of an improved global communications network. Already we see major improvements in international telecommunication capabilities which are providing significant benefits for all peoples.

RICHARD NIXON

THE WHITE HOUSE
January 1970

Conused
760

Review Draft

January 28, 1970



ANNUAL REPORT

on
ACTIVITIES AND
ACCOMPLISHMENTS
under the
COMMUNICATIONS
SATELLITE ACT OF 1962

January 1 - December 31, 1970

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APPENDIX A - PROGRESS CHART

APPENDIX B - GLOBAL SYSTEM (MAP)

APPENDIX C - GROWTH IN OPERATIONAL CAPABILITY

INTRODUCTION

When the Congress of the United States established the Communications Satellite Act of 1962, a global communications system utilizing satellites was a long term adventurous scientific plan. Through the dedication of both governments and industry the communications satellite network has progressed through infancy in experiments, adolescence with limited operational capability to maturity with a reliable global satellite communications system. Evident in this mature phase is the transition into the world of economics and long term institutional arrangements. Accordingly, the emphasis in the satellite communications community is shifting from the scientific endeavor to increasing the reliability of the network, maximizing the economic benefits, and seeking to establish the required institutional arrangements.

During 1970 progress continued to be made by INTELSAT in establishing and operating the global commercial communications satellite system as evidenced by the successful launching of two INTELSAT III series satellites; the development and delivery to the launch site of the first INTELSAT IV satellite; the initiation of commercial operation of 10 new earth station antennas; and a 50% increase in capability utilization of the INTELSAT network. Additionally, seven nations joined the INTELSAT consortium bringing the total membership to 77. A progress chart showing the various programs contributing to the

establishment of commercial communications satellite services is shown in Appendix A. The location of the satellites and earth stations of the Global System are shown in Appendix B.

Under Reorganization Plan No. 1 of 1970, which was approved by Congress on April 20, 1970, the Office of Telecommunications Policy was established by Executive Order No. 11556 on September 4, 1970. The President has delegated certain responsibilities assigned to him by the Communications Satellite Act of 1962 to the Director of the Office of Telecommunications Policy. This delegation of responsibility is, in fact, a recognition of the importance of telecommunications to national growth and international cooperation. Recognizing the dynamic nature of technology applicable to the satellite communications network and the ever-increasing requirements for international communications services, the Office of Telecommunications Policy will continuously review the Communications Satellite Act for current applicability, and when necessary, recommendations for legislative modification will be proposed.

There have been major technical and institutional accomplishments since enactment of the Communications Satellite Act of 1962. These have provided improved international telecommunications. The goals established by the Congress have been largely achieved--far more rapidly than was expected. Major milestones in the development of the global system include:

- Establishment of the Communications Satellite Corporation in February 1963;
- The International Agreement Establishing Interim Arrangements for a Global Commercial Communications Satellite System on August 20, 1964;
- Operation of the first commercial communications satellite (EARLY BIRD) June 1965; and
- Achievement of global coverage by the INTELSAT System in July 1969.

In evaluating this progress, it is noted that not only advanced nations but also many developing countries have planned and installed earth stations to utilize satellite communications. The establishment of the space segment and growth in numbers of earth stations have provided for the first time, particularly in the developing areas of the world, high quality, reliable, and reasonably priced international telecommunication services. Additionally, international distribution of live television programs has become routine.

The progress which has been achieved with the first three generations of commercial communication satellites represents a profoundly important step toward a new order of worldwide communications. This progress enhances the process of establishing worldwide interconnection of all modes of telecommunication and thereby increases the enrichment of mankind through the sharing of knowledge. Future accomplishments will

be limited only by the imagination of the nations participating in this
challenging peaceful venture in space.

II

NATIONAL ACTIVITIES

The keynote of the United States' activities in satellite communications is the mutual support and cooperation demonstrated by the United States government-industry team and the member nations of INTELSAT. These joint efforts enabled INTELSAT to move rapidly toward its goals of establishing a successful international commercial enterprise, and of increasing the participation of the partner nations in research, development and manufacture in this new field of technology.

The following is a summary of significant activities during 1970:

Federal Coordination and Planning

The Office of Telecommunications Policy and the Department of State, in coordination with the Federal Communications Commission, continued active participation in fulfilling Executive Branch responsibilities assigned to the President by the Communications Satellite Act of 1962.

The principal activities in this functional area during the year included:

- Providing policy guidance to COMSAT, in its capacity as the United States representative in meetings of the Interim Communications Satellite Committee (ICSC) of INTELSAT.

- Participating in the work of the United States Delegation to the Resumed Plenipotentiary Conference on Definitive Arrangements for the International Telecommunications Satellite Consortium (convened on February 16, 1970) and in the Intersessional Working Group, established by the Conference, which met three times during the year.
- Maintaining continuous review of all significant phases of the development and operation of the global system including activities of the Communications Satellite Corporation, particularly with regard to INTELSAT III and IV satellites.
- Helping attain efficient use of the electromagnetic spectrum and technical compatibility of communications satellite systems with existing telecommunications facilities.
- Collaborating with other interested agencies and departments (including the Department of Transportation, the Federal Aviation Administration, and the National Aeronautics and Space Administration) in national planning and development of policy with regard to use of satellites for aeronautical purposes.

Federal Support

The National Aeronautics and Space Administration (NASA) continued to provide launch vehicles and launch services on a reimbursable basis,

to enable COMSAT, serving as manager for INTELSAT, to place satellites into transfer orbit; and provided technical advice and assistance to COMSAT, as well as technical advice to the Federal Communications Commission.

The principal activities performed by NASA in this functional area during the year included:

- Launching additional INTELSAT III series satellites.
- Participating in extensive design reviews of the INTELSAT IV spacecraft at Hughes Aircraft Company, the spacecraft contractor, and reporting the results in detail to the FCC.
- Participating in the investigation of the cause of the launch failure of the INTELSAT III, F-8 mission.
- Conducting spacecraft flight readiness review for each INTELSAT III launch conducted and reporting the results to the FCC.

Other Activities Relating to Satellite Communications

During 1970, various government departments and agencies engaged in a number of other activities relating directly to their responsibilities and activities under the Communications Satellite Act of 1962. These included the following:

Preparation for the World Administrative Radio Conference

A World Administrative Radio Conference on Space Telecommunications will be held in Geneva in the summer of 1971 under the

auspices of the International Telecommunication Union (ITU). National preparation for this conference continued throughout the year under joint auspices of the Office of Telecommunications Policy, the Federal Communications Commission and the Department of State. Participation in the preparatory work by Federal Government agencies and industry has resulted in U.S. proposals aimed at meeting radio spectrum needs of both domestic and international communications satellite systems as well as other applications of space technology.

Radio Interference and Propagation Program

A radio interference and propagation program, directed at solving problems of stationary orbit positions and frequency spectrum allocations was initiated early in 1970. The program is a joint effort of the Office of Telecommunications Policy, the National Aeronautics and Space Administration, the Federal Communications Commission, and the Department of Commerce.

Ground-to-ground interference and propagation experiments were initiated during 1970 with satellite-to-ground experiments being planned. Experimental data is particularly important since it is not certain that frequency sharing criteria previously adopted by international organizations can be applied without changes as the number of satellites and earth stations and the services they provide increase, particularly in areas of dense deployment of surface radio relay systems. Experimental data and theoretical models must be provided prior to the June 1971 World Administrative Radio Conference on Space Telecommunications.

III

THE INTERNATIONAL TELECOMMUNICATIONS
SATELLITE CONSORTIUM (INTELSAT)

Membership

During 1970 INTELSAT again expanded in membership and in the volume of services satellites provide. The accession of seven countries brought total membership in the consortium to 77. The new members are the Democratic Republic of the Congo, the Dominican Republic, Ecuador, Senegal, Trinidad and Tobago, Yugoslavia and Zambia. On the basis of current quotas allocated, Bolivia, Costa Rica, El Salvador, Honduras and Paraguay may accede at any time.

The continued high growth rate of services provided by the global satellite system affirms the success of the enterprise to date and the potential of satellite communications in international communications.

Interim Communications Satellite Committee (ICSC)

As governing body of the INTELSAT organization, the ICSC continued to plan and direct the development and operation of the global system.

Notable accomplishments during the year were:

- Approval of the INTELSAT IV tracking, telemetry and command arrangements.
- Approval of the operational use of the SPADE demand assignment mode with the space segment.

- Approval of new earth stations to work with the space segment of the global system.
- Approval of launch arrangements and contracts relating to INTELSAT III and IV series satellites.
- Continuing review and revision of contingency plans for operation of the space segment of the global system.
- Reduction of space segment charges effective January 1, 1971.
- Renewal of allotment agreements between the British Post Office and COMSAT providing for continuing requirements of the National Aeronautics and Space Administration.
- Approval of the INTELSAT Research and Development Budget including COMSAT Labs and other contractors.
- Adoption of policy with regard to the use of INTELSAT inventions and data for other than INTELSAT applications.
- Reduction of charges for multideestination television.

Definitive Arrangements for INTELSAT

Following four weeks of deliberations at the Plenipotentiary level and three subsequent meetings of its Preparatory Committee in 1969, the Plenipotentiary Conference on Definitive Arrangements for the International Telecommunications Satellite Consortium resumed work in a five-week session from February 16 to March 20, 1970. Major progress resulted from a compromise proposal designed to resolve questions relating to (1) the management of the organization; (2) the

basis of investment; (3) the structure of the organization; and (4) voting in the Board of Governors. The Conference established an Intersessional Working Group which met three times in Washington later in the year and at the conclusion of these meetings, the Intersessional Working Group has developed recommended texts of nearly all of the articles of the proposed intergovernmental agreement and operating agreement.

The Plenipotentiary Conference is now scheduled to reconvene in Washington, D.C., in 1971 to consider the recommendations of the Intersessional Working Group and to complete work on definitive arrangements for INTELSAT.

IV

PROGRESS IN ESTABLISHING AND OPERATING THE GLOBAL SYSTEMIntroduction

The global commercial satellite system has grown steadily since operations began in June 1965. The introduction of larger-capacity satellites has enabled INTELSAT to meet the expanding requirements for all types of telecommunications services. In addition, the rapidly growing number of earth stations in the global system has greatly increased the flexibility and effectiveness of this system.

An overview of the progress made by INTELSAT toward establishing and operating the global system is shown in Appendices A and B of this report.

Background

The INTELSAT system is based on the deployment of a relatively few high-performance geostationary communications satellites so located in orbit as to provide essentially global coverage. The specific configuration of the global system is achieved by placing the individual satellites so as to optimize the coverage in (a) the Atlantic Ocean Basin, (b) the Pacific Ocean Basin and (c) the Indian Ocean Basin. All currently active satellites have multiple access capabilities which enable earth stations of many nations to use a single satellite simultaneously.

Operational Satellites

During 1970, NASA launched three INTELSAT III series satellites for COMSAT: the F-6 in January, the F-7 in April, and the F-8 in July. However, due to a failure during the operation of its on-board propulsion system, the F-8 did not achieve synchronous orbit. Both the F-6 and F-7 satellites were placed in commercial service over the Atlantic Ocean. Other satellites providing commercial service at the close of the year included INTELSAT III (F-4) and INTELSAT II (F-4) both positioned over the Pacific Ocean, and INTELSAT III (F-3) positioned over the Indian Ocean.

Launch Results and Operational Status of all INTELSAT Satellites

The launch results and the operational status, as of December 31, 1970, of all of the satellites launched for the global commercial satellite system are as follows:

INTELSAT I (Early Bird)

Launched April 6, 1965 and placed in service over the Atlantic Ocean. Placed in reserve on January 20, 1969; last used on August 21, 1969. It is still operable, but cannot be maintained on station. Its future utility has, therefore, been diminished.

INTELSAT II Series

F-1: Launched on October 26, 1966, but failed to achieve synchronous orbit due to malfunction of on-board propulsion system (apogee motor).

F-2: Launched on January 11, 1967, and placed in service over the Pacific Ocean. Not in commercial service.

F-3: Launched on March 22, 1967, and placed in service over the Atlantic Ocean. All systems are operational, but is presently on reserve.

This satellite was used from July 4-11 and Nov. 26-Dec. 2 when INTELSAT III (F-6) experienced antenna trouble.

F-4: Launched on September 27, 1967, and placed in service over the Pacific Ocean. Not in commercial service.

INTELSAT III Series

F-1: Launched on September 18, 1968, but failed to achieve orbit due to a launch vehicle malfunction.

F-2: Launched on December 18, 1968, and placed in service over the Atlantic Ocean. Ceased operation on June 29, 1969; resumed operation August 1, 1969. Ceased operation again on May 24, 1970, and is no longer considered usable. The operational difficulties were due to stalling of the rotating antenna shaft.

F-3: Launched on February 5, 1969, and originally placed in service over the Pacific Ocean and then repositioned

over the Indian Ocean where it is presently providing commercial service.

F-4: Launched on May 21, 1969, and placed in service over the Pacific Ocean where it is presently providing commercial service.

F-5: Launched on July 25, 1969, but failed to achieve orbit due to a launch vehicle malfunction.

F-6: Launched on January 14, 1970, and placed in service over the Atlantic Ocean. The rotating antenna shaft stalled on July 4, 1970, and the satellite was restored to full service by July 11, 1970. The antenna shaft stalled again on November 26, 1970, and the satellite was restored to full service by December 2, 1970. This satellite is presently fully operational.

F-7: Launched on April 22, 1970, and placed in service over the Atlantic Ocean.

F-8: Launched July 23, 1970, but failed to achieve synchronous orbit due to a malfunction which occurred during the firing of the on-board propulsion system (apogee motor).

There have been a total of 13 launches of INTELSAT satellites in the period from April 6, 1965, to December 31, 1970. The percentage

of failure (did not achieve synchronous orbit) is 30.8%. The percentage for this limited experience is somewhat higher than the predicted 25%.

Advanced Satellites

The first of the next generation of satellite, the INTELSAT IV series, is scheduled for launch in January 1971. Preparation of the Atlas-Centaur vehicle to be used for the launch was begun at the launch site (Eastern Test Range) in November 1970.

The first INTELSAT IV satellite is planned to be placed in synchronous orbit over the Atlantic Ocean. The second and third INTELSAT IV satellites are presently planned for launch in the third and fourth quarters of 1971, respectively.

Satellite Operational Capabilities

There has been a substantial growth in the capacity and improvement in performance characteristics of the INTELSAT satellites since the first generation spacecraft. The principal features and operational capabilities of the various types of INTELSAT satellites are shown in Appendix C.

Tracking, Telemetry and Command

Overall operational control of the INTELSAT system is accomplished by specialized stations which perform tracking, telemetry, and command (TT&C) functions. The TT&C stations are operated under lease or other arrangements with INTELSAT.

The four TT&C stations, spaced around the world, are at Andover, Maine; Fucino, Italy; Carnarvon, Australia; and Paumotu, Hawaii.

Earth Stations

During 1970, the following 10 new earth station antennas were placed into commercial operation:

Atlantic Ocean Region: Choconta, Columbia; Thermopylae, Greece, and Camatagua, Venezuela.

Pacific Ocean Region: Kum San, Korea, and Bartlett, Alaska.

Indian Ocean Region: Kuantan, Malaysia; Sri Racha, Thailand (second antenna); Buitrago, Spain (second antenna); Fucino, Italy (second antenna), and Longorot, Kenya.

At the close of the year, 51 earth station antennas were in operation at 43 earth stations in 30 countries. Approximately 70 antennas at 58 earth stations in 43 countries are expected to be in operation by the end of 1971.

Utilization of the INTELSAT System

The growth in utilization of the INTELSAT system from the first year of operation in 1965 through 1970, and estimates of 1971 utilization, are shown in Table 1. The number of full-time leased two-way circuits, for voice and record service, has increased from 75 in 1965 to 2129 at the end of 1970. The latter figure represents a 50 percent increase over the previous year. Global television time in the INTELSAT system

has also steadily increased from 40 half-channel hours in 1965 to approximately 997 half-channel hours in 1970.

Year Ending	1965	1966	1967	1968	1969	1970	1971 (Estimate)
-------------	------	------	------	------	------	------	--------------------

Number of Full-Time Leased Two-way Voice Circuits (all classes of terminals)

75

86

344

560

1416

2129

4135

Television Time (Half-Channel hours)

Transmit

40

76

225

666

779

997

1050

Receive

40

76

225

706

1047

1431

1480

TABLE 1

GROWTH IN UTILIZATION
THE INTELSAT SYSTEM

Use of Communications Satellite Service by NASA

The use of commercial satellite communications service by NASA began in February 1967, being first used for direct communications to the Apollo stations. The use of INTELSAT service continued through 1970 and is now used throughout the space tracking and control networks.

The NASA Communications System, used for tracking and control circuits to each NASA tracking station, has taken advantage of the large bandwidths provided by INTELSAT satellites. In 1970 NASA began operational use of the first transatlantic wideband satellite circuit to Madrid, Spain. Expanded use of this type service as it becomes available on a global basis, will enable the space tracking and control systems to operate in a more efficient and economical manner.

Worldwide television coverage via communications satellite was given to the dramatic recovery of the astronauts on the aborted Apollo 13 mission.

Special Events

The unique capability of communication satellites to transmit live television broadcasts across the oceans was demonstrated again throughout 1970. Various important public affairs events of worldwide interest were relayed via INTELSAT satellites, including: President Nixon's visit to Europe, Vice President Agnew's visit to Japan, Prime Minister Wilson's

visit to the United States, French President Pompidou's visit to the United States, Indonesian President Suharto's visit to the United States, the funeral of former French President de Gaulle, the funeral of Egyptian President Nasser, the visit of the Pope to the Far East, the Pope's celebration in Rome of Easter Mass and of Christmas Mass, the signing of a Russian-German agreement, the Mideast crisis, aircraft skyjacking, the Apollo 13 mission, and a number of sports events of international interest.

V

SUMMARY

(Opportunities and Challenges)

The first operational commercial communications satellite was deployed to meet expanding telecommunication requirements in the North Atlantic region. This original service was available only between North America and Western Europe, and then only between two earth stations at any given time. Subsequent operational satellites (INTELSAT II's and III's) are providing multipoint communications in the Atlantic, Pacific and Indian Ocean regions to those nations with earth stations, thereby assuring them efficient, economical, direct access to the global system.

Up to 1970, the effort has been to establish the global system by deploying communications satellites and encouraging nations to build earth stations. Now that the system has been established, there is a need to improve its overall system reliability by providing appropriate system redundancy and increasing the individual reliability performance of the earth stations.

There is an opportunity to promote the early utilization of advancing technology which will bring the benefits of direct access to the global system within the economic means of any nation desiring such access. A system is currently under development at COMSAT Laboratories that

will allow the nations with relatively low channel requirement to use the global system on an economical basis by utilization of a relatively few channels in the INTELSAT IV satellite that are assigned on an instantaneous demand basis.

An important unfinished task ahead is to reach agreement among partners on the Definitive Arrangements for INTELSAT. The United States' objective is to build upon the solid accomplishments of the Consortium since the Interim Arrangements were established in 1964.

Many opportunities are presented to the nation in bringing the benefits of communications to mankind. In meeting this challenge, the United States continues to support the global commercial communications satellites system which is made available to all nations--large and small, developed and developing--on a non-discriminatory basis by the International Telecommunications Satellite Consortium (INTELSAT).



EXECUTIVE OFFICE OF THE PRESIDENT

OFFICE OF TELECOMMUNICATIONS POLICY

DRAFT
(THIS COVER NOT USED)

ANNUAL REPORT

January 1 - December 31, 1970

on

Activities and Accomplishments

under the

Communications Satellite Act of 1962

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TO THE CONGRESS OF THE UNITED STATES:

In 1970 the activities and accomplishments of the United States under the Communications Satellite Act of 1962 enhanced the peaceful use of outer space and fostered the spirit of international cooperation. The International Telecommunications Satellite Consortium has made significant progress in the establishment of a global satellite communications system and I take this opportunity to reaffirm the commitment of the United States to support the Consortium in this worthwhile commercial enterprise.

It is my pleasure to report to Congress, as required by section 404 (a) of the Communications Satellite Act, on these activities and accomplishments.

RICHARD NIXON

THE WHITE HOUSE
February 1971

I

INTRODUCTION

When the Congress of the United States established the Communications Satellite Act of 1962, a global communications system utilizing satellites was an adventurous technological endeavor. Through the dedication of both government and industry the communications satellite network has progressed from experimental infancy, through marginally operational adolescence, to current maturity of a reliable global satellite communications system. In this transitional process, the emphasis has gradually shifted from technical innovation to improved system reliability, reduction in user cost and establishment of long term institutional arrangements.

During 1970 progress continued to be made by INTELSAT in establishing and operating the global commercial communications satellite system as evidenced by the successful launching of two INTELSAT III series satellites; the development and delivery to the launch site of the first INTELSAT IV satellite; the initiation of commercial operation of ten new earth station antennas; and a 50% increase in utilization of the INTELSAT network. Additionally, seven nations joined the INTELSAT Consortium bringing the total membership to 77.

Under Reorganization Plan No. 1 of 1970, which was approved by Congress on April 20, 1970, the Office of Telecommunications Policy was established. Executive Order No. 11556, signed on September 4, 1970 transferred the delegation of certain responsibilities assigned to the President by the Communications Satellite Act of 1962 to the Director of the Office of Telecommunications Policy. The dynamic nature of satellite communications technology and the ever-increasing requirements for international communications services require constant review of our communications policies and institutions. The Office of Telecommunications Policy will, on a continuing basis, assess the current and future suitability of the Communications Satellite Act. Recommendations for legislative modification will be proposed if desirable.

There have been major technical and institutional accomplishments since enactment of the Act. We have come a long way toward improved international telecommunications. The goals established by the Congress have been largely achieved -- far more rapidly than was expected. Major milestones in the development of the global system include:

- Establishment of the Communications Satellite Corporation in February 1963;
- The International Agreement Establishing Interim Arrangements for a Global Commercial Communications Satellite System on August 20, 1964;
- Operation of the first commercial communications satellite (EARLY BIRD) June 1965; and
- Achievement of global coverage by the INTELSAT System in July 1969.

In evaluating this progress, it is important to note that not only advanced nations but also many developing countries have planned and installed earth stations to utilize satellite communications. The establishment of the space segment and the growing numbers of earth stations have provided for the first time, particularly in the developing areas of the world, high quality, reliable, and reasonably priced international telecommunication services. Additionally, international distribution of live television programs has become routine.

The progress which has been achieved with the first three generations of commercial communication satellites represents a profoundly important step toward a new order of worldwide communications. Future accomplishments will be limited only by the imagination of the nations participating in this challenging peaceful venture in space. We can take great satisfaction that the technology and cooperative international leadership of the United States has made this possible.

NATIONAL ACTIVITIES

The keynote of the United States' activities in satellite communications is the mutual support and cooperation demonstrated by the United States government-industry team and the member nations of INTELSAT. These joint efforts enabled INTELSAT to move rapidly toward its goals of establishing a successful international commercial enterprise, and of increasing the participation of the partner nations in research, development and manufacture in this new field of technology.

The following is a summary of significant activities during 1970:

Federal Coordination and Planning

The Office of Telecommunications Policy and the Department of State, in coordination with the Federal Communications Commission, continued active participation in fulfilling Executive Branch responsibilities assigned to the President by the Communications Satellite Act of 1962.

The principal activities in this functional area during the year included:

- Providing policy guidance to COMSAT in its capacity as the United States representative in meetings of the Interim Communications Satellite Committee (ICSC) of INTELSAT.
- Participating in the work of the United States Delegation to the Resumed Plenipotentiary Conference on Definitive Arrangements for the International Telecommunications Satellite Consortium (convened on February 16, 1970) and in the Intersessional Working Group, established by the Conference, which met three times during the year.
- Maintaining continuous review of all significant phases of the development and operation of the global system including activities of the Communications Satellite Corporation, particularly with regard to INTELSAT III and IV satellites.

- Helping attain efficient use of the electromagnetic spectrum and technical compatibility of communications satellite systems with existing telecommunications facilities.

Federal Support

The National Aeronautics and Space Administration (NASA) continued to provide launch vehicles and launch services on a reimbursable basis, to enable COMSAT, serving as manager for INTELSAT, to place satellites into transfer orbit; and provided technical advice and assistance to COMSAT, as well as technical advice to the Federal Communications Commission.

The principal activities performed by NASA in this functional area during the year included:

- Launching additional INTELSAT III series satellites.
- Participating in extensive design reviews of the INTELSAT IV spacecraft at Hughes Aircraft Company, the spacecraft contractor, and reporting the results in detail to the FCC.
- Participating in the investigation of the cause of the launch failure of the INTELSAT III, F-8 mission.
- Conducting spacecraft flight readiness review for each INTELSAT III launch conducted and reporting the results to the FCC.

Other Activities Relating to Satellite Communications

During 1970, various government departments and agencies engaged in a number of other activities relating to satellite communications. These included the following:

Preparation for the World Administrative Radio Conference

A World Administrative Radio Conference on Space Telecommunications will be held in Geneva in the summer of 1971 under the auspices of the International Telecommunication Union (ITU). National preparation for this conference continued throughout the year under joint auspices of the Office of Telecommunications Policy, the Federal Communications Commission and the Department of State. Participation in the preparatory work by Federal Government agencies and industry has resulted in U. S. proposals aimed at meeting radio spectrum needs of both domestic and international communications satellite systems as well as other applications of space technology.

Radio Interference and Propagation Program

A radio interference and propagation program, directed at solving problems of stationary orbit positions and frequency spectrum allocations was initiated early in 1970. The program is a joint effort of the Office of Telecommunications Policy, the National Aeronautics and Space Administration, the Federal Communications Commission, and the Department of Commerce. Ground-to-ground interference and propagation experiments were initiated during 1970 with satellite-to-ground experiments being planned.

III

THE INTERNATIONAL TELECOMMUNICATIONS SATELLITE CONSORTIUM (INTELSAT)

Membership

During 1970 INTELSAT again expanded in membership and in the volume of services satellites provide. The accession of seven countries brought total membership in the Consortium to 77. The new members are the Democratic Republic of the Congo, the Dominican Republic, Ecuador, Senegal, Trinidad and Tobago, Yugoslavia and Zambia. On the basis of current quotas allocated, Bolivia, Costa Rica, El Salvador, Honduras the Islamic Republic of Mauritania and Paraguay may accede at any time.

The continued high growth rate of services provided by the global satellite system affirms the success of the enterprise to date and the potential of satellite communications in international communications.

Interim Communications Satellite Committee (ICSC)

As governing body of the INTELSAT organization, the ICSC continued to plan and direct the development and operation of the global system. Notable accomplishments during the year were:

- Approval of the INTELSAT IV tracking, telemetry and command arrangements.
- Approval of the operational use of the SPADE demand assignment mode with the space segment.
- Approval of new earth stations to work with the space segment of the global system.
- Approval of launch arrangements and contracts relating to INTELSAT III and IV series satellites.
- Continuing review and revision of contingency plans for operation of the space segment of the global system.
- Reduction of space segment charges effective January 1, 1971.
- Renewal of allotment agreements between the British Post Office and COMSAT providing for continuing requirements of the National Aeronautics and Space Administration.
- Approval of the INTELSAT Research and Development budget including COMSAT Labs and other contractors.
- Adoption of policy with regard to the use of INTELSAT inventions and data for other than INTELSAT applications.
- Reduction of charges for multideestination television.

Definitive Arrangements for INTELSAT

Following four weeks of deliberations at the Plenipotentiary level and three subsequent meetings of its Preparatory Committee in 1969, the Plenipotentiary Conference on Definitive Arrangements for the International Telecommunications Satellite Consortium resumed work in a five-week session from February 16 to March 20, 1970. Major progress resulted from a proposal designed to resolve questions relating to (1) the management of the organization; (2) the basis of investment; (3) the structure of the organization; and (4) voting in the Board of Governors. The Conference established an Intersessional Working Group which met three times in Washington later in the year and at the conclusion of these meetings, the Intersessional Working Group has developed recommended texts of nearly all of the articles of the proposed intergovernmental agreement and operating agreement.

The Plenipotentiary Conference is now scheduled to reconvene in Washington, D. C., in 1971 to consider the recommendations of the Intersessional Working Group and to complete work on definitive arrangements for INTELSAT.

IV

PROGRESS IN ESTABLISHING AND OPERATING THE GLOBAL SYSTEM

Introduction

The global commercial satellite system has grown steadily since operations began in June 1965. The introduction of larger-capacity satellites has enabled INTELSAT to meet the expanding requirements for all types of telecommunications services. In addition, the rapidly growing number of earth stations in the global system has greatly increased the flexibility and effectiveness of this system.

An overview of the progress made by INTELSAT toward establishing and operating the global system is shown in Appendices A and B of this report.

Background

The INTELSAT system is based on the deployment of a relatively few high-performance geostationary communications satellites so located in orbit as to provide essentially global coverage. The specific configuration of the global system is achieved by placing the individual satellites so as to optimize the coverage in (a) the Atlantic Ocean Basin, (b) the Pacific Ocean Basin and (c) the Indian Ocean Basin. All currently active satellites have multiple access capabilities which enable earth stations of many nations to use a single satellite simultaneously.

Operational Satellites

During 1970, NASA launched three INTELSAT III series satellites for COMSAT: the F-6 in January, the F-7 in April, and the F-8 in July. However, due to a failure during the operation of its on-board propulsion system, the F-8 did not achieve synchronous orbit. Both the F-6 and F-7 satellites were placed in commercial service over the Atlantic Ocean. Other satellites providing commercial service at the close of the year included INTELSAT III (F-4) and INTELSAT II (F-4) both positioned over the Pacific Ocean, and INTELSAT III (F-3) positioned over the Indian Ocean.

Launch Results and Operational Status of all INTELSAT Satellites

The launch results and the operational status, as of December 31, 1970, of all of the satellites launched for the global commercial satellite system are as follows:

INTELSAT I (Early Bird)

Launched April 6, 1965 and placed in service over the Atlantic Ocean. Placed in reserve on January 20, 1969; last used on August 21, 1969. It is still operable, but cannot be maintained on station. Its future utility has, therefore, been diminished.

INTELSAT II Series

- F-1: Launched on October 26, 1966, but failed to achieve synchronous orbit due to malfunction of on-board propulsion system (apogee motor).
- F-2: Launched on January 11, 1967, and placed in service over the Pacific Ocean. Not in commercial service.
- F-3: Launched on March 22, 1967, and placed in service over the Atlantic Ocean. All systems are operational, but is presently on reserve. This satellite was used from July 4-11 and Nov. 26-Dec. 2 when INTELSAT III (F-6) experienced antenna trouble.
- F-4: Launched on September 27, 1967, and placed in service over the Pacific Ocean.

INTELSAT III Series

- F-1: Launched on September 18, 1968, but failed to achieve orbit due to a launch vehicle malfunction.
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- F-3: Launched on February 5, 1969, and originally placed in service over the Pacific Ocean and then repositioned over the Indian Ocean where it is presently providing commercial service.
- F-4: Launched on May 21, 1969, and placed in service over the Pacific Ocean where it is presently providing commercial service.

- F-5: Launched on July 25, 1969, but failed to achieve orbit due to a launch vehicle malfunction.
- F-6: Launched on January 14, 1970, and placed in service over the Atlantic Ocean. The rotating antenna shaft stalled on July 4, 1970, and the satellite was restored to full service by July 11, 1970. The antenna shaft stalled again on November 26, 1970, and the satellite was restored to full service by December 2, 1970. This satellite is presently fully operational.
- F-7: Launched on April 22, 1970, and placed in service over the Atlantic Ocean.
- F-8: Launched July 23, 1970, but failed to achieve synchronous orbit due to a malfunction which occurred during the firing of the on-board propulsion system (apogee motor).

There have been a total of 13 launches of INTELSAT satellites in the period from April 6, 1965, to December 31, 1970. The percentage of failure (did not achieve synchronous orbit) is 30.8%. The percentage for this limited experience is somewhat higher than the predicted 25%.

Advanced Satellites

The first of the next generation satellite, the INTELSAT IV series, was successfully launched on January 25, 1971. This first INTELSAT IV satellite is planned for service in the Atlantic Ocean area. The second and third INTELSAT IV satellites are presently planned for launch in the third and fourth quarters of 1971, respectively.

Satellite Operational Capabilities

There has been a substantial growth in the capacity and improvement in performance characteristics of the INTELSAT satellites since the first generation spacecraft. The principal features and operational capabilities of the various types of INTELSAT satellites are shown in Appendix C.

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The four TT&C stations, spaced around the world, are at Andover, Maine; Fucino, Italy; Carnarvon, Australia; and Paumalu, Hawaii.

Earth Stations

During 1970, the following ten new earth station antennas were placed into commercial operation:

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Pacific Ocean Region: Kum San, Korea, and Bartlett, Alaska; Sri Racha, Thailand (second antenna).

Indian Ocean Region: Kuantan, Malaysia; Buitrago, Spain (second antenna); Fucino, Italy (second antenna), and Longorot, Kenya.

At the close of the year, 51 earth station antennas were in operation at 43 earth stations in 30 countries. Approximately 70 antennas at 58 earth stations in 43 countries are expected to be in operation by the end of 1971.

Utilization of the INTELSAT System

The growth in utilization of the INTELSAT system from the first year of operation in 1965 through 1970, and estimates of 1971 utilization, are shown in Table 1. The number of full-time leased two-way circuits, for voice and record service, has increased from 75 in 1965 to 2129 at the end of 1970. The latter figure represents a 50 percent increase over the previous year. Global television time in the INTELSAT system has also steadily increased from 40 half-channel hours in 1965 to approximately 997 half-channel hours in 1970.

Year Ending	65	66	67	68	69	70	71 (Est.)
Full time leased two-way voice circuits. (All classes of terminals)	75	86	344	560	1416	2129	4135
Television Time (Half channel hours)							
Transmit	40	76	225	666	779	997	1050
Receive	40	76	225	706	1047	1431	1480

TABLE 1

GROWTH IN UTILIZATION
THE INTELSAT SYSTEM

Use of Communications Satellite Service by NASA

The use of commercial satellite communications service by NASA began in February 1967, being first used for direct communications to the APOLLO stations. The use of INTELSAT service continued through 1970 and is now used throughout the space tracking and control networks.

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Worldwide television coverage via communications satellite was given to the dramatic recovery of the astronauts on the aborted APOLLO 13 mission.

Special Events

The unique capability of communication satellites to transmit live television broadcasts across the oceans was demonstrated again throughout 1970. Various important public affairs events of world-wide interest were relayed via INTELSAT satellites, including: President Nixon's visit to Europe, Vice President Agnew's visit to Japan, Prime Minister Wilson's visit to the United States, French President Pompidou's visit to the United States, Indonesian President Suharto's visit to the United States, the funeral of former French President de Gaulle, the funeral of Egyptian President Nasser, the visit of the Pope to the Far East, the Pope's celebration in Rome of Easter Mass and of Christmas Mass, the signing of a Russian-German agreement, the Mideast crisis, aircraft skyjacking, the APOLLO 13 mission, and a number of sports events of international interest.

SUMMARY

(Opportunities and Challenges)

The first operational commercial communications satellite was deployed to meet expanding telecommunication requirements in the North Atlantic region. This original service was available only between North America and Western Europe, and then only between two earth stations at any given time. Subsequent operational satellites (INTELSAT II's and III's) are providing multipoint communications in the Atlantic, Pacific and Indian Ocean regions to those nations with earth stations, thereby assuring them efficient, economical, direct access to the global system.

Up to 1970, the effort has been to establish the global system by deploying communications satellites and encouraging nations to build earth stations. Now that the system has been established, there is a need to improve its overall system reliability by providing appropriate system redundancy and increasing the individual reliability performance of the earth stations. There is an opportunity to promote the early utilization of advancing technology which will bring the benefits of direct access to the global system within the economic means of any nation desiring such access.

The United States will continue to support the global commercial communications satellite system which is made available to all nations -- large and small, developed and developing -- on a non-discriminatory basis by INTELSAT.

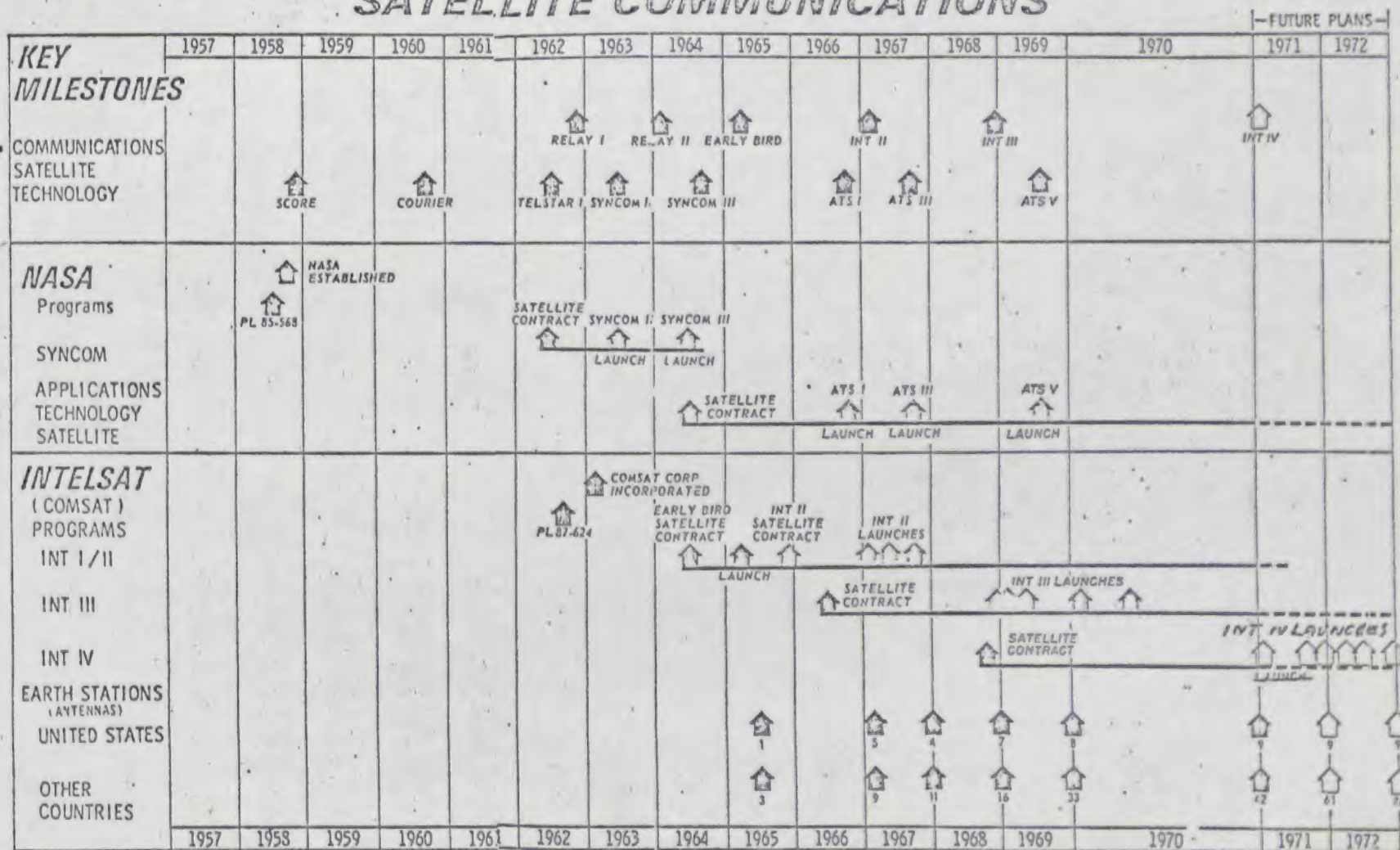
APPENDIX A

PROGRESS CHART

SATELLITE COMMUNICATIONS

NOT FINAL

PROGRESS CHART SATELLITE COMMUNICATIONS



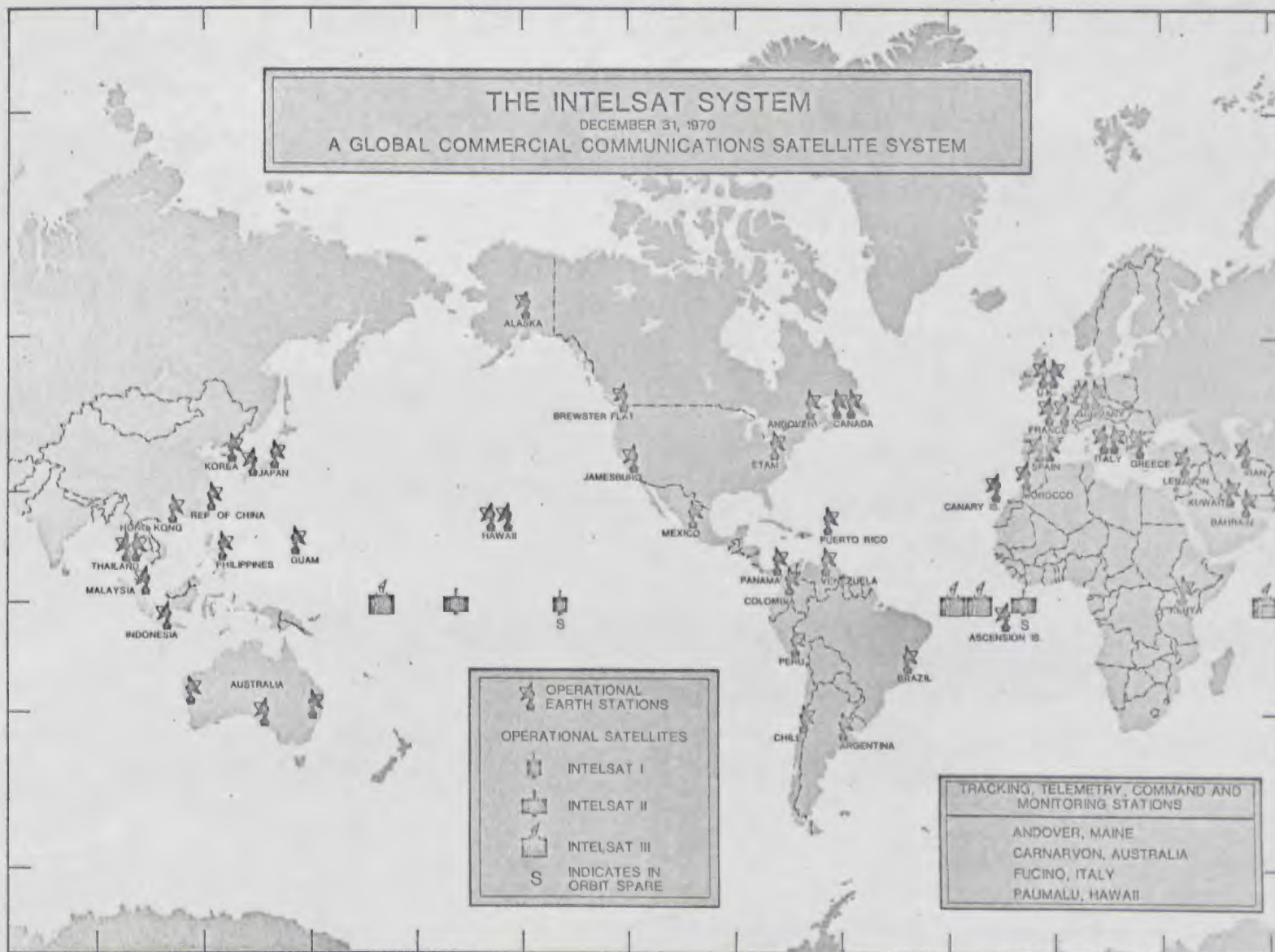
APPENDIX B

THE INTELSAT SYSTEM

THE INTELSAT SYSTEM

DECEMBER 31, 1970

A GLOBAL COMMERCIAL COMMUNICATIONS SATELLITE SYSTEM



APPENDIX C

INTELSAT SATELLITES

GROWTH IN OPERATIONAL CAPABILITY

APPENDIX C

ITEM	INTELSAT I (Early Bird)	INTELSAT II	INTELSAT III	INTELSAT IV ^a
Diameter, inches	28.4	56.0	56.0	93.8
Height, inches (overall)	47.1	51.0	78.0	208.0
Initial Weight, lb. (in orbit)	85	190	334	1587
Design Lifetime (years)	1-1/2	3	5	7
Total two-way telephone circuits ^b , <u>or</u>	240	240	1200	3000 to 9000 ^c
TV Channels ^d	1	1	4	12

^a Parameters estimated.

^b When used with standard earth stations.

^c Depending on type modulation, number of carriers per repeater, and antenna beam width used.

^d In lieu of telephone circuits.

INTELSAT SATELLITES
GROWTH IN OPERATIONAL CAPABILITY

Comsat

January 27, 1970

MEMORANDUM FOR THE STAFF SECRETARY

Subject: Log No. 2819

I recommend that the Annual Report under the Communications Satellite Act of 1962 be transmitted to the Congress with a revised transmittal letter to be prepared by Mr. Keogh.

Peter Flanigan
Assistant to the President

Attachment

(Cy in Comsat file)

cc: Mr. Keogh
Mr. Flanigan
Mr. Whitehead ✓
Mr. Kriegeman
Central Files

CTWhitehead:ed

THE WHITE HOUSE
WASHINGTON

1/20/70
(Date)

TO: *T. Whitehead*
FROM: PETER FLANIGAN

ACTION:

DUE DATE: 26 Jan.
a.m.

- ☒ Prepare reply for
Mr. Flanigan's signature
- ☐ Direct reply
- ☐ Comments/recommendations
- ☐ Please handle
- ☐ Information
- ☐ File

REMARKS:

*Call Mr. Carmack
Lay.*

ACTION MEMORANDUM

WASHINGTON

LOG NO.: 2819

Date: Monday, January 19, 1970

Time: 4:25 P.M.

FOR ACTION: Dir. Mayo

cc (for information):

Peter Flanigan (Whitehead)

FROM THE STAFF SECRETARY

DUE: Date: Monday, January 26, 1970

Time: 2:00 P.M.

SUBJECT: Annual Report on Activities of the Communications
Satellite Act of 1962.

ACTION REQUESTED:

___ For Necessary Action

X For Your Recommendations

___ Prepare Agenda and Brief

___ Draft Reply


___ For Your Comments

___ Draft Remarks

REMARKS:

PLEASE ATTACH THIS COPY TO MATERIAL SUBMITTED

If you have any questions or if you anticipate a delay in submitting the required material, please telephone the Staff Secretary immediately.


M. P. COLE, JR.
For the President

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

Date: January 19, 1970

Subject: Annual Report on Activities and Accomplishments
under the Communications Satellite Act of 1962

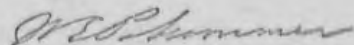
To: Mr. William J. Hopkins

Attached are two copies of the final draft of the President's Report to the Congress under the Communications Satellite Act of 1962. A proposed letter of transmittal has also been included.

In preparing the report and the letter of transmittal, assistance and advice have been obtained from:

Department of State
Department of Defense
Department of Transportation
National Aeronautics and Space Administration
National Aeronautics and Space Council
(Executive Secretary)
Ambassador Scranton

I would very much appreciate your assistance in obtaining the White House staff review of the report and the approval of the President for publication and forwarding to the Congress.



W. E. Plummer
Acting Director

Attachments



ANNUAL REPORT

on
ACTIVITIES AND
ACCOMPLISHMENTS
under the
COMMUNICATIONS
SATELLITE ACT OF 1962

January 1 - December 31, 1962

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TO THE CONGRESS OF THE UNITED STATES

There have been many significant accomplishments in commercial satellite communications during the 1960's. These include important milestones:

- Demonstration of the feasibility of satellite communications for practical uses;
- Enactment of the Communications Satellite Act of 1962;
- Establishment of the Communications Satellite Corporation;
- Creation of the International Telecommunications Satellite Consortium (INTELSAT); and
- Establishment and operation of a Global Commercial Communications Satellite System.

These unprecedented achievements were facilitated by the policy of the United States to make the services attainable through communications satellite technology available to the nations of the world. The outstanding success of INTELSAT is the product of enlightened international cooperation between the participating member nations of the Consortium. Through this cooperative effort was created the INTELSAT system which is today providing international telecommunication services to much of the world.

The rapid progress toward establishment of the global system and the accelerated application of advanced technology have demonstrated the basic soundness of the institutional arrangements in the interim multilateral agreement. This progress has been the result of INTELSAT's effective decision making performance and COMSAT's accomplishments in planning and execution, as Manager for INTELSAT. These achievements are a tribute to human creativity and international cooperation in surmounting the substantial impediments (technical, social, political and economic) normally encountered in the introduction of a new technology.

The full impact of our progress was graphically portrayed when I sat in The White House in July and talked to Neil Armstrong and Edwin Aldrin on the surface of the Moon, an experience shared with people throughout the world through the medium of satellite communications.

The challenges ahead are to address further the complex factors facing modern society and to formulate meaningful national and international policy to exploit the growing opportunities offered by satellite communications technology. A specific task ahead for the United States is the successful completion of the INTELSAT Conference in 1970 leading to a multilateral agreement on Definitive Arrangements. The objective of the United States in this regard is to build upon the achievements of the Consortium since the Interim Arrangements were established in 1964.

Under section 404(a) of the Communications Satellite Act of 1962, I am transmitting to the Congress this seventh report on the national program, which is successfully advancing satellite communications technology. This report reflects the steady progress being made toward implementing the policy declared by the Congress in the Act to establish, as expeditiously as possible, a commercial communications satellite system, as part of an improved global communications network. Already we see major improvements in international telecommunication capabilities which are providing significant benefits for all peoples.

RICHARD NIXON

THE WHITE HOUSE
January 1970

INTRODUCTION

Background

Through the Communications Satellite Act of 1962, the Congress of the United States enunciated national policy "to establish, in conjunction and in cooperation with other countries, as expeditiously as practicable a commercial communications satellite system as part of an improved global communications network, which will be responsive to public needs and national objectives, which will serve the communication needs of the United States and other countries, and which will contribute to world peace and understanding." The Act also declared it to be United States policy that "in order to facilitate this development and to provide for the widest possible participation by private enterprise, United States participation in the global system shall be in the form of a private corporation, subject to appropriate governmental regulations." The Communications Satellite Corporation (COMSAT), incorporated in the District of Columbia on February 1, 1963, has served to carry out the intent of the Congress.

Prior to development of communication satellite technology inter-continental telecommunication services were provided by high frequency radio and submarine cable. The classical institutional arrangements for such service were established bilaterally between United States communication common carriers and those of foreign nations.

The advent of communication satellites with their potential for enhancing international telecommunications presented a challenge to the ingenuity of the United States and the international community to establish arrangements designed to yield the greatest benefits. Rather than choosing to continue the bilateral approach, it was decided that new institutional arrangements involving a multilateral agreement with a large number of nations was the more desirable alternative.

Summary of Progress

During 1969 progress continued to be made by the INTELSAT Consortium in establishing and operating the Global Commercial Communications Satellite System. In five and one-half years INTELSAT has grown from an initial membership of 11 participating nations to its year-end membership of 70 nations. A progress chart showing the various programs

contributing to the establishment of commercial communications satellite services is shown in Appendix A. The locations of the satellites and earth stations of the Global System are shown in Appendix B.

Significant milestones in 1969 were the successful launching of two INTELSAT III series satellites, a new generation of improved operational satellites; and the design and development by industry of the more advanced INTELSAT IV series satellites. The Global System has experienced a steady growth in use of the available capacity of the space segment. The space segment facilities of the Global System continued to provide high quality telephone, telegraph, television and related services. Eighteen additional earth stations were activated in various countries during the year. With the initiation of commercial service via the INTELSAT system to the Indian Ocean basin and the Near-East, global coverage was achieved. Users of the system have thus obtained improved international telecommunications. For example, the National Aeronautics and Space Administration used leased INTELSAT facilities as a portion of its total telecommunications network supporting the APOLLO manned space operations. It is estimated that half a billion people watched the APOLLO 11 astronauts on the Moon via television relayed by satellites.

Evaluation of Accomplishments

There have been major technical and institutional accomplishments since enactment of the Communications Satellite Act of 1962. These have provided improved international telecommunications throughout the world. The basic goal established by the Congress has been largely achieved -- far more rapidly than was expected. Major milestones in the development of the global system include:

- Establishment of the Communications Satellite Corporation in February 1963;
- The International Agreement Establishing Interim Arrangements for a Global Commercial Communications Satellite System on August 20, 1964;
- Operation of the first commercial communications satellite (EARLY BIRD) June 1965; and
- Achievement of global coverage by the INTELSAT System in July 1969.

In evaluating this progress, it must be noted that not only advanced nations but also many of the developing countries have planned and installed earth stations to make use of this new mode of telecommunication. The rapid establishment of the space segment and growth in numbers of earth stations have meant that for the first time, particularly in the developing areas of the world, high quality, reliable, and reasonably priced international telecommunication services have become available. Furthermore, the live distribution of television over transoceanic regions has become routine.

The progress which has been achieved with the first three generations of operational commercial communication satellites represents a profoundly important step toward a new order of capability for worldwide communication. This progress enhances the process of establishing worldwide interconnection of all modes of telecommunication and thereby increases the possibilities for the enrichment of mankind through the sharing of knowledge. Future accomplishments will be limited only by the imagination, skill, and cooperation of the nations participating in this challenging venture in space..

There are additional tasks ahead, however, if the full range of goals established by the Congress are to be met. Continued concern for the interaction of policy, planning and technology will be needed to bring the benefits of communications by satellite to more of the developing areas of the world, particularly to the centers of low-density traffic. Further attention is also needed to expand the range of telecommunication services by applying in progressively greater measure the potential of communication satellite technology.

One of the important unfinished tasks ahead is to complete the INTELSAT Conference and to reach agreement with our partners on the Definitive Arrangements for INTELSAT. The United States' objective is to build upon the solid accomplishments of the Consortium since the Interim Arrangements were established in 1964.

NATIONAL ACTIVITIES

The keynote of the United States' activities in satellite communications is the mutual support and cooperation demonstrated by the United States Government-Industry team, coupled with the enlightened international cooperation by the members of INTELSAT. These joint efforts enabled INTELSAT to move rapidly toward its goals of establishing a successful international commercial enterprise, and of increasing the participation of the partner nations in research, development and manufacture in this new field of technology.

There follows a summary of significant activities during 1969 in furtherance of our national communication satellite policy; and of the concurrent planning which has been undertaken to maintain the rapid pace of progress in satellite technology and its adaptation to the needs of modern society.

Federal Coordination and Planning

The Director of Telecommunications Management and the Department of State, in coordination with the Federal Communications Commission, continued active participation in fulfilling Executive Branch responsibilities assigned to the President by the Communications Satellite Act of 1962.

The principal activities of the Director of Telecommunications Management and the Department of State in this functional area during the year included:

- Providing policy guidance to COMSAT, acting as the United States representative in meetings of the Interim Communications Satellite Committee (ICSC), of INTELSAT.
- Participating in the work of the United States Delegation to the Plenipotentiary Conference on Definitive Arrangements for the International Telecommunications Satellite Consortium, initially convened on February 24, 1969.
- Maintaining continuous review of all significant phases of the development and operation of the Global System including activities of the Communications Satellite Corporation, particularly with regard to INTELSAT III and IV satellites.

- Helping attain efficient use of the electromagnetic spectrum and technical compatibility of communication satellite systems with existing telecommunication facilities.
- Collaborating with other interested agencies and departments (including the Department of Transportation, the Federal Aviation Administration, the Federal Communications Commission and the National Aeronautics and Space Administration) in national planning and development with regard to use of satellites for aeronautical purposes.

Federal Support

The National Aeronautics and Space Administration (NASA) continued to provide launch vehicles and launch services on a reimbursable basis for placing INTELSAT satellites into transfer orbit for the Consortium, through COMSAT serving as Manager for INTELSAT; and to provide technical advice and assistance to COMSAT, as well as technical advice to the Federal Communications Commission.

The principal activities performed by NASA in this functional area during the year included:

- Launching additional INTELSAT III series satellites.
- Providing technical consultation service to COMSAT in a number of instances. NASA made its experience available to COMSAT in connection with various aspects of spacecraft technology, and spacecraft under design, development and test.
- Continuing to furnish technical advice and comments to the Federal Communications Commission (FCC) on a number of applications filed by COMSAT and on other matters in respect to satellite communications and earth stations.
- Making available for commercial purposes and on a reimbursable basis during the year television relay services via the Applications Technology Satellites ATS-1 and ATS-3.

III

THE INTERNATIONAL TELECOMMUNICATIONS
SATELLITE CONSORTIUM (INTELSAT)

Membership

INTELSAT continued to grow during 1969, increasing its membership and extending services to new areas. The addition of seven members during the year brought total membership in the Consortium to 70 countries. The new members are: Cameroon, Guatemala, Ivory Coast, Jamaica, Luxembourg, Nicaragua, and Republic of Viet Nam. In addition, the following eight countries have obtained allocated quotas and can accede at any time: Bolivia, Democratic Republic of the Congo, Costa Rica, Dominican Republic, Ecuador, Honduras, Paraguay, and Trinidad and Tobago.

The interest and active participation of so many countries in establishing a viable and useful Global Commercial Communications Satellite System is an indication of the promise of this new mode of communications for providing improved international telecommunication services.

Interim Communications Satellite Committee (ICSC)

The ICSC, as governing body of the organization, continued its normal bi-monthly meeting schedule for the purpose of planning and directing the development and operation of the INTELSAT system. The Committee dealt with a wide variety of issues and problems during the year, including among others:

- Approval of certain design and engineering changes in the INTELSAT III satellite series and for ordering additional satellites;
- Approval of the exercise of options under the INTELSAT IV satellite procurement contract for the purchase of additional satellites;
- Approval of launch arrangements and contracts relating to INTELSAT III and INTELSAT IV series satellites;
- Continual review and revision of contingency plans for operation of the space segment of the global system;

- Renewal of the service contract with the National Aeronautics and Space Administration to extend NASCOM communication services in support of the APOLLO program until September 1970;
- Establishment of policy relating to conditions under which INTELSAT inventions and data can be utilized by Signatories for communication satellite systems, including earth stations;
- Continual review of INTELSAT's user charges including consideration of the method of charging for multi-destination television transmissions;
- Approval of new earth stations to work with the space segment of the Global System;
- Determination of technical compatibility between the INTELSAT existing and planned space segment and the proposed domestic communications satellite system of Canada;
- Appointment of a new panel of legal experts from which presidents of arbitration tribunals will be selected;
- Coordination with the International Civil Aviation Organization to discuss possibilities and implications of the establishment of an aeronautical communication-satellite service;

Definitive Arrangements for INTELSAT

Pursuant to the terms of Article IX of the 1964 Intergovernmental Agreement Establishing Interim Arrangements for a Global Commercial Communications Satellite System, the Government of the United States convened a conference in Washington, D. C., in February 1969 to consider definitive arrangements for the global system. The Plenipotentiary Conference on Definitive Arrangements for the International Telecommunications Satellite Consortium met in Washington for four weeks, recessing on March 21, after establishing a Preparatory Committee to carry forward the work of the Conference.

The Conference Plenary was participated in by sixty-seven of the then sixty-eight member countries, by observers from twenty-nine non-member countries, and observers from the UN Secretariat and the ITU. Of this total of ninety-eight delegations to the Conference,

about forty-five participated in the work of the Preparatory Committee. The Preparatory Committee met in Washington, D. C., for four weeks during June and July, for three weeks during September and again for more than three weeks in November and December to try to resolve differences of views and formulate draft agreements.

The Conference Plenary is now scheduled to reconvene in Washington, D. C., on February 16, 1970, to consider the Preparatory Committee report and complete work on Definitive Arrangements for INTELSAT.

PROGRESS IN ESTABLISHING AND OPERATING THE GLOBAL SYSTEM

Background

The Global System has grown steadily since operations began in June 1965. The market for international services by satellite consists of requirements of the international telecommunication carriers.

An overview of and the progress made by INTELSAT toward establishing and operating the Global System can be seen in Appendices A and B.

Conceptual Framework of the Global System

Communication satellites placed in synchronous altitude equatorial (geostationary) orbit provide a unique transmission medium for all types of telecommunication services. Essentially, the synchronous altitude equatorial corridor -- when active repeater communication satellites are employed -- is virtually a 22,300 mile high ionospheric belt which can be exploited to extend the range of telecommunication capability. The fundamental attributes of this revolutionary mode of communications include an unprecedented degree of versatility and flexibility together with high capacity that can be achieved at economically viable costs per channel.

The INTELSAT system is based on the deployment of a relatively few high performance geostationary communication satellites so located in orbit as to provide essentially global coverage. The specific configuration of the Global system is achieved by placing the individual satellites so as to optimize the coverage in (a) the Atlantic Ocean Basin, (b) the Pacific Ocean Basin and (c) the Indian Ocean Basin. All satellites after INTELSAT I (Early Bird) have multiple access capabilities which enable several earth stations to use a single satellite simultaneously. A system with these coverage and operational features enhances the availability of the satellites to a maximum number of nations.

Technical control of the INTELSAT satellite operation, orbit positioning and monitoring of the satellites status is accomplished from a select number of tracking, telemetry, command and monitoring (TTC&M) earth stations comprising a system control network.

Space Segment Development

The INTELSAT system is based on an integrated systems approach in both systems design (configuration) and management in the establishment and operation of the system. Since a few geostationary satellites

allow extensive geographic coverage, global in scope, the institutional arrangements of INTELSAT provide an opportunity for applying an orderly and integrated systems approach to the design of the system. The current configuration of the INTELSAT system with the present operational satellites is shown in Appendix B.

Operational Satellites

The operational system of 1969 consisted primarily of INTELSAT III series satellites with secondary reliance on the INTELSAT II satellites and the single INTELSAT I (Early Bird) satellite.

-- INTELSAT I (Early Bird)

The first INTELSAT satellite, Early Bird, positioned in geostationary orbit over the Atlantic Ocean was retired from service on January 20, 1969, and used as an in-orbit spare. This satellite had provided regular commercial service between North America and Western Europe since June 28, 1965. Early Bird was placed back into commercial service for a short period from June 30, 1969 to August 17, 1969, when difficulty was experienced with the INTELSAT III (F-2) antenna.

-- INTELSAT II Series

Two of the three INTELSAT II series satellites successfully launched during 1967 were in service at the end of the year. The INTELSAT II (F-3) satellite positioned over the Atlantic has been used during most of 1969 to provide service between North America and Ascension and Grand Canary Islands as well as to the NASA APOLLO Tracking and Data Acquisition Ship in the Atlantic. This satellite was also used for service during the failure of the Atlantic INTELSAT III satellite. The Pacific INTELSAT II (F-4) satellite is used to provide part of the commercial service between the U. S. mainland and Hawaii.

-- INTELSAT III Series

During 1969 two INTELSAT III series satellites were successfully launched and placed into geostationary orbit. Another INTELSAT III satellite was launched in July but failed to reach orbit due to a malfunction of the third stage of the Delta launch vehicle. The two satellites launched this year plus the satellite successfully launched at the close of 1968 has allowed an INTELSAT III satellite to be positioned over each of the three ocean areas, Atlantic, Pacific and Indian.

One portion of one of the amplifiers in the Indian Ocean satellite has failed, requiring earth stations to transmit greater power. Overall quality and maximum capacity has not changed, however, and the satellite continues to provide full-time service.

The Atlantic satellite has provided for most of the Atlantic Basin traffic during 1969, but it experienced antenna problems from June 29, 1969 to July 28, 1969 during which time it was not able to carry any traffic.

Technical modifications have been made on subsequent satellites in this series. For example, the INTELSAT III satellite which is positioned over the Pacific Ocean has not experienced any difficulties since being launched and continues to provide the majority of commercial service in the Pacific region.

-- Advanced Satellites --

The next generation of satellites, the INTELSAT IV series, is under construction and is scheduled for launching beginning in 1971. The original contract, placed in October 1968, called for delivery of a prototype and four flight models. A contract option for two additional flight models was exercised in October 1969. Another option for two additional flight models was exercised in December 1969. The Atlas Centaur was selected during 1969 to be the launch vehicle for the INTELSAT IV series satellites.

-- Satellite Operational Capabilities

There has been a substantial growth in the size and performance characteristics of the INTELSAT satellites from the first generation model Early Bird. The principal features and operational capabilities of the various types of INTELSAT satellites are shown in Appendix C.

Tracking, Telemetry, Command and Monitoring

Overall operational control of the INTELSAT system is accomplished by specialized stations which perform tracking, telemetry, command and monitoring (TTC&M) functions. These stations track the individual satellites in the INTELSAT system, receive telemetry data which indicate the performance and status of the satellites, and transmit commands which control the various on-board communications and position keeping equipment. The TTC&M stations are operated under lease or other arrangements with INTELSAT.

The TTC&M stations at Andover, Maine; Paumotu, Hawaii; and Fucino, Italy were placed in an operational status prior to 1969. A new station located at Carnarvon, Australia, was placed into operational status during 1969.

Earth Stations

The year 1969 saw the largest annual increase in the number of operational earth stations in the history of INTELSAT. Eighteen new stations became operational. New earth station antennas were placed into operation in the following countries: Argentina, Australia (Carnarvon No. 2, Ceduna), Bahrain, Brazil, Canada (Mill Village No. 2), Republic of China, France (Pleumeur Bodou No. 2), Germany (Raisting No. 2), Indonesia, Iran, Japan (Yamaguchi), Kuwait, Lebanon, Morocco, Peru, United Kingdom (Hong Kong), and the United States (Guam).

At the close of the year, 41 earth station antennas were in operation in 24 countries. Nine other stations or additional antennas are expected to be in service within the first six months of 1970. They are located in the following countries: Colombia, East Africa (Kenya), Italy (Fucino No. 3), Greece, India, Malaysia, Republic of Korea, Spain (Buitrago No. 2), and Thailand (Si Racha No. 2). In addition, nine more stations are expected to be placed in operation during the latter half of 1970. One of these stations is to be located at Talkeetna, Alaska, located about 90 miles north of Anchorage. This station is scheduled to begin commercial operation by July 1, 1970.

Utilization of the Space Segment

Each satellite in the INTELSAT system is accessed by a group of earth stations as listed in Appendix B. The utilization of the INTELSAT satellites increased from a total of 75 two-way voice circuits provided at the end of 1965, to 1416 circuits by the end of 1969. The growth in utilization of the operational satellites is shown in Table 2.

Number of Operational INTELSAT Satellites	1	1	4	4	5	5
Satellite Utilization* Percent of Rated Capacity	31.3%	35.8%	53.3%	74.9%	44.4%	37.8%
Number of Leased Two-way Voice Circuits (All classes of terminals)	75	86	344	560	1416	2877
Number of Operational Earth Station Antennas (Includes NASA terminals)	5	12	15	23	41	57
Year Ending	1965	1966	1967	1968	1969	1970 Estimate

*"Utilization in percent of rated capacity" figures include the effect that some non-standard earth stations are less efficient in utilizing satellite capacity.

TABLE 2
GROWTH OF UTILIZATION
THE INTELSAT SYSTEM

The higher capacity INTELSAT III series satellites and the increasing number of operational earth stations throughout the world made possible the dramatic increase in voice traffic utilization in 1969.

The transmission of television via the INTELSAT satellites has increased from approximately 40 hours in 1965 to approximately 760 hours in 1969.

Use by NASA

The NASA Operational Communications System began using commercial satellite service for APOLLO support in February 1967, and the use of the INTELSAT service continued throughout 1969.

The APOLLO manned flights conducted in 1969 included the use of satellite service to the three instrumentation ships outfitted for direct communications via communication satellites of the INTELSAT system. This provided the APOLLO Mission Director in Houston, Texas, a capacity to effect real time direction of the orbiting APOLLO spacecraft.

Special Events

The unique capability of communication satellites to transmit live television broadcasts across the oceans was demonstrated throughout the year. Various important public affairs events of world-wide interest were relayed via INTELSAT satellites.

Among the major events relayed via communication satellites during 1969 were: the inauguration of President Nixon, the funeral of General Eisenhower, the DeGaulle referendum in France and the French national elections, President Nixon's meeting with President Thieu, President Nixon's visits to Western Europe, Romania and the Far East, the Investiture of the Prince of Wales, the Pope's visit to Uganda, the Wimbledon tennis tournament, the U. S. baseball World Series, and the Strategic Arms Limitation Talks (SALT) in Helsinki, Finland.

Of special interest were the live television broadcasts of the APOLLO 9, 10, 11 and 12 missions. The historic APOLLO 11 moonlanding showing man's first steps on the surface of the Moon, was one of the most dramatic and significant scientific accomplishments in history. The moonlanding was relayed by communication satellite to five continents, which also made it the most widely shared event in history.

SUMMARY
(Opportunities and Challenges)

The first operational commercial communications satellite (Early Bird) was deployed to meet expanding telecommunication requirements in the high traffic volume North Atlantic region. Subsequent operational satellites (INTELSAT II's and III's) are providing satellite capability in the Atlantic, Pacific and Indian Ocean regions to those nations with earth stations, thereby assuring them efficient, economical, direct access to the Global System. There is an opportunity to promote the development of technology which will accommodate low-density traffic sources throughout the world. Here the challenge is to promote the early utilization of advancing technology which will bring the benefits of direct access to the Global System within the economic means of any nation desiring such access.

The initial use of the Global System has been to provide international public telecommunication services. There is an opportunity for technical and management innovations to take advantage of the unique attributes offered by advancing technology in expanding the range of telecommunication services by making broader applications of communication satellites. Here the challenge is to address the complex technical, social, political and economic problems and formulate meaningful United States national and international policy.

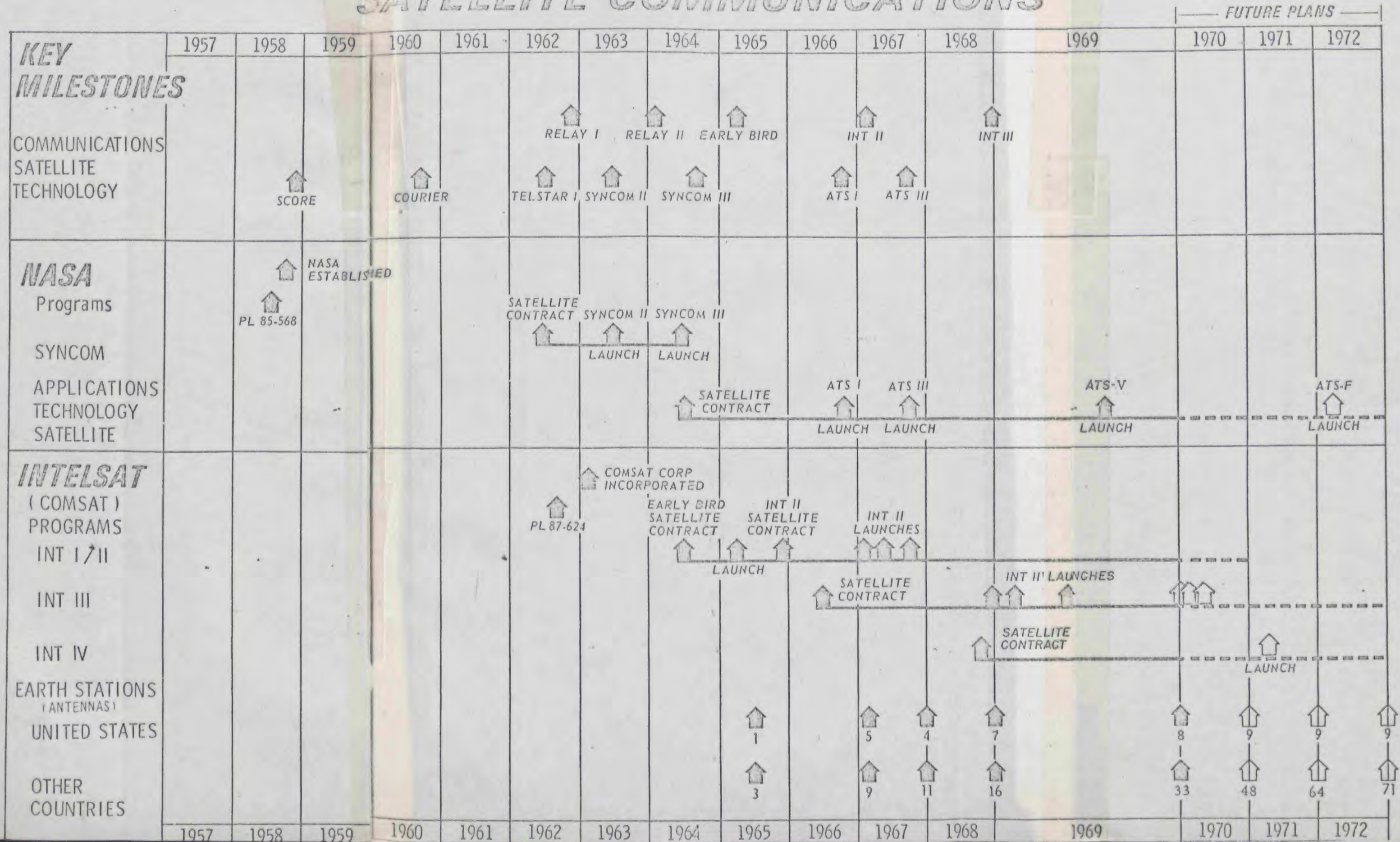
Finally, many opportunities are presented to the nation in bringing the benefits of satellite communications to mankind. In meeting this challenge, the United States will continue to support the Global Commercial Communications Satellites System which is made available to all nations -- large and small, developed and developing -- on a non-discriminatory basis by the International Telecommunications Satellite Consortium (INTELSAT).

APPENDIX A

PROGRESS CHART

SATELLITE COMMUNICATIONS

PROGRESS CHART SATELLITE COMMUNICATIONS



APPENDIX B

THE INTELSAT SYSTEM



INTELSAT System

DECEMBER 31, 1968

COMMUNICATIONS SATELLITE SYSTEM

TH STATIONS ▲ NEW EARTH STATIONS (1969)



WORKS CONFIGURATION

EARTH STATIONS
PAUMALU, OAHU, HAWAII
TANAY, PHILIPPINES
SRI RACHA, THAILAND
BREWSTER, WASHINGTON
PAUMALU, OAHU, HAWAII
EDARAKI, JAPAN
CARNARVON, AUSTRALIA (42°)
MOREE, AUSTRALIA
JAMESBURG, CALIFORNIA

NETWORKS CONFIGURATION*

SATELLITE	EARTH STATIONS
INTELSAT I EARLY BIRD	MILL VILLAGE, CANADA GOONHILLY DOWNS, ENGLAND PLEUMEUR BODOU, FRANCE RAISTING, WEST GERMANY
INTELSAT II (F-3)	ANDOVER, MAINE LONGOVILO, CHILE UTIBE, PANAMA BUITRAGO, SPAIN FUCINO, ITALY GRAND CANARY ISLAND, SPAIN (42°) ASCENSION ISLAND, UK (42°)

* Note: The network configuration will change when INTELSAT III (F-2) (Extended) becomes operational. The following stations will then be added to the network: Elm, West Virginia, Cayey, Puerto Rico and Tulancingo, Mexico.

Note: This Chart will be updated as of 31 December 1969

APPENDIX C

INTELSAT SATELLITES

GROWTH IN OPERATIONAL CAPABILITY

APPENDIX C

ITEM	INTELSAT I (Early Bird)	INTELSAT II	INTELSAT III	INTELSAT IV ^a
Diameter, inches	28.4	56.0	56.0	93.0
Height, inches (overall)	47.1	51.0	78.0	193.0
Weight, lb (in orbit)	85	190	322	1584
Design Lifetime (Years)	1-1/2	3	5	7
Total two-way telephone circuits ^b , <u>or</u>	240	240	1200	3,000 to 9,000 ^c
TV Channels ^d	1	1	4	12

^aParameters estimated.

^bWhen used with standard Earth Stations having 85 to 97-ft. diameter.

^cDepending on type modulation, number of carriers per repeater, and antenna beam width used.

^dIn lieu of telephone circuits.

INTELSAT SATELLITES
GROWTH IN OPERATIONAL CAPABILITY