

June 30, 1969

MEMORANDUM FOR

Dr. Thomas Paine
Administrator
National Aeronautics and
Space Administration

In our discussions shortly after I assumed my responsibilities here at the White House, we agreed that NASA would provide, on a monthly basis, a report of significant events and accomplishments during the preceding month and a review of major problems facing your agency during the upcoming month.

We have not been receiving these reports, and I would appreciate it if you would begin such a procedure as soon as possible.

Peter M. Flanigan
Assistant to the President

cc: Mr. Flanigan
Mr. Whitehead ✓
Central Files

CTWhitehead:ed

BB FORM
NO. 38

ROUTE SLIP

(Fold Here)

EXECUTIVE OFFICE OF THE PRESIDENT
BUREAU OF THE BUDGET

DATE

6/30/69

TO:

Tom

FROM:

Dick Speier

REMARKS:

FYI

Europeans Interested in Titan 3 Proposal

By Cecil Brownlow

Paris—France, Italy and West Germany have expressed a serious follow-on interest in Martin Marietta Corp.'s proposal to provide Titan 3 boosters for the launching of heavy-weight European space payloads.

Martin began promoting a campaign to market the Titan 3 in Europe as a payload booster during the recent Paris air show at a proposed total customer cost of \$20 million per launch. This includes use of the range facilities at Cape Kennedy; propellants, launch personnel and associated services.

The \$20 million, in the words of one Martin official here, "gets you . . . off the ground," with payloads too heavy to be lifted by presently-available European launchers, whether developed on a multi-national or strictly national basis.

State and Defense Dept. export officials will not permit the company to offer the booster for direct sale because of the advanced technology techniques incorporated into the Titan system. The U.S. government probably would approve the launching of the Titan by U.S. crews from sites outside the North American continent, if the European customer agreed to pay the additional transport and facility costs involved. But, there are no European-owned launch complexes that can handle a vehicle of Titan's size and configuration. Transport costs would be prohibitive.

National space agencies of the three European countries have asked Martin Marietta's Denver Div. to conduct economic feasibility studies regarding the use of the Titan 3 vehicle for carrying specific payloads into space. The payloads already have been designed, but their individual weights are beyond

the capacity of available boosters within Europe, either through national programs or the waning European Launcher Development Organization (ELDO).

Following its initial proposal for the Titan 3 as an European booster at the recently concluded Paris air show, the company said it has uncovered one definitely planned European payload that should have the lift capability of a Titan. This is probably the Franco-German Symphonie communications satellite scheduled to join these two countries with South America's Guiana and the French-speaking portions of Africa.

The proposal, and early Paris air show contacts, are being pursued by visits by David S. Le Vine, the Denver Div.'s vice president for launch vehicles. Le Vine currently is touring France, Italy, Belgium and West Germany. Great Britain, never a leader in proposed advanced European space payload programs and now even more reluctant in view of its present financial crisis, also will be visited by Martin representatives.

Under present plans, two Symphonie experimental payloads are scheduled to be launched on ELDO Europa 1/PAS boosters in 1972 from the French space site in French Guiana. But, there is increasing doubt whether the small ELDO booster will be capable of launching the Symphonie payload as it gains in complexity and weight during its development stage.

But, U. S. government restrictions concerning Martin's right to sell outside the country in this area could be a deterrent to export sales. Washington has told the company that it cannot contract to boost any communications satellites with a worldwide capability that might come into competition with the orbital payloads put into space by the Communications Satellite Corp. (Comsat). Comsat is a private organization, but its management role in a multi-nation communications satellite network has the formal backing of the U. S. That country is not prepared to back—however indirectly—any project that might compete with Comsat's organization.

On the other hand, Martin's permission to sell, as authorized by the State Dept., does permit the company to negotiate for the launch of regional communications satellite systems. In the eyes of the Europeans, the question is what, in State Dept. parlance, constitutes a worldwide communications satellite system vis-a-vis a regional system. Much of Martin's success, or failure, may depend upon the State Dept.'s ruling in this regard.

The Martin decision to offer the Titan as a European payload booster during the course of the Paris air show was based upon a number of conclusions. These included:

- National Aeronautics and Space Administration announcement that it planned to use the Titan 3C as the booster for its advanced technology ATS-F and ATS-G satellites. These are scheduled for launch into a synchronous earth orbit in 1972 and 1973-74, respectively, with payloads of between 1,600 and 1,700 lb. Synchronous orbits of the two would be in the same plane as those of most European communications satellite projects that might require a Titan launch.

But, more importantly, the NASA decision gave the Titan a civilian sheen. Previously, it had been solely a Defense Dept. booster, with a primary mission of launching Air Force unmanned—and largely unannounced—global surveillance satellites from Vandenberg AFB, Calif. Now, with NASA participation in the program, any interested European country can negotiate for a

West Germany Set for Helios Project

West German aerospace industry has begun a competition to design, build and test the Helios solar probe, which has been described as the most advanced scientific spacecraft yet scheduled for launch.

The joint U.S.-German Helios project involves the launch of two probes to within 0.3 astronomical units of the sun. Germany will have responsibility for the spacecraft, and the U.S. will supply three of the 10 experiments on board. U.S. will also furnish the launch vehicle, probably an Atlas Centaur, launch the probes and do some tracking and data acquisition.

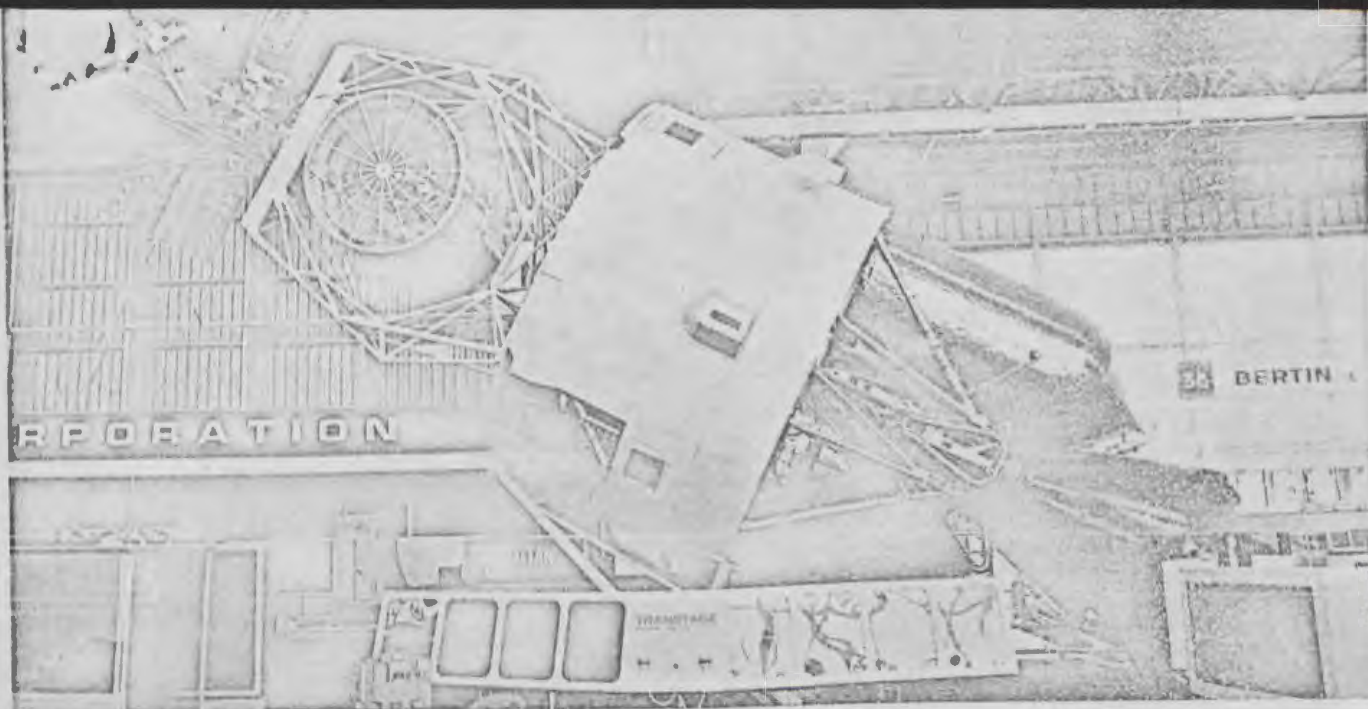
Most of the cost of the Helios project, currently estimated at \$75 million, will be borne by the West German government, which has committed about \$57.5 million to it during the next five years.

Objectives of the Helios probes will be measurements of the interplanetary medium closer to the sun than was possible with Pioneer and Mariner spacecraft. Budgetary limitations within the National Aeronautics and Space Administration forced the U.S. agency to seek outside partners to conduct this mission.

The three U.S. experiments will be sponsored by NASA but will be designed in conjunction with Australian and Italian experimenters.

The current mission and design characteristics for the 300-lb. probes result from feasibility studies conducted by Germany's Boelkow, Erno and Junkers. It is expected that Erno and Messerschmitt-Boelkow-Blohm will be the major competitors for the spacecraft.

A joint mission definition group concluded nine months of studies in April. This group was led by Rudy Stampfl of Goddard Space Flight Center and Ants Kutzer of GFW, the German space research association.



Multi-payload capability of the Aerojet-General Transtage for the Titan 3C USAF launch vehicle is displayed at the Paris air show. Spacecraft at the nose is the Northrop OV2-5 package for measuring high energy particle radiation. Cylindrical spacecraft nested behind it is the Lincoln Laboratory LES-6 Lincoln Experimental Satellite for testing advanced experimental solid

state avionic systems for UHF transmission and reception. On the opposite side are two small TRW payloads (below), the OV5-2 for monitoring electron and proton fluxes, and the OV5-4 for obtaining basic heat transfer data, specifically heat transfer coefficients for natural convection, nucleate and film boiling for Freon 114.

Titan launch through the "peaceful" NASA rather than through the Defense Dept. From a political standpoint, this is much more desirable on both sides of the Atlantic.

■ Final Titan research and development vehicle had been flown successfully shortly before the opening of the Paris show. The program currently is entering the full production phase. Present production rate at the Denver Div. is one booster every 20 days based upon a one-shift-per-day schedule. This could be increased substantially through the addition of shifts, should foreign orders and timetables dictate. If pressed, the Denver facility could produce 6-8 Titans per month.

The company also has several of the boosters in storage, ranging in number between 8-10 at any given time, depending upon launch requirements of the U.S. Air Force.

But, as a rule of thumb, Martin believes that it can accept an order from abroad and fulfill it well before any European country could fabricate the payload to go with it.

■ Martin officials sensed what they believed to be a shift in European philosophy regarding space research activities as the U.S. and the Soviet Union stretched their respective leads in the field. The Europeans, Martin believes, have decided after several years of frustrated effort to place more emphasis upon launching financially and scientifically useful payloads, less upon the development of behind-the-state-of-the-art



boosters for the sake of prestige alone.

The cost of such launch vehicles has proved to be almost prohibitive, the prestigious results almost negative. Martin is betting on the premise that the financially crippled nations of Europe will not also decide that the continued development and production of European payloads for space are prohibitive in cost and lacking in international prestige.

The company also believes that any serious European programs for high-weight-factor satellites with scientific or communications-transmission payloads will require boosters with the lift capa-

bility of the Titan 3. The vehicle can carry payloads of up to 26,500 lb. for low-earth orbital missions, 2,150 lb. for synchronous equatorial orbits and 3,000 lb. for planetary missions such as explorations conducted in the region of Mars.

Major associate contractors with Martin Marietta in the Titan 3 program include Aerojet-General Corp. for the liquid-propellant engines, United Aircraft Corp.'s United Technology Center for the solid-propellant strap-on motors and AC Electronics Div. of General Motors Corp. for the inertial guidance system.

Thursday 6/26/69

3:15 Neither Flanigan's office nor DuBridge's office
has received the biweekly reports from NASA.

We get the releases and so does DuBridge.

Do you want to call someone?

ALSA
June 26, 1969

MEMORANDUM FOR MR. FLANNERY

As you know, I have expressed in the past some concerns about the notion of the future of our space program. My main concern is that NASA and others will use the enthusiasm generated by a success of Apollo II to create very strong pressures on the President to support him and the Nation prematurely in a large and continuing space effort.

The immediate problem is that the space task group chaired by the Vice President appears to be heading in the single recommended space program that will involve immediate commitments to high levels of lunar exploration simultaneously with a large manned space station program. This may be appropriate and may be the President's ultimate choice. However, a strong case can be made for constraining the NASA budget to its present level or slightly lower, while at the same time prioritizing the United States in maintaining a strong space program, including manned space flight, and preserving the President's option to select his own path for the future in his own time.

The Kennedy-Johnson 1971 budget process gives us an opportunity to review and possibly change our current levels of spending and that the President will have meaningful options to consider that will be useful in taking the space program beyond things that have happened.

It may be necessary that the President's committee would be created and the President is personally interested in a serious evaluation of several alternative NASA budget levels, including one in the vicinity of \$2.5 to \$3 billion.

(1) The Administration this week has to explain the changes of the Kennedy-Johnson 1971 budget and continue the ongoing effort to cut the \$2.25 billion added to the Administration's budget for NASA in the House authorization bill.

NASA

Wednesday 6/25/69

1:15 Dick Speier dictated the following over the phone:

"Last week the House Appns. Cmte. reported a bill that cuts appropriations for NASA \$18½ million below the Nixon budget. This action follows floor action on NASA authorization bill which added \$250.8 million. Members of the authorizing committee are currently organizing to add funds during floor action on the appropriation bill. "

THE WHITE HOUSE
WASHINGTON

Eva :
get out all NASA
periodic reports to date.

3. The President should be informed that NASA is making strong public statements about future commitments in space and that there is a significant danger that he may find himself in a very difficult situation in the next few months unless he asserts an interest in assessing the desirability of alternative space programs in a considered way without unnecessary pressure being generated by NASA in the press and on the Hill.

The President has stated that he has a personal bent for science and science-related programs. There are certainly many benefits, both economic and international, that we derive from our space program. I am not arguing here for a reduced NASA budget, but simply pointing out that I think that the President should seek a serious analysis of a \$2.5 to \$3 billion level in space program, including its costs and potential accomplishments. I think there are significant budgetary, scientific, and political factors that suggest that this could be a desirable alternative for the President and in any event one that he should have the option of evaluating.

This option cannot be preserved for the President unless we take some immediate steps. I propose therefore that you or I call Bob Mayo to emphasize the importance of including at least three major options in the fiscal year 1971 budget review process, including one in the \$2.5-\$3 billion range. It probably also would be appropriate for you to send a memorandum to the President outlining the desirability of continuing this option and suggesting that NASA be calmed down during the enthusiasm of Apollo 11, pending a systematic review this fall.

Clay T. Whitehead
Staff Assistant

cc: Mr. Whitehead
Central Files

CTWhitehead:ed

R. Speier

Illustrative \$2.5 billion
NASA budget for FY 71

<u>Program</u>	<u>\$M outlays</u>		<u>Explanation</u>
	<u>FY 71 present policy</u>	<u>FY 71 for \$2.5B budget</u>	
Manned space flight	1,800	850	Zero S ∇ production, 1/yr. Apollo with modest payloads, continue AAP
Planetary	180	250	Grand Tour (Titan Centaur) start plus smaller new starts
Sciences	160	110	cut astronomy and bio- science especially
Applications	180	200	ERTS expansion
Technology	190	100	Stop NERVA, reduce manned flight R&D
Aircraft	100	80	Reduce
Support	1,050	900	Cut manned centers \$100M, reduce other manned flight support.
	<hr/>	<hr/>	
TOTAL	3,660	2,490	

NEWS



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
WASHINGTON, D.C. 20546

TELS. WO 2-4155
WO 3-6925

FOR RELEASE: IMMEDIATE
June 24, 1969

RELEASE NO: 69-83C

APOLLO 11 TELEVISION

Two hours and 40 minutes of live television from the surface of the Moon will be transmitted to Earth by Apollo 11 in an early, early show beginning at 2:12 a.m., EDT, July 21.

Black-and-white pictures will show astronaut Neil A. Armstrong stepping onto the Moon from the ladder of the Lunar Module and erecting a U. S. flag and Armstrong and Edwin E. Aldrin, Jr., gathering lunar rocks and soil samples and setting out scientific experiments.

The lunar surface transmission is one of eight tentatively planned for the Apollo 11 flight, scheduled for launch from Kennedy Space Center, Fla., on July 16.

All the others are in color from the command module, which will remain in orbit about 70 miles above the Moon while the LM descends for the landing.

-more-

6/24/69

The tentative schedule of TV transmissions follows:

<u>Date</u>	<u>EDT</u>	<u>Event</u>
July 17	7:32 - 7:47 p.m.	Translunar coast, about 150,000 miles from Earth.
July 18	7:32 - 7:47 p.m.	Translunar coast, nearing Moon.
July 19	4:02 - 4:17 p.m.	Surface views of Moon from lunar orbit.
July 20	1:52 - 2:22 p.m.	CSM and LM flying formation after separation.
July 21	1:57 - 2:07 a.m.	Landing site tracking.
	2:12 - 4:52 a.m.	Lunar surface.
July 22	9:02 - 9:17 p.m.	Transearth coast.
July 23	7:02 - 7:17 p.m.	Transearth coast.

Television signals from the Moon will be transmitted direct from the LM, or from an umbrella-like high-gain antenna set up on the lunar surface, to a 210-foot diameter radio telescope at the National Radio Astronomy Observatory, Parkes, Australia.

From Parkes the signals, converted to a standard U.S. television picture, will be transmitted to Sydney, Australia, by microwave and then via the Intelsat III Pacific satellite to NASA's Mission Control Center at Houston, Texas, for release to the U.S. and overseas television networks.

NEWS



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
WASHINGTON, D.C. 20546

TELS. WO 2-4155
WO 3-6925

FOR RELEASE: IMMEDIATE
June 24, 1969

SPECIAL

NOTE TO EDITORS:

The National Aeronautics and Space Administration will issue a daily report on the status of the Apollo 11 Moon landing mission both in writing and by telephone, effective at 11 a.m. Wednesday, June 25. Copies will be available at NASA Headquarters, Room 6043, 400 Maryland Ave., S.W. For a daily telephone report, newsmen may dial: (202) 347-8550.

-end-

6/24/69



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
WASHINGTON, D.C. 20546

OFFICE OF THE ADMINISTRATOR

JUN 19 1969

MEMORANDUM TO: Dr. Clay T. Whitehead
The White House

Enclosed are copies of the more significant charts used in the June 13th presentation of the ATS program, as well as copies of the Communications Satellite Corporation's letter to NASA and the proposals submitted by Mr. John Macy of the Corporation for Public Broadcasting and Mr. Everett Erlick of the American Broadcasting Companies, Inc. Other proposals or statements that might be received will be circulated if so requested by the sender.

A handwritten signature in cursive script, reading "Walter A. Radius", is positioned above the typed name.

Walter A. Radius
Office of DOD and
Interagency Affairs

Enclosures:

1. CPB - Ford
- ~~2. COMBAT LTR~~
3. ABC Proposal
4. Burke's Charts

NASA

PRESENTATION OF ATS PROGRAM AND CAPABILITIES

JUNE 13, 1969

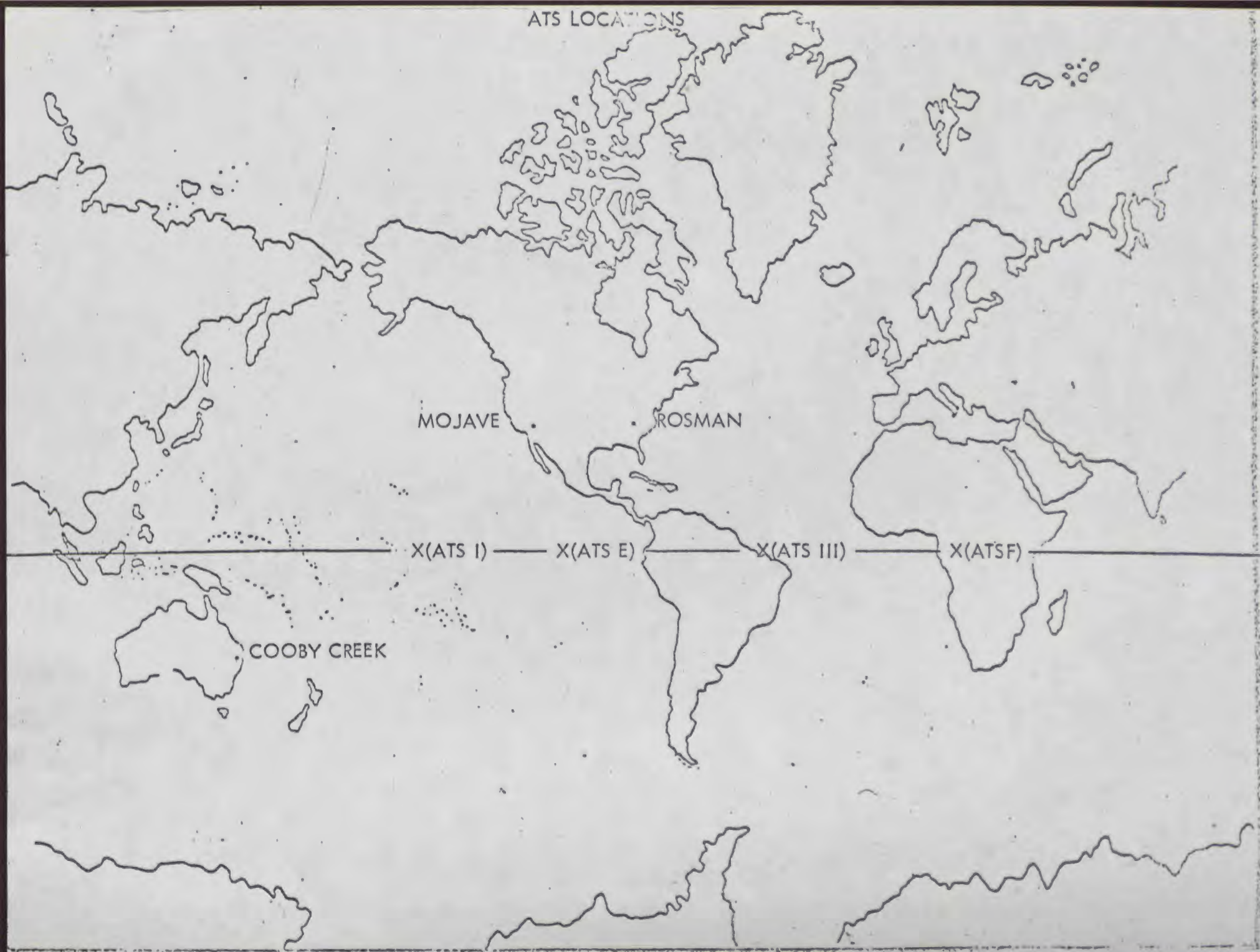
ATS OBJECTIVES

- INVESTIGATE AND FLIGHT-TEST TECHNOLOGY COMMON TO A NUMBER OF SATELLITE APPLICATIONS.
- INVESTIGATE AND FLIGHT-TEST TECHNOLOGY FOR THE STATIONARY ORBIT.
- CONDUCT A CAREFULLY INSTRUMENTED GRAVITY-GRADIENT ORIENTATION EXPERIMENT DIRECTED TOWARD PROVIDING BASIC DESIGN INFORMATION.
- TO FLIGHT-TEST EXPERIMENTS FOR A NUMBER OF TYPES OF SATELLITE APPLICATIONS ON EACH INDIVIDUAL SPACECRAFT.

ATS SCHEDULE

[illegible]

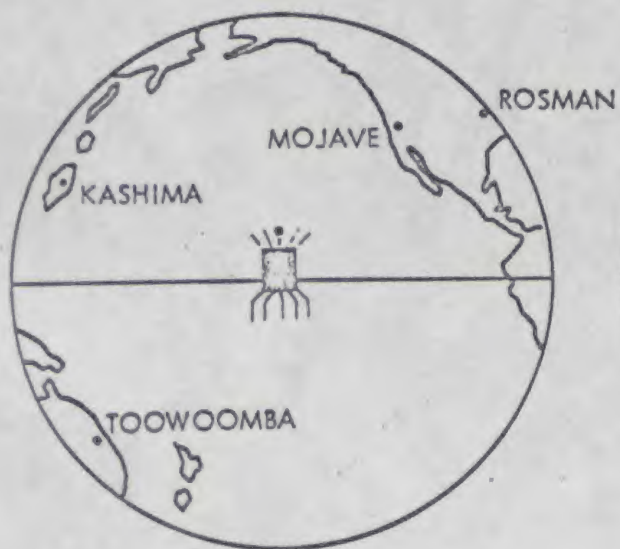
ATS LOCATIONS



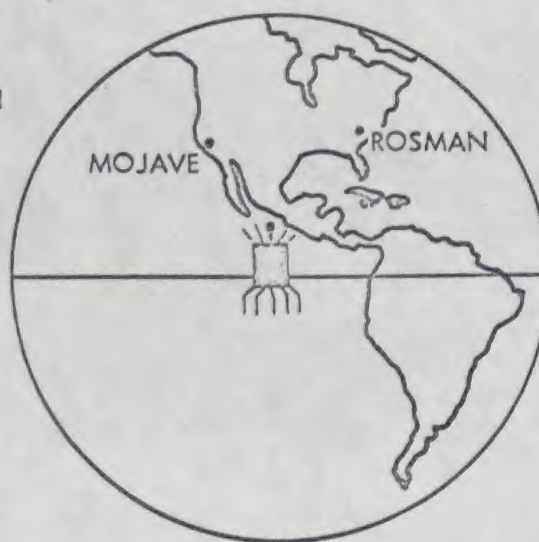
APPLICATIONS TECHNOLOGY SATELLITES GROUND STATION LOCATIONS

VIEW OF EARTH FROM:

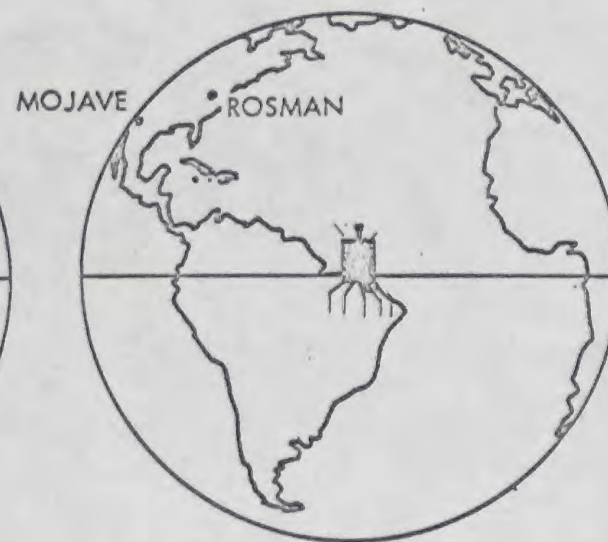
150° WEST



95° WEST



47° WEST






NASA SA68-615
1-12-68

GPO 937 020

APPLICATIONS TECHNOLOGY SATELLITES

ATS A-E SPACECRAFT CHARACTERISTICS

FLIGHT	ORBIT	WEIGHT IN FINAL ORBIT	STABILIZATION	LAUNCH VEHICLE
ATS-A	6,500 MILE CIRCULAR 28° INCLINED	 721 POUNDS	3 AXIS GRAVITY GRADIENT	ATLAS-AGENA
ATS-B ATS-C	SYNCHRONOUS CIRCULAR EQUATORIAL	 775 POUNDS	SPIN WITH DESPUN ANTENNAS	ATLAS-AGENA PLUS KICK MOTOR
ATS-D ATS-E	SYNCHRONOUS CIRCULAR EQUATORIAL	 879 POUNDS	3 AXIS GRAVITY GRADIENT	ATLAS - CENTAUR PLUS KICK MOTOR

NASA SA67-875
1-5-67

ATS-1

COMMUNICATIONS CAPABILITY

• SHF: TWO TRANSPONDERS

ERP: 19.5 dbw
or
22.2 dbw

IF BANDWIDTH: 25 MHz

G/T - 23.4 DB

600 TWO WAY VOICE CHANNELS BETWEEN
85' STATIONS

120 TWO WAY VOICE CHANNELS BETWEEN
40' STATIONS

1 CCIR COLOR TV CHANNEL

• VHF: ONE TRANSPONDER

ERP: 22.5 dbw

IF BANDWIDTH: 100 KHz

G/T: - 20.2 DB

1 TWO WAY VOICE CHANNEL TO AIRCRAFT

ATS-I STATUS

- ① LOCATION: 150° W. LONGITUDE
- ② INCLINATION: 1.57°
- ③ AVAILABLE REGULATED POWER: 120 WATTS (SOLSTICE)
- ④ POWER SUPPLY DEGRADATION RATE: 5% PER YEAR
- ⑤ LIFETIME FOR HOUSEKEEPING PLUS 1 SHF TRANSPONDER: ORDER OF YEARS
LIFETIME FOR HOUSEKEEPING PLUS 2 SHF TRANSPONDERS: ORDER OF YEARS
LIFETIME FOR HOUSEKEEPING PLUS VHF TRANSPONDER: ORDER OF YEARS
- ⑥ 12 HOURS PER DAY FOR ESSA USE; EXPERIMENTS LARGELY COMPLETED.
- ⑦ MALFUNCTIONING SYSTEMS:

PROPULSION
ELECTRONICALLY DESPUN ANTENNA

ATS-III

COMMUNICATIONS CAPABILITY

• SHF: TWO TRANSPONDERS

(a) ERP: 26.5 dbw

(b) ERP: 22.5 dbw
or
24.2 dbw

IF BANDWIDTH: 25 MHz

G/T - 13.4 DB

600 TWO WAY VOICE CHANNELS BETWEEN
85' STATIONS

120 TWO WAY VOICE CHANNELS BETWEEN
40' STATIONS

1 CCIR COLOR TV CHANNEL

• VHF: ONE TRANSPONDER

ERP: 24.2 dbw

IF BANDWIDTH: 100 KHz

G/T: - 19.4 DB

ATS-III STATUS

- LOCATION: 47° W. LONGITUDE
- INCLINATION: 0.26°
- AVAILABLE REGULATED POWER: 120 WATTS (SOLSTICE)
- POWER SUPPLY DEGRADATION RATE: 8% PER YEAR
- LIFETIME FOR HOUSEKEEPING PLUS 1 SHF TRANSPONDER: ORDER OF YEARS
LIFETIME FOR HOUSEKEEPING PLUS 2 SHF TRANSPONDERS: ORDER OF YEARS
LIFETIME FOR HOUSEKEEPING PLUS VHF TRANSPONDER: ORDER OF YEARS
- PROBABLY 12 HOURS PER DAY FOR ESSA; EXPERIMENTS LARGELY COMPLETED BY 1 JANUARY 1970.
- MALFUNCTIONING SYSTEMS:

PROPULSION
MECHANICALLY DESPUN ANTENNA

ATS-E

COMMUNICATIONS CAPABILITY

• SHF: TWO TRANSPONDERS

ERP: 24.4 dbw

IF BANDWIDTH: 25 MHz

G/T: - 13.1 DB

600 TWO WAY VOICE CHANNELS BETWEEN
85' STATIONS

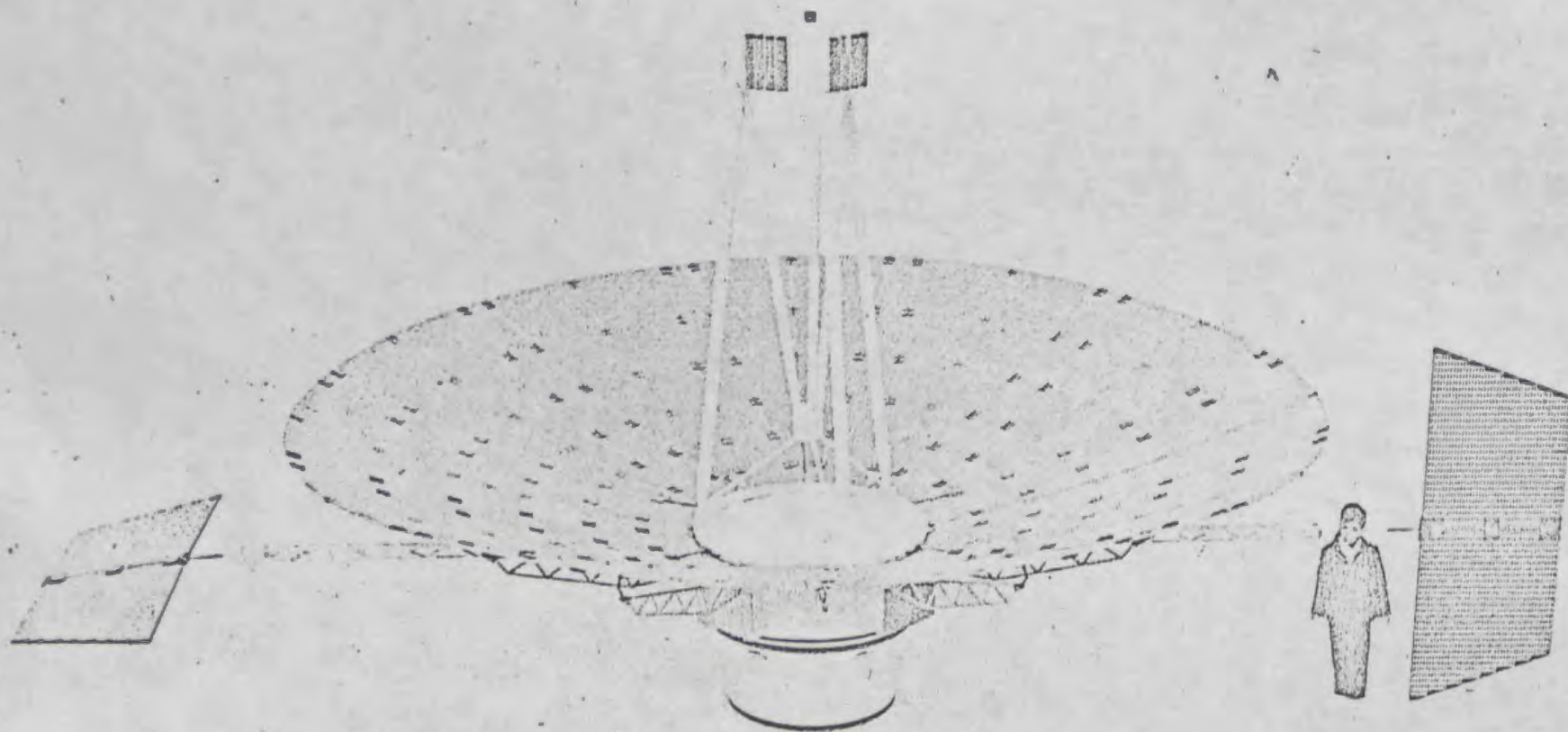
120 TWO WAY VOICE CHANNELS BETWEEN
40' STATIONS

1 CCIR COLOR TV CHANNEL

ATS-E STATUS

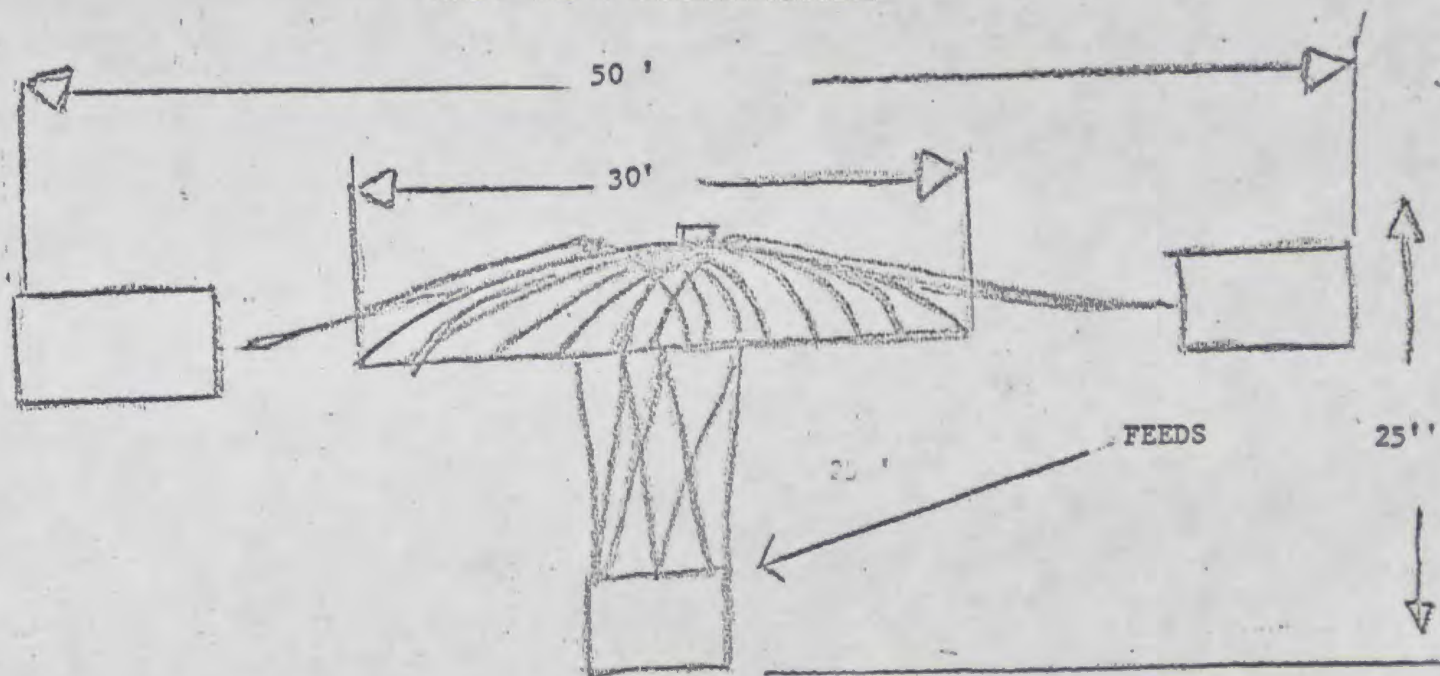
- ④ SCHEDULED LAUNCH - AUGUST 1969
- ④ CURRENTLY ON SCHEDULE
- ④ EXPERIMENTS PLANNED THROUGH AUGUST 1970

APPLICATIONS TECHNOLOGY SATELLITES ATS F&G SPACECRAFT SCALE MODEL



NASA SA68-610
1-12-68

ATS F AND G CHARACTERISTICS



WEIGHT: 1950 POUNDS

PRIME POWER: 450 WATTS(end of life)

ORBITAL REPOSITION: 200 f.p.s.

DESIGN LIFETIME: 2 YEARS

LAUNCH VEHICLE: TITAN IIIC

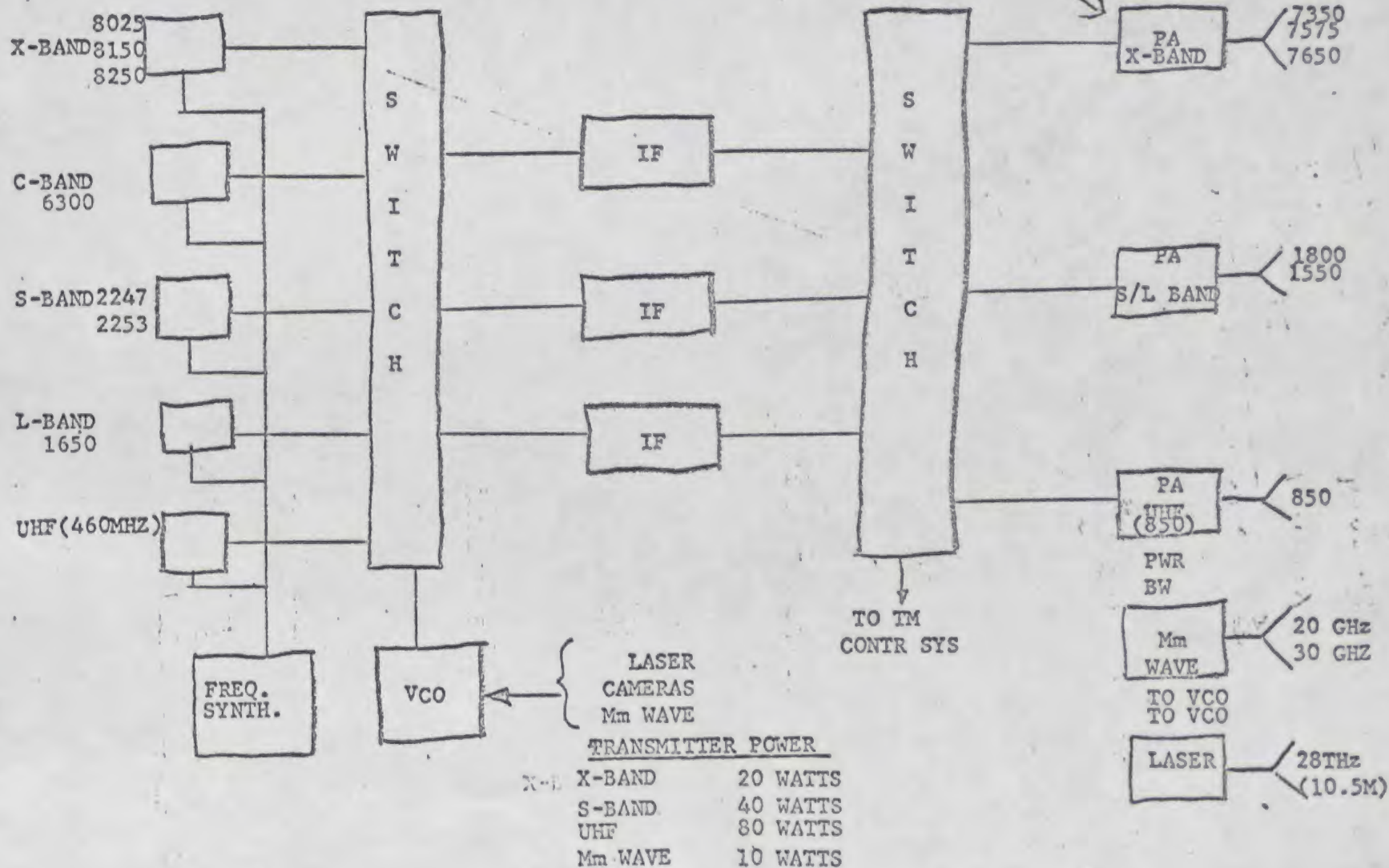
POINTING ACCURACY: 0.1 DEG.

ATS -F&G STATUS

- FIXED PRICE CONTRACTS FOR PHASES B&C SIGNED WITH TEAMS LED BY GENERAL ELECTRIC & FAIRCHILD HILLER
- MECHANICAL MODEL OF 30 FOOT ANTENNA COMPLETED AND TESTED AT GOODYEAR
- OF 67 EXPERIMENTS PROPOSED FOR ATS-F, 21 HAVE BEEN SELECTED
- ATS-G "OPPORTUNITIES ANNOUNCEMENT" - JUNE 1969

ATS F AND G
INTEGRATED TRANSPONDER

C-BAND → 500 MHz
PWR



APPLICATIONS TECHNOLOGY SATELLITES

APPLICATIONS TECHNOLOGY EXPERIMENTS

S = SUCCESSFULLY OPERATED, GAVE USEFUL DATA IN SPACE
 N = ELECTRICALLY AND MECHANICALLY SUCCESSFUL BUT PLANNED
 DATA NOT OBTAINED
 P = PLANNED FOR LATER OPERATION
 U = UNSUCCESSFUL
 X = PLANNED

COMMUNICATIONS:

MICROWAVE MULTIPLE ACCESS-SSB/PM
 MICROWAVE WIDE BAND-FM/FM
 VHF TRANSPONDER
 MILLIMETER WAVE

METEOROLOGY:

SPIN SCAN CAMERA (MONOCHROME)
 SPIN SCAN CAMERA (COLOR)
 AVCS CAMERA
 EARTH ALBEDO
 IMAGE DISSECTOR CAMERA
 DAY-NIGHT CAMERA

STABILIZATION AND POINTING TECHNOLOGY

ELECT. DESP. ANTENNAS
 MECH. DESP. ANTENNA
 THREE AXIS GRAVITY GRADIENT
 NUTATION SENSOR
 RESISTOJET

ORBITAL TECHNOLOGY:

KICK MOTOR
 SELF CONTAINED NAVIGATION SYSTEM
 N-S STATIONKEEPING

SPACE ENVIRONMENT DEGRADATION:

SOLAR CELLS
 THERMAL COATINGS
 OPTICAL SURFACES

	II	III	IV	D	E
	S	N	S	X	X
	S	N	S	X	X
	S		S		X
	S				
		N	S		
		N	S	X	
	S		S		
		N	S	X	X
	S				
	S				
	S		S	X	X
	S		P		
	S	N	S		

ATS-E L-BAND EXPERIMENT

TRANSPONDER

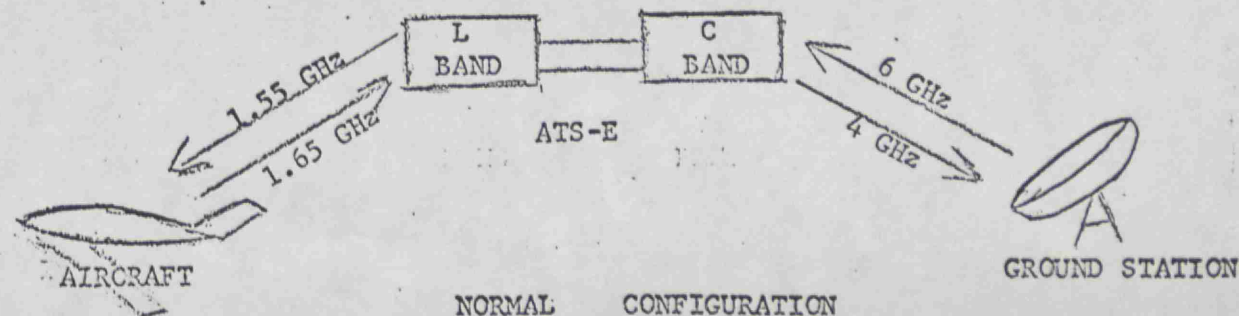
CHARACTERISTICS:

ANTENNA GAIN	-	14.1 DB
TRANSMITTER POWER	-	25 WATTS
LOSSES - TRANSMIT	-	2 DB
ERP	-	26 DB
RECEIVE	-	2 DB

RECEIVER NOISE TEMPERATURE - 900°K

REQUIRED DC POWER - 100 WATTS

POSITION MEASUREMENT - SIDE TONE RANGING
OMEGA TRANSLATION



APPLICATIONS TECHNOLOGY SATELLITES SCIENTIFIC EXPERIMENTS

PARTICLE MEASUREMENTS :

PROTONS: .25-50 EV
50 EV - 150 KEV
.7 - 100 MEV

ELECTRONS: 50 EV - 150 KEV
50 KEV - 1 MEV
.5 - 5 MEV

ALPHA PARTICLES: .25 - 50 EV
1.8 - 85 MEV

ELECTRIC FIELDS

SOLAR RADIO BURST

VLF POWER SPECTRUM

ELECTRON CONTENT OF IONOSPHERE

MAGNETIC FIELDS

ATS-II	ATS-III	ATS-III	ATS-E
S			
S	N		X
			X
S	N		X
S	N		X
S			
S	N		
	N		X
	N		X
	N		
		S	X
S			

S = SUCCESSFULLY OPERATED, GAVE USEFUL DATA IN SPACE

N = ELECTRICALLY/MECHANICALLY SUCCESSFUL, PLANNED DATA NOT RECEIVED

U = UNSUCCESSFUL

APPLICATIONS TECHNOLOGY SATELLITES

RESULTS OF ATS-I TECHNOLOGY EXPERIMENTS

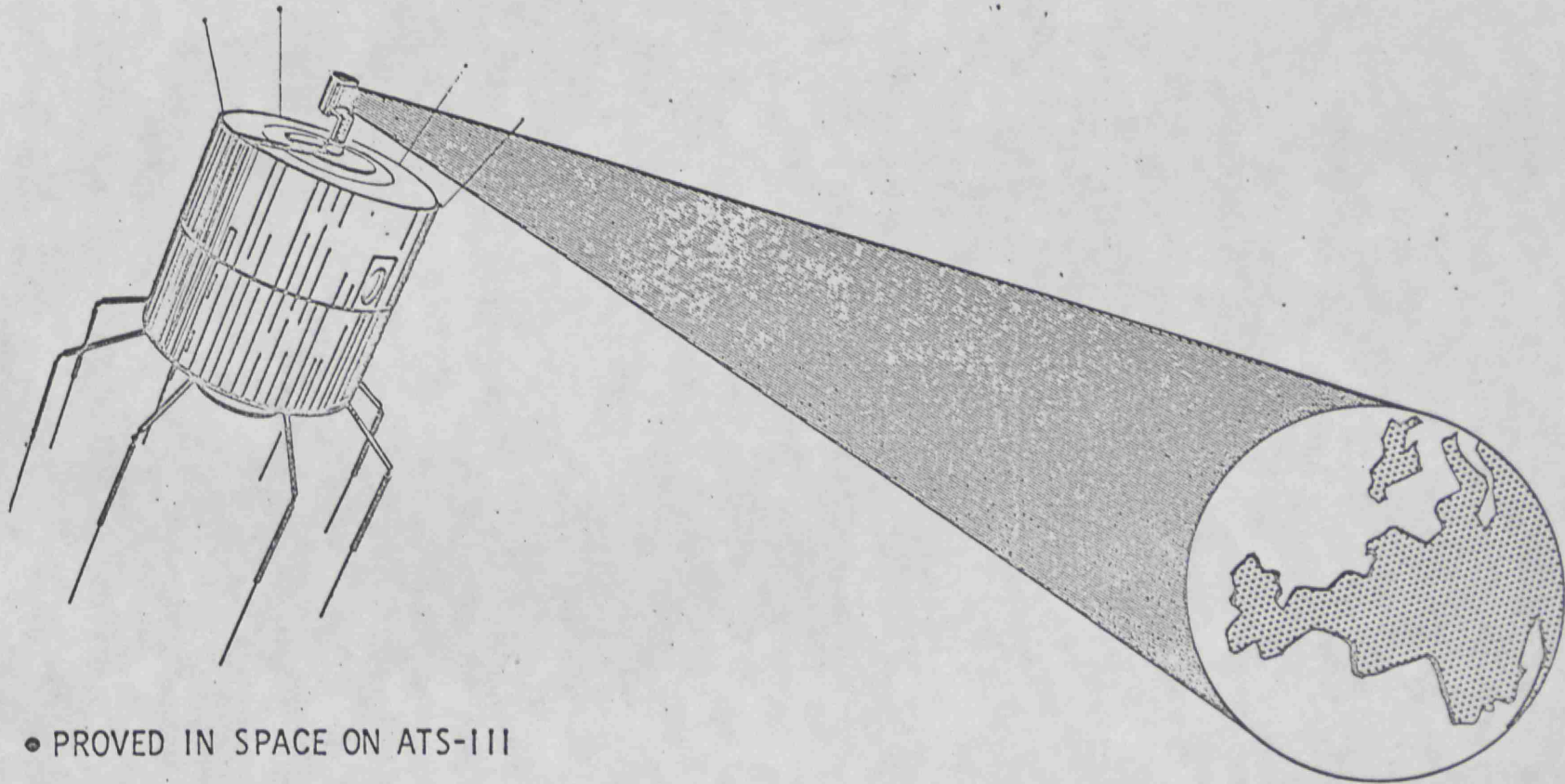
<u>EXPERIMENT</u>	<u>EXPERIENCE</u>	<u>RESULTS</u>
ELECTRONICALLY DESPUN ANTENNA	6385 HOURS	POINTING ACCURACY - 0.7° GAIN - 14 DB
MULTIPLE ACCESS COMMUNICATIONS	1234 HOURS	COMMUNICATIONS AMONG 6 GROUND STATIONS SIMULTANEOUSLY
VHF TRANSPONDER	2952 HOURS	
AIRCRAFT-TO-GROUND COMM.	214 HOURS	DEMONSTRATIONS TO AIRCRAFT IN FLIGHT OVER OCEAN AREAS
WEATHER FACSIMILE	340 HOURS	TRANSMISSION OF WEATHER FACSIMILE PICTURES
RIVER GAUGE DATA COLLECTION	DAILY 5 MINUTE TRANSMISSIONS FOR SEVERAL MONTHS	THREE REMOTE STATIONS INTERROGATED AND ERROR-FREE DATA TRANSMITTED.
SPIN-SCAN CAMERA	1535 HOURS	SINGLE AND TIME LAPSE SEQUENCES IN MONOCHROME
LINE ISLAND EXPERIMENT	COMPLETED	EXCELLENT CORRELATION BETWEEN SURFACE AND SATELLITE WEATHER MEASUREMENTS
NUTATION SENSOR	53 HOURS	NUTATION OF SPINNING S/C CAN BE QUICKLY DAMPED

APPLICATIONS TECHNOLOGY SATELLITES

PRELIMINARY ATS-III RESULTS (SINCE LAUNCH ON NOV. 5, 1967)

<u>EXPERIMENT</u>	<u>BASIS</u>	<u>RESULTS</u>
MECHANICALLY DESPUN ANTENNA	GAIN PATTERN MEASURED AND ANTENNA OPERATED SINCE S/C PLACED ON STATION	ANTENNA SUCCESSFULLY DESPUN. POINTED AT THE EARTH. GAIN 16 DB.
MULTICOLOR SPIN SCAN CLOUD CAMERA	123 PICTURES TAKEN	COLOR PICTURES TAKEN, MAJOR GEOGRAPHICAL FEATURES IDENTIFIED.
IMAGE DISSECTOR CAMERA EXPERIMENT	SEVERAL DOZEN PICTURES TAKEN	MONOCHROME PICTURES TAKEN.
HYDRAZINE THRUSTER	USED TO STOP ATS-III DRIFT AT DESIRED LOCATION	OBTAINED PREDICTED SPECIFIC IMPULSE.
MULTIPLE ACCESS COMMUNICATIONS	TESTS UNDERWAY	PRELIMINARY RESULTS INDICATE SATISFACTORY OPERATION.
VHF TRANSPONDER GROUND-TO-AIRCRAFT	DEMONSTRATION TO AIRCRAFT FLYING TO ENGLAND AND GERMANY	DUPLEX VOICE COMMUNICATION ACROSS ENTIRE NORTH ATLANTIC ROUTE.
OPLE	PRELIMINARY EXPERIMENTS	OPERATION SUCCESSFUL AND GROUND STATION POSITION DETERMINED.
WEATHER FACSIMILE	TO BE SCHEDULED	NONE TO DATE.
REFLECTOMETER	EXPERIMENT OPERATED	EXPERIMENT OPERATING. NO DEGRADATION NOTED.
IONOSPHERIC PROPAGATION EXPERIMENT	EXPERIMENT EXERCISED DAILY	DATA IS BEING ANALYZED.
RESISTOJET	OPERATED 3 TIMES	VALVE LEAKING; RESISTOJET THRUSTER OPERATES BUT HAS ANOMALIES.
SELF-CONTAINED NAVIGATION EXPERIMENT	NOT SCHEDULED UNTIL SPRING 1968	NONE.

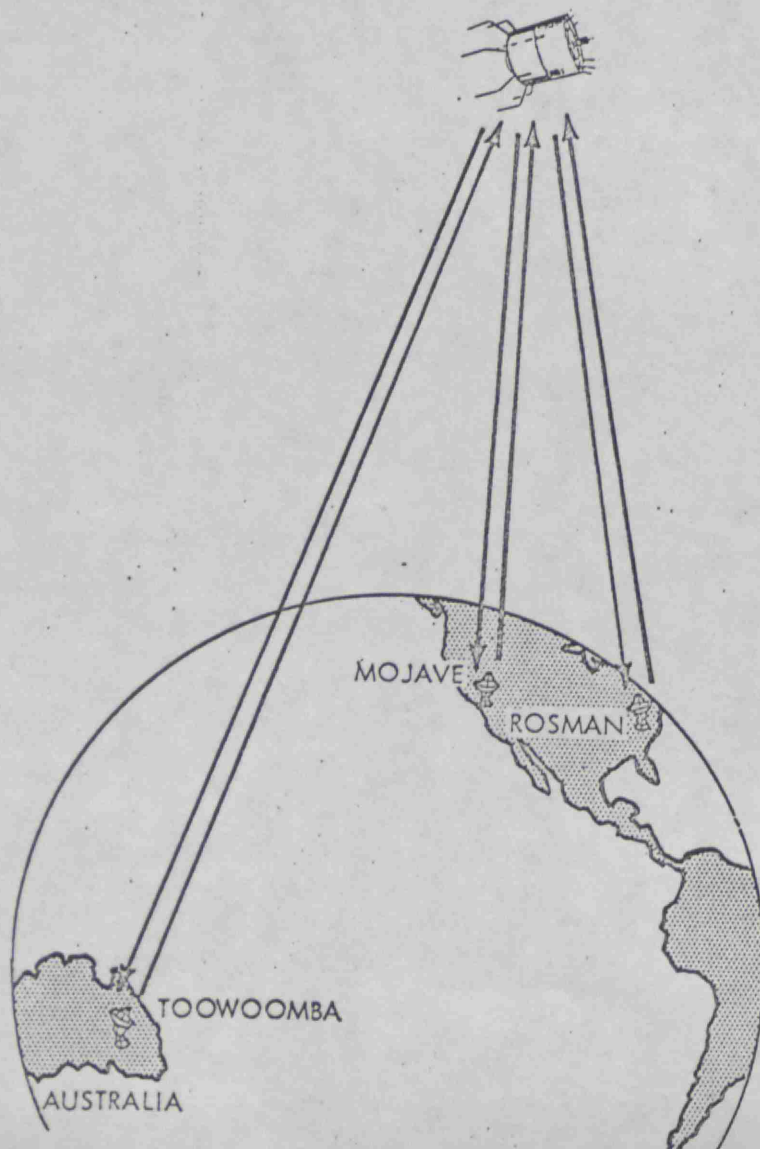
APPLICATIONS TECHNOLOGY SATELLITES
ANTENNA BEAM POINTING TECHNOLOGY
MECHANICALLY DESPUN ANTENNA



- PROVED IN SPACE ON ATS-III
- FACTOR OF TEN IMPROVEMENT
- TECHNOLOGY WILL BE USED ON:
INTELSAT III
DEFENSE SATELLITES

NASA SA68-602
1-12-68

APPLICATIONS TECHNOLOGY SATELLITES ATS MULTIPLE ACCESS COMMUNICATIONS EXPERIMENT

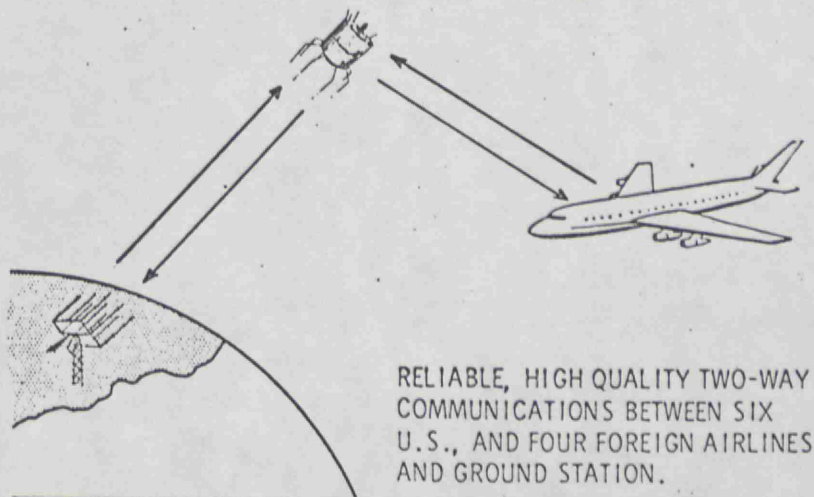


- PROVED WITH THREE STATIONS SIMULTANEOUSLY
- QUALITY BETTER THAN INTERNATIONAL STANDARDS
- COULD BE USED WITH SEVERAL HUNDRED STATIONS
- MAKES EFFICIENT USE OF THE FREQUENCY SPECTRUM

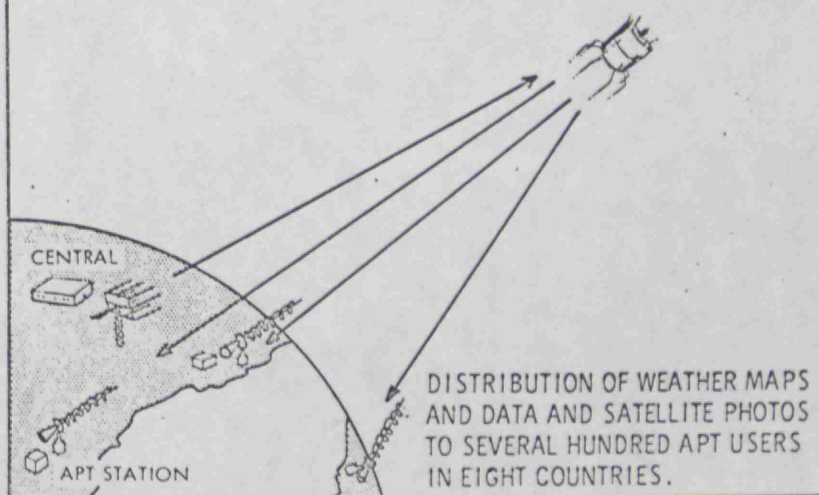
NASA SA68-603
1-12-68

APPLICATIONS TECHNOLOGY SATELLITES VHF COMMUNICATIONS EXPERIMENTS

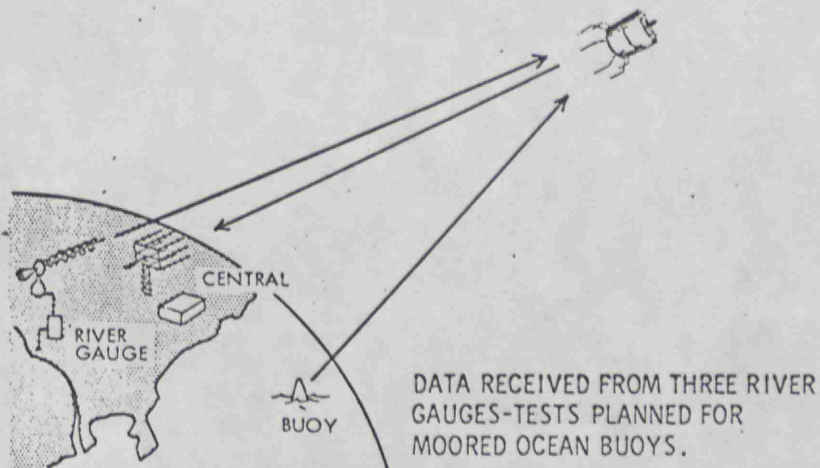
AIRCRAFT COMMUNICATIONS



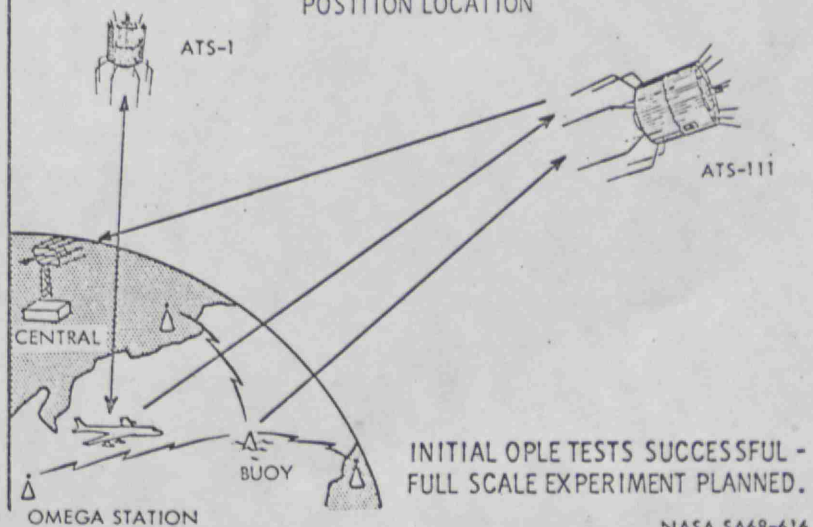
WEATHER FACSIMILE



DATA COLLECTION



POSITION LOCATION



EXAMPLES OF SMALL STATION VOICE EXPERIMENTS

VHF

MARITIME ADMINISTRATION - SS ST. LUCIA

NAVY - SOUTH AMERICAN MANEUVER

COAST GUARD - CUTTER NORTHWIND MONSTER
BUOY

C & GS - TIME DISSEMINATION TO PITCAIRN ISLAND
TRISTAN DE CUNHA

SHF

GSFC - SMALL STATION

ATS-F EXPERIMENTS

● COMMUNICATIONS:

TV RELAY USING SMALL TERMINALS
RF INTERFERENCE MEASUREMENT
LASER COMMUNICATIONS
MILLIMETER WAVE COMMUNICATIONS
TIME AND FREQUENCY DISPERSION
AAP VOICE AND DATA RELAY
NIMBUS-E DATA RELAY

● SPACECRAFT TECHNOLOGY:

GIMBALLED GRAVITY GRADIENT
SOLAR CELL DEGRADATION
ATTITUDE MANEUVERING AND
PRECESSION POINTING
HIGH PRECISION STAR FIELD SCANNER

● METEOROLOGY:

VERY HIGH RESOLUTION IR RADIOMETER
VERY HIGH RESOLUTION CAMERA

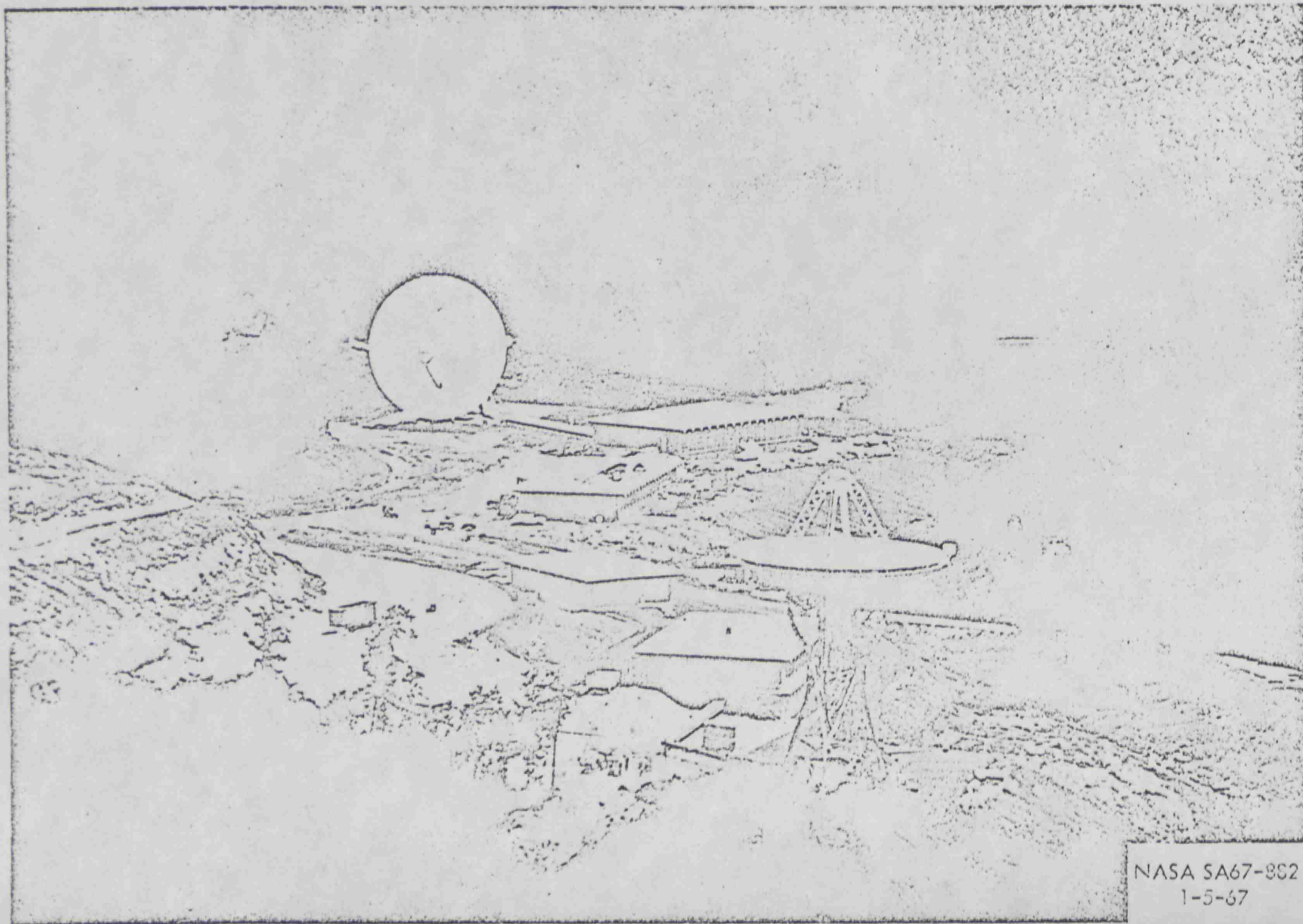
● SCIENCE:

RADIO BEACON ELECTRON DENSITY
MAGNETOMETER
AURORAL PARTICLES
LOW ENERGY ELECTRONS AND PROTONS
LOW ENERGY PROTONS
SOLAR COSMIC RAYS
PARTICLE ACCELERATION

● NAVIGATION:

POSITION LOCATION AND AIRCRAFT COMMUNICATION

APPLICATIONS TECHNOLOGY SATELLITES
ROSMAN GROUND STATION



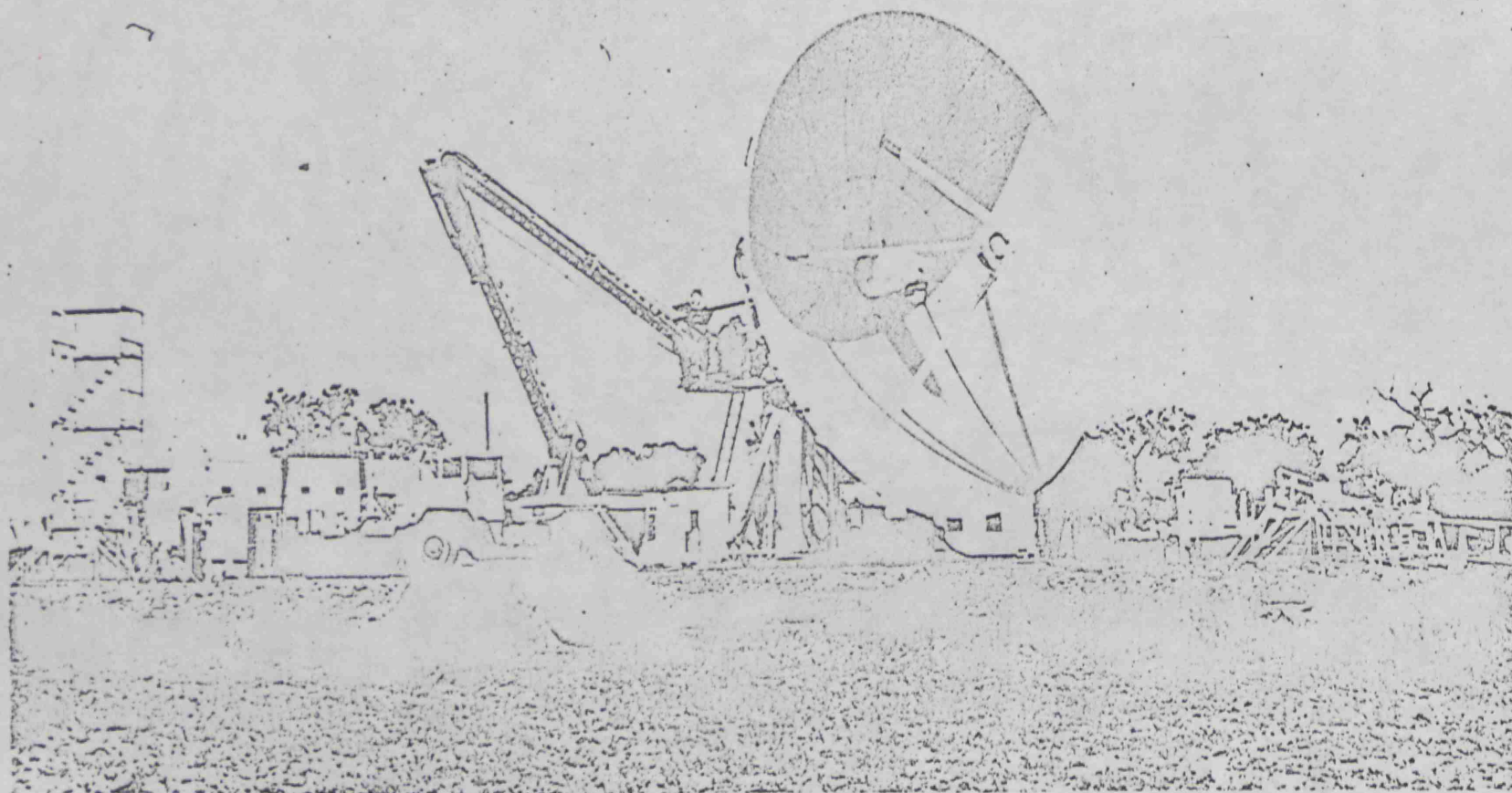
NASA SA67-862
1-5-67

APPLICATIONS TECHNOLOGY SATELLITES
MOJAVE GROUND STATION



NASA SA67-883
1-5-67

APPLICATIONS TECHNOLOGY SATELLITES
COOBY CREEK GROUND STATION



NASA SA67-384

1-5-67

TABLE 1.2 ATS EARTH STATION SYSTEMS

ITEM DESCRIPTION		ROSMAN	MOJAVE	TRANSPORTABLE
ANTENNA	TYPE	Parabolic Reflector with Prime Focus Feed and Subreflector. Cassegrain Feed	Parabolic reflector with Subreflector Cassegrain Feed.	Parabolic Reflector with Subreflector Cassegrain Feed.
	Diameter/Mount	85 Ft/X-Y	40 Ft/X-Y	40 Ft/AZ-EL
	Receive Gain (4 GHz) (nom.)	58 db	51 db	51 db
	Transmit Gain (6 GHz) (nom.)	61.5 db	54.6 db	55.1 db
	Receive System Noise Temperature	60°K (Paramp)	60°K (Paramp)	55°K (Maser & Paramps) / 65°K (Paramps)
	Tracking Accuracy	±0.05 deg.	±0.015 deg.	±0.057 deg.
	Receive Beamwidth (P/2)	0.2 deg.	0.47 deg.	0.42 deg.
	Transmit Beamwidth (P/2)	0.13 deg.	0.28 deg.	0.28 deg.
Spacecraft - Ground Communications System	Maximum Transmit Power	16 kw Total Two 8 kw SHF Transmitters	8 kw	8 kw
	Simultaneous Capability	Capable of Transmitting Two S/C Channels and Receiving Two S/C Channels Simultaneously (SSB or FT)	Capable of Transmitting One S/C channel & receiving Two Channels Simultaneously	Capable of Transmitting One S/C channel & receiving Two Channels Simultaneously

TABLE 1.2 ATS EARTH STATION SYSTEMS (Continued)

ITEM DESCRIPTION		ROSMAN	MOJAVE	TRANSPORTABLE
	Number of Channels SSB Multiplex	Basic 1200 Channel Capability (One Way) 24 Channels Supplied 12 ECHO Suppressors and Companders	Basic 240 Channel Capability (One Way) 24 Channels Supplied 6 ECHO Suppressors and Companders	Basic 240 Channel Capa- bility (One Way) 24 Channels Supplied 6 ECHO Suppressors and Companders
	TV Tape Recorders	Color and Monochrome Record and Playback	Monochrome-Record and Playback Color-Record Only	Monochrome-Record and Playback Color-Record Only
Overall Capability	ATS-1	38.2 db	32.2 db	32.2 db
	G/T ATS-3	39.6 db	32.2 db	
Location	Area	near Ashville North Carolina	Goldstone Dry Lake, Mojave Desert, near Barstow, California	Cooby Creek near Toowoomba Australia
	Latitude	35° 11' 35.4" North Lat.	35° 17' 48" North Lat.	27° 23' South Lat.
	Longitude	82° 52' 22" West Long.	116° 53' 57" West Long.	151° 57' East Long.

ATS EARTH STATIONS
VHF COMMUNICATIONS CAPABILITY

Item Description		Rosman & Mojave	Transportable
Antenna	Type	SATAN Transmit - 4, 9 element crossed yagis Linear or circular polarization. Receive - 16, 8 element crossed yagis Linear or circular polarization	TACO Transmit - 1, 9 element crossed yagi Linear or circular polarization Receive - 9, 8 element crossed yagis Linear or circular polarization
	Mount	X - Y	AZ - EL
	Transmit Gain	12.8 db	12.5 db
	Receive gain	20.3 db	20.0 db
	Transmit Beamwidth (P/2)	36°	36°
	Receive Beamwidth (P/2)	15°	15°
Transmitter	Maximum Power output	2.5 kw	2.5 kw
	RF Bandwidth	3 MHz	3 MHz
	Type of modulation	FM or AM	FM or AM
	FM Deviation Range	20 KHz Max	20 KHz max

(continued)

ATS EARTH STATIONS
VHF COMMUNICATIONS CAPABILITY (continued)

Receiver	Type	Dual channel with pre-detection combining	Dual channel with pre-detection combining
	Noise figure	3.5 db	3.5 db
	Types of demods.	FM and AM	FM and AM
	IF Bandwidth	10 KHz - 3 MHz	10 KHz - 3 MHz
Multiplex Equipment	No. of channels	3	3
	Output bandwidth	300 Hz - 12 KHz	300 Hz - 12 KHz

INPUTS TO ATS GROUND STATIONS

STATION

COOBY:

- (a) ONE 3 KHz 4 WIRE SCAMA LINE
- (b) SECOND SCAMA LINE AVAILABLE ON-CALL (BACK-UP)
- (c) STANDARD COMMERCIAL DIAL-IN PHONE

MOJAVE:

- (a) ONE 3 KHz 4 WIRE SCAMA LINE
- (b) FIVE COMMERCIAL TELEPHONES

ROSMAN:

- (a) ONE 3 KHz 4 WIRE SCAMA LINE
- (b) THREE SCAMA'S ON CALL-UP
- (c) TEN COMMERCIAL PHONES
- (d) 5 MHz WIDE BAND (TV) LINE TO GSFC (ATT LINE)
- (e) OGO SPECIAL PURPOSE 100 Hz - 128 KHz
- (f) OGO WIDEBAND 100 Hz - 128 KHz
- (g) OAO "TV" LINE (0 - 75 KHz)
- (h) OAO WIDEBAND 100 Hz - 10 KHz
- (i) NIMBUS COMPOSITE 10 KHz - 695 KHz
- (j) NIMBUS PLM MODE 100 Hz - 128 KHz

ATS GROUND STATIONS

TAPE RECORDERS

ROSMAN, MOJAVE, COOBY CREEK

AMPEX FR607

120 IPS	0.3 - 500 KHZ
60 IPS	0.3 - 250 KHZ
30 IPS	0.15- 125 KHZ
15 IPS	0.1 - 60 KHZ
7½ IPS	0.1 - 30 KHZ

MOJAVE, COOBY CREEK

AMPEX VR1100

15 IPS
7½ IPS

525 LINE STANDARD B&W TV

ROSMAN

2 AMPEX VR1100 L

525 LINE STANDARD COLOR TV
525 LINE STANDARD B&W TV

ATS SUPPORT TO WORLD COMMUNICATIONS

1968

DATE	AUG 18-25	OCT 2-8	OCT 12-27	OCT 22	DEC 21-27	NOV 5-17
EVENT	POPE'S VISIT TO BOGOTA	1968 WORLD SERIES	1968 SUMMER OLYMPIC GAMES	APOLLO 7	APOLLO 8	US ELECTION RETURNS
ATS USE	ATS-III TV TO EUROPE	ATS-III TV - US TO PUERTO RICO	ATS-I TV TO JAPAN	ATS-III TV CARRIER TO US ATS-III TV US TO EUROPE ATS-I TV TO JAPAN ATS-III VOICE-CARRIER TO US ATS-I, III BACKUP VOICE/ DATA TRACKING SHIPS-US	ATS-I TV CARRIER TO US ATS-III TV TO EUROPE ATS-I TV TO AUSTRALIA ATS-I VOICE-CARRIER TO US ATS-I & III BACKUP VOICE/ DATA TRACKING SHIPS US	ATS-III TV TO EUROPE ATS-I TV TO JAPAN

ATS

PARTICIPATION IN EXPERIMENTS

- INVOLVING UNIQUE INSTRUMENT TO BE FLOWN ON A NASA SATELLITE
- INVOLVING USE OF NASA SATELLITE CAPABILITIES THROUGH OPERATION OF GROUND EQUIPMENT, IN WHICH NASA SUPPORT IS REQUESTED
- INVOLVING USE OF NASA SATELLITE CAPABILITIES THROUGH OPERATION OF GROUND EQUIPMENT
- IF THE USE OF NASA SATELLITE CAPABILITIES IS FOR A PUBLIC DEMONSTRATION RATHER THAN AN EXPERIMENT

AMERICAN BROADCASTING COMPANIES, INC.

1330 AVENUE OF THE AMERICAS · NEW YORK, N. Y. 10019 · LT 1-7777

PROPOSED SATELLITE TRANSMISSION TEST TO ANCHORAGE, ALASKA

In its initial satellite filing in September of 1965, and in each of its subsequent submissions in Docket 16495, American Broadcasting Company has urged the Federal Communications Commission to approve the positioning of a synchronous satellite to be used for radio and television program distribution purposes. Like NBC, CBS, and the Ford Foundation, ABC has argued that a dedicated television distribution system has numerous advantages over a multipurpose system.

To demonstrate that a satellite system for program distribution purposes is entirely feasible and reliable and that it could be placed in operation almost immediately, ABC herewith proposes that ATS-1 be utilized, under NASA's auspices, for a period of three to six months to provide instantaneous news and public affairs programming to the three television stations in Anchorage, Alaska, an area entirely dependent at present on delayed telecasts for national and international news developments. To that end ABC would welcome the cooperation and participation of the other television networks, commercial and educational, in the experimental program here envisaged.

ABC's technical advisers (Hughes Aircraft Company) are confident that such a test program, over a period of three to six months, would fully demonstrate the feasibility and reliability

of synchronous satellites for program distribution purposes -- without elaborate and costly ground receiving terminals. In addition to test data thus obtainable from the experimental transmissions here proposed, there would be substantial public interest benefits in thereby providing direct reception (news and public affairs) to the people of Alaska, an area wholly dependent on delayed video broadcasts for news happenings elsewhere.

The technical details for the test system, utilizing ATS-1, which is here being proposed for NASA's consideration, is outlined in essential respects in the engineering statement attached hereto. It will be noted that the required equipment is now in use at the Island of Barbados and that it can be moved to Alaska and be ready for operation by September 1969. To meet the September date, a go-ahead is needed by about July 1.

The costs for the experimental program would be between \$125,000 and \$250,000 for the three to six months period. If the necessary authorizations are obtained, ABC proposes to share these costs with other networks who desire to participate.

TECHNICAL DETAILS OF
PROPOSED SATELLITE TRANSMISSION TEST TO ANCHORAGE, ALASKA

I. INTRODUCTION

This document describes a television receiving station for use at Anchorage, Alaska, using the ATS-1 satellite. A system is described which will receive an FM-modulated carrier at a low level, amplify it to a suitable level, and demodulate it to produce video and sound baseband signals. Equipment for this station can be installed and operating by September, 1969. The system includes a 30-foot diameter parabolic antenna with linearly polarized feed, a cooled parametric amplifier, a downconverter and demodulators.

The following discussion includes brief system, hardware, and implementation descriptions.

II. SYSTEM DESIGN

Figure 2.1 is a system block diagram of the receiving station. Pertinent information relating to the blocks of this diagram are given both on the diagram and in the following paragraphs.

Station characteristics are listed in Table 2.1. Table 2.2 gives receiving performance. ATS-1 characteristics are tabulated on Table 2.3. Required transmitter performance is given in Table 2.4, while power and weight estimates are on Tables 2.5 and 2.6.

Table 2.1

Station Characteristics

Antenna and Feed - 30-foot diameter parabolic dish with hour angle mount. Electrical drive with position readout. Linearly polarized, adjustable feed. 49.8 dB gain. 0.57 degree beam width. 65 percent efficiency. 21 degree elevation angle at Anchorage.

Parametric Amplifier - 35 degrees Kelvin helium-cooled unit. 35 dB gain.

Down Converter - Single conversion.

Video Demodulator - Wideband threshold extension demodulator.
5 dB improvement over conventional demodulator.

Audio Demodulator - Subcarrier demodulator operating at 8 MHZ in video baseband.

Station Location - Anchorage, Alaska, 61° 12' N and 148° 48' W.

Table 2.2

Receiving Performance

Satellite EIRP (2 TWT's)	22.5 dBW
Space Loss	-196.5 dB
Satellite Beam Shape Loss	-3 dB
Receive Antenna Gain	49.8 dB
Carrier Level at Feed Output	-127.2 dB
System Noise Temperature	
$= \frac{TA}{LF} + \frac{LF - 1}{LF} TL + Tp$	
$= \frac{18}{1.037} + \frac{1.037 - 1}{1.037} \times 290 + 35$	
$= 17.3 + 10.35 + 35 =$	
	62.65° K
Noise = KTB	-136.7 dBW
K = 228.6 dBW/° K/ Hz	
T = 18 dB (62.65° K)	
B = 74 dB (25 MHz)	
C/N at Feed Output $\frac{-127.2 - (-136.7)}{1}$	9.5 dB
Threshold Extension Improvement Over Conventional Demodulator	5 dB
Margin Over 10 dB Threshold Level (Knee of S/N vs C/N Curves)	4.5 dB

Table 2.3

ATS-1 Satellite Characteristics

Position (May 30, 1969)	149.948° W
Drift Rate	0.017°/day E
Inclination	1.572°
Orbit Eccentricity (Apogee/Perigee)	0.0003
Squint Angle to Anchorage	8° 5'
Side Angle to Anchorage	≈ 0°
EIRP (1 TWT)	19.5 dBW
EIRP (2 TWT's)	22.5 dBW
Beam Width (3 dB)	20°
Noise Figure (Repeater 1)	5.8 dB
Noise Figure (Repeater 2)	5.9 dB
Expected EIRP Reduction due to Satellite Beam Width and Station Position	2.5 to 3 dB
Repeater Gain (exclusive of antennas)	≈ 120 dB
Antenna Gain (Transmit)	13.5 dB
Antenna Gain (Receive)	6 dB
Repeater Input Level, 3 dB Above Noise	
TWT 1	-113 dBm
TWT 2	-111.7 dBm
TWT 3	-110 dBm
TWT 4	112.9 dBm

Table 2.4

Required Transmitter Performance

Satellite Input for Saturated Output	- 83.7 dBm
Antenna Gain	6 dB
Space Loss at 6 GHZ	- 199.1 dB
EIRP Required to Saturate Satellite	+ 109.4 dBm
or	+ 79.4 dBW

Table 2.5

Power Estimate

(120/208, 3 phase, 60 Hz)

	<u>Current (Amps per phase)</u>
Cryogenic Equipment	2
Servo Motors, both axes	10
Electronics	<u>5</u>
	17
120 V X 17 A =	2,040 Watts per Phase
Total Power Estimated -	6,120 Watts

Table 2.6

Weight and Volume Estimate

	<u>Weight (Pounds)</u>	<u>Volume (Cubic Feet)</u>
Antenna	2,500	2,250 *
Mount (including rings, motors, and counter weights)	14,000	750 **
Subreflector	250	150
Electronic Racks (2)	600	56
Compressed Gas (6 Bottles)	<u>1,800</u>	<u>90</u>
	19,150	3,296

* - Antenna is shipped in 4 crates, $3\frac{1}{2}$ X 15 X 15 feet.

** - Mount gross dimensions are 30 X 5 X 5 feet.

III. EQUIPMENT

A. Antenna and Feed

The antenna is a 30-foot diameter parabolic dish with a 3-foot subreflector and a linearly polarized, adjustable feed. Gain at 4 GHz is 49.8 dB, with the expected efficiency of 65 percent. The 3 dB beam width is 0.57 degrees and the 1 dB beam width is 0.33 degrees. Aluminum is used for the reflector and steel is used for the backup structure, and the mount. The mount is a polar mount having limited motion of about ± 2.5 degrees in each direction, which is accomplished by means of electric motor drives. Installed on a concrete pad, the antenna is initially positioned to point at the satellite. Fine positioning to follow satellite movement is accomplished manually with the above-mentioned motor drives and digital voltmeter readout of position potentiometers. Antenna position readouts can be initially calibrated for a given satellite location by peaking the IF AGC meter on the received signal, while adjusting the antenna. Following the satellite can be done by moving the antenna to peak the AGC voltage or by adjusting the antenna position to pre-computed values of antenna position. This antenna has been used for several space system tests by Hughes.

B. Parametric Amplifier

A 35-degree Kelvin, helium-cooled parametric amplifier is expected to be used. This three-stage unit was designed and built by Hughes and has been used for receiving signals from ATS and other satellites. It will be mounted directly behind the antenna feed to reduce losses at its input, thus keeping the system noise temperature at a minimum.

C. Receiver

A tunnel diode amplifier and a down converter comprise the receiver. The tunnel diode amplifier has a gain of 12 dB and a noise figure of about 6 to 7 dB. Down conversion is accomplished by a mixer with a signal generator as a local oscillator. Image response and reduction of out-of-band signals is accomplished by a 25 MHz bandpass filter on the input of the receiver. A 130 MHz IF amplifier is utilized, having a gain of about 70 dB.

D. Demodulators

To achieve demodulation of low carrier-to-noise signals, a special wideband threshold extension demodulator designed by Hughes will be utilized. This demodulator is also being used in the Barbados cloud picture experiments, using ATS-3. A threshold extension of 5 dB is expected to be achieved.

IV. IMPLEMENTATION AND OPERATIONS

Since it is expected that much of the required equipment will be in use at the island of Barbados until the end of July, 1969, upon its arrival by airplane in California, the equipment will be checked for possible physical damage and for proper operation. It can then be loaded on an Alaska-bound ship. It is estimated that it can be ready to operate by September, 1969. A go-ahead is needed, however, by about July 1st, so that preparations can be started for the site and so that all arrangements are completed in time for all interfaces.

Interfaces to be defined include:

Power connectors

Power forms

Video and audio levels, impedances and connectors

Building or shelter space available

Site for antenna.

Operations are expected to include several hours of television transmission per day. A three man crew is expected to be required the first month, with a one or two man crew for following months.

V.

From an operational point of view, the system would follow the block diagram of Chart I. The Television Network feeds would be available at the AT&T Test Room in Asheville, North Carolina. From that point to the Rosman Ground Station, we would utilize temporary facilities, also provided by AT&T. The Rosman station would feed the ATS-1 satellite with the programs being received at the Hughes Transportable Ground Station in Anchorage, Alaska. From the ground station to the participating Anchorage stations, temporary microwave links might have to be provided, if the ground station is located beyond the normal run for coaxial cable interconnection.

It is intended that the program material fed to the Anchorage stations would be primarily live News and Sports, as well as some recorded News and Public Affairs items of prime importance. The balance of the programming fed would be determined by the Anchorage stations, based on the Network program availability at the transmission site. The consideration being given here is the affect that the programming available at the transmission site has on the actual air schedule of the programs, as they are normally telecast in Anchorage.

It is hoped that an additional voice channel can be made available from the Control Studio in New York, via the satellite, for guideline or cue purposes. This circuit will be uni-directional from New York to Anchorage. It is not contemplated that a two-way capability will be needed for the purpose of this test.

It is intended that the system provide optimum NTSC color programming to the station. It is recognized that since certain aspects of the system may be marginal, that an optimum color signal may not be obtainable. We hope, however, to deliver no worse than a Grade II signal at the receiving end.

Items To Be Provided By:

NETWORKS

- (1) Video and Audio Signal to the Ground Station.
- (2) Two-way communication to and between the Ground Stations.
- (3) Networks will arrange for delivery of the signal from the Ground Station to Anchorage Affiliates
- (4) Assist Hughes in getting the necessary site and building facilities.

HUGHES

- (1) The entire Ground Station hardware and all necessary test and monitor equipment, as well as the signals at base band.
- (2) Supervise the signal transmissions at Rosman.
- (3) Provide power to run the station either Diesel or Commercial.
- (4) Provide all necessary manpower to set-up, run, maintain and knock-down the ground station.
- (5) Preferable start of the test is prior to the Apollo #11 liftoff scheduled for July 16th.
- (6) If not item #5, no later than September 1, 1969.
- (7) All necessary site survey and preparation.
- (8) Provide a second (2nd) ground station in the U.S.A., at a mutually agreeable site for environmental tests.

NETWORKS

HUGHES

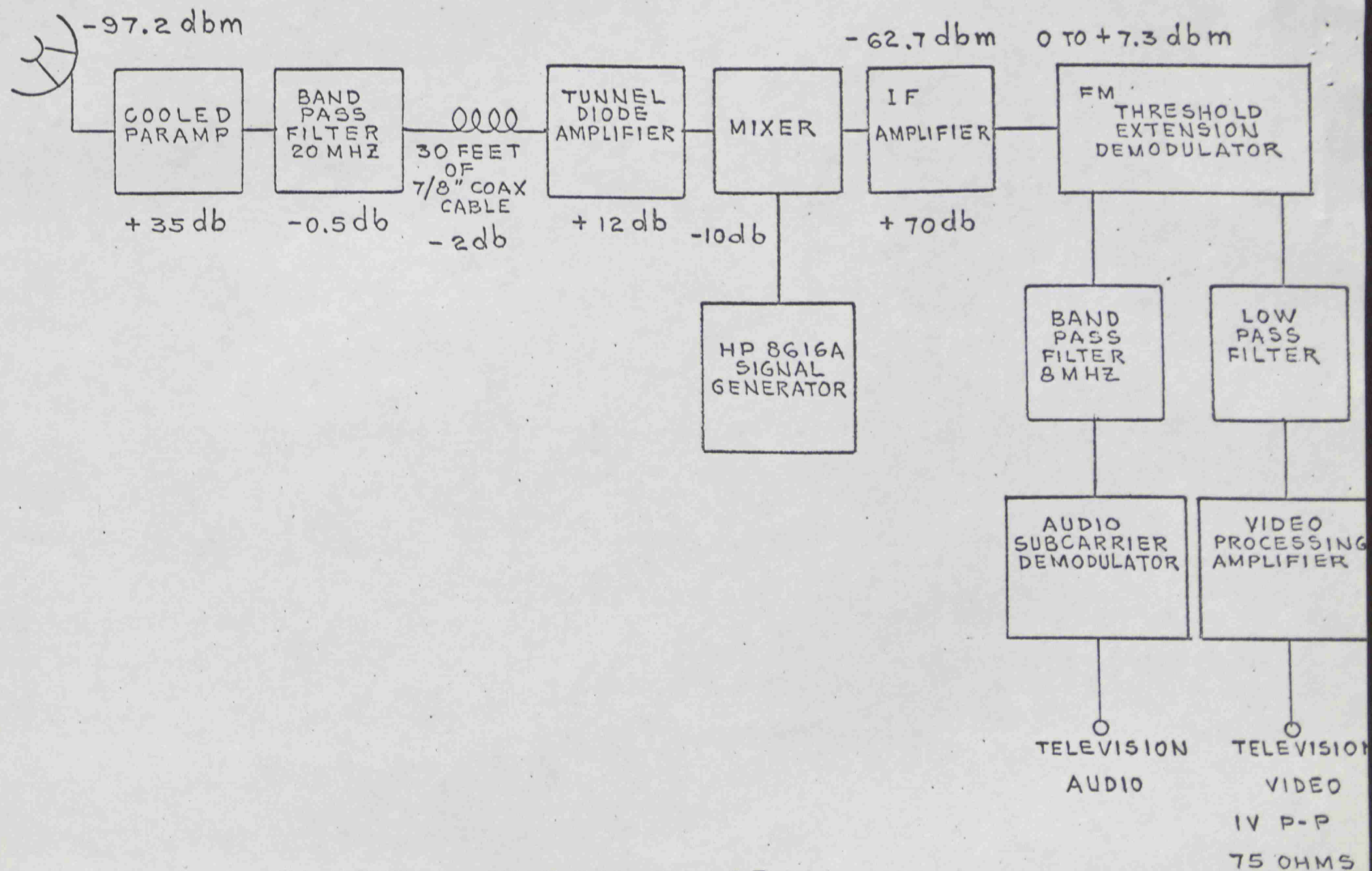
The responsibilities and equipment are the same as those above for the Anchorage station.

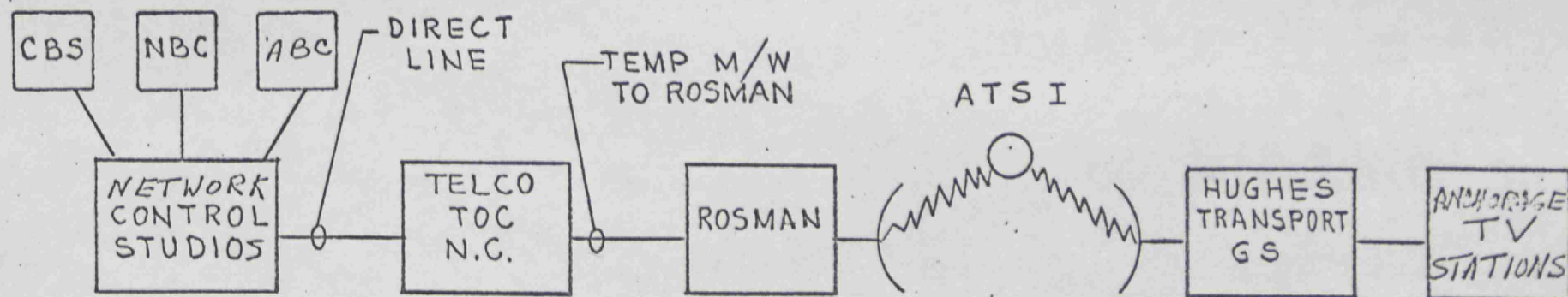
(9) The estimated costs are as follows:

Items 1-7, \$50,000 for the first (1st) month, less the cost of space and building rental; \$10,000 for each month thereafter.

Item 8, \$40,000 for the first (1st) month, less cost of space and building rental; \$10,000 for each month thereafter.

(10) Video objectives in terms of specifications are those outlined in the document entitled "Television Initial Line-Up Performance Guide." Audio objectives are 600 ohms balanced audio at +8 dBm, signal to noise ratio 46 dB or better. Harmonic distortion less than 3 percent.

SYSTEM BLOCK DIAGRAM



Note: ETV transmission can also be accommodated.

SPACE SCIENCE AND APPLICATION DIVISION,
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

PROPOSAL FOR EXPERIMENTAL USE OF ATS

CORPORATION FOR PUBLIC BROADCASTING
FORD FOUNDATION
NATIONAL ASSOCIATION OF EDUCATIONAL BROADCASTERS
NATIONAL EDUCATIONAL TELEVISION
JOINT COUNCIL ON EDUCATIONAL TELECOMMUNICATIONS

I. INTRODUCTION

The Corporation for Public Broadcasting appreciates the opportunity provided by the National Aeronautics and Space Administration to comment on the possible experimental use of the ATS I and III satellites now in synchronous orbit and the ATS E satellite which is scheduled to be launched in August of this year.

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

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

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

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

The use of ATS satellites as set forth herein will provide the American public with a daily demonstration of the application of space technology. While there is nothing more dramatic than placing a man on the moon or taking pictures

of Mars, it is through the ability to demonstrate that this technology will affect everyday life that we can assure those who question the direction and expense of the space program. The fact that unused technical capacity of an already existing satellite that has outlived its original purpose can be utilized for broader public interests is visible proof of the daily application of space technology and to what extent space dollars can be applied for the general benefit of society.

Public broadcasting has well defined needs and interests that form the basis of this proposal. But the horizons and objectives of the NASA experiment should be expansive in nature and we hope for the fullest cooperation amongst all the interested parties. The Corporation and the public broadcasting community hope that any experiment will encompass the broad needs of our industry and we call upon fellow broadcasters to join with us to explore the ultimate potential of this technological advancement.

This is a unique and troublesome time in this country's history. The decay of some of our most basic social institutions seems to be developing as fast as scientific and educational attainment. We feel that the proposals set forth herein afford the scientific and educational communities the unusual opportunity to join together in a dramatic demonstration of technical and social progress that could afford new hope to a troubled society.

II. PROPOSAL

We propose to use satellites to accomplish four related experiments and demonstrations:

- A. Transcontinental Interconnection
- B. Radio Network
- C. Satellite Cities Demonstration
- D. Remote Production Capability

Transcontinental Interconnection

Our initial priority is to demonstrate that transcontinental distribution is feasible and a major step forward in the growth of non-commercial broadcasting. We propose that a relay link be inaugurated between the east and west coast using ATS III as the distribution mechanism. Television programs would be delivered through conventional terrestrial microwave links to either the NASA earth terminal at Rosman, North Carolina, or Mojave,

California, depending on the point of origination, and then relayed by the satellite to the companion terminal at the opposite coast for distribution or other use.

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

Distribution of programs by satellite has been part of the public broadcasting community orientation since the first Ford Foundation proposal in 1966. The use of a satellite distribution system may prove to be the only practical method available to public broadcasting for programs to be made available to the public on the same basis as commercial television. The use of the ATS satellite for the transcontinental demonstration will provide the data to determine that this is a practical and efficient distribution system and would facilitate and encourage the flow of programs between the east and west coasts. It will give public broadcasting a unique opportunity to analyze the daily operational and technical problems that are involved with satellite distribution. Such an experiment will provide the data upon which the distribution options available to public broadcasting can be analyzed in terms of our financial and technical planning.

Since virtually all of the requisite technical facilities are already in existence, this experiment can be operational as soon as NASA approves the use of the satellites and the ground stations.

Radio Network

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

At present, non-commercial radio does not have access to a national network because of a lack of funds. However, the potential of existing satellite communication facilities suggests that such interconnection could be accomplished

rapidly and without excessive capital or operating costs. By utilizing the VHF capability of the ATS satellite, we can establish an inexpensive receiving facility at individual non-commercial radio stations throughout the United States. In addition, at selected points transmitting stations could be constructed and then utilized to transmit radio programs throughout the non-commercial radio system to demonstrate the need and the practicality of a non-commercial radio network in the United States as outlined in the Public Broadcasting Act of 1967.

As an adjunct to the radio network, we plan to explore the possibility of utilizing the satellite to provide non-commercial educational radio programs to Alaska, Hawaii and Puerto Rico. If this proves feasible and as technology develops, we hope to expand this demonstration to include the transmission of television programs to these areas.

Satellite Cities Demonstration

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

We propose to designate a group of cities within the United States as satellite demonstration cities. These cities would receive programs directly from the satellite either as part of a network origination or a delay pattern to demonstrate the ultimate distribution capability of a satellite system. Furthermore, some of the cities will be utilized as production centers with the capability of transmitting by satellite directly to the other satellite cities. In this way, program material produced by the local production centers will be made available to all satellite cities. While whole programs produced at the various centers will be distributed in this fashion, it is also possible to piece portions of programs together by utilizing the satellite as a switching center.

We contemplate that six cities will participate in this demonstration. The exact number of cities that will have transmitting capability will be based on funds available and estimates by manufacturers as to the construction costs of transmitting and receiving terminals. We hope that the test could be operational as soon as construction of the ground facilities are completed.

In our view, a meaningful test of this nature should also address the needs of the academic, educational and disadvantaged communities in the various cities.

While the selection of the satellite cities will primarily be based upon geographic location and production capability, we would actively seek the participation of universities, public educational authorities, and organizations concerned with the problems of disadvantaged communities in the planning and selecting process.

For example, the possibility of establishing receiving capacity on an Indian reservation as suggested by the Report of the President's Interdepartmental Task Force on Communications Policy would be explored. In essence, the opportunity to use the ground facilities for the distribution of instructional and cultural programs for specialized audiences could offer dramatic evidence that satellites have the potential to make a profound impact on the educational and social problems of the nation.

Remote Production Capability

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

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

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

We recognize that use of mobile transmitting facilities must include careful consideration of the potential for interference to existing terrestrial microwave systems. However, the Corporation believes the need for this type of service is sufficiently urgent and the promise sufficiently bright that the experiment must be undertaken. Since the problem has been most identified in the urban areas of the country, we propose to initially conduct the experiment in distant areas that normally are not heavily penetrated by conventional microwave facilities

and, therefore, less likely to raise the interference issue. It is precisely these areas that broadcasters have difficulty reaching with television facilities. Such a test will contribute a great deal toward determining the technical limits of the use of mobile transmitters.

III. CONCLUSION

The availability of the ATS satellite for experimental purposes affords broadcasting, and in particular public broadcasting, a unique opportunity to expand the horizons of the medium. In addition, it provides a dramatic demonstration of new scientific and social progress.

The parties to this submission, and in particular the Corporation and the Ford Foundation, are prepared to offer manpower, technical and financial aid to support the experiments outlined in this proposal.

We suggest the following course of action:

1. The Corporation for Public Broadcasting and NASA enter into an agreement which would allow the use of the ATS III satellite for the transcontinental demonstration set forth in (I). We propose September 1, 1969 as the operational date for this demonstration.
2. That the Corporation, NASA and the FCC enter into an agreement which would allow the use of remote equipment as soon as such equipment could be made available.
3. A task force composed of the interested parties be formed by July 1, 1969 for the purpose of exploring the specific requirements for the regional remote and radio network demonstrations. The task force should report within 60 days and set forth a timetable for the implementation of the experiments.

NASA

June 19, 1969

MEMORANDUM FOR GENERAL O'CONNELL

Thank you for your memorandum of June 16th regarding correspondence between your office and NASA on the procurement of communications satellite service to support the Apollo program.

Your position seems eminently reasonable with regard to the timing of a conference with the terrestrial carriers. However, I still have reservations about the authorized user question and the question of certification of national interest. I would like to discuss this with you before a final decision is reached in this matter.

Clay T. Whitehead
Staff Assistant

cc: Mr. Flanigan
Mr. Whitehead
Central Files

CTWhitehead:ed

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

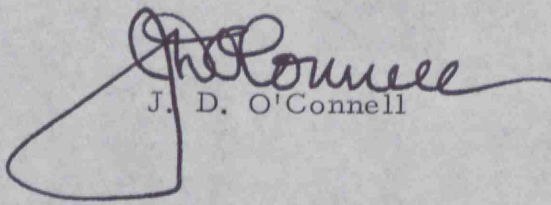
OFFICE OF THE DIRECTOR

June 16, 1969

MEMORANDUM FOR MR. CLAY T. WHITEHEAD

Attached, for your information, are copies of an exchange of correspondence between my office and NASA regarding the procurement of communications satellite service to support the NASA Apollo program.

Since the correspondence seems self-explanatory, I will not restate the problem in this memorandum. I would simply state that NASA shares our concern that the terrestrial carriers be afforded a hearing. In conversations at the staff level we have been advised that NASA intends to confer with the terrestrial carriers about this procurement, and the only unresolved problem seems to be timing. We feel that it would be in the Government's best interest for NASA to have the hearing at the outset rather than after this office should approve the procurement.



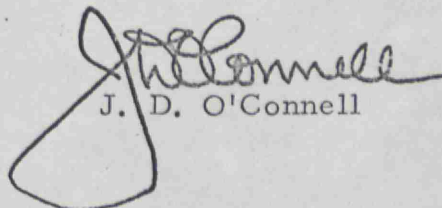
J. D. O'Connell

Attachments

It does not appear, therefore, that the contention that there would be a 15% cost saving is an acceptable basis for concluding that direct procurement would be in the national interest. A conclusion based on that premise would be completely counter to the FCC policy on composite rates, and would mean that every specific procurement of satellite service by a Government department or agency would necessarily be in the national interest. The effect on departments and agencies, such as the Department of Defense, which depend on both satellites and cables to meet their requirements could be uncertain and possibly adverse.

I would appreciate your advising me, therefore, as to how NASA proposes to handle the matter of affording a hearing to the terrestrial carriers. After that procedural matter is resolved and I receive a firm and unchangeable statement that NASA considers direct procurement to be in the national interest, I intend to furnish appropriate advice promptly to the FCC.

Sincerely,



J. D. O'Connell

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

OFFICE OF THE DIRECTOR

June 13, 1969

Mr. Willis H. Shapley
Associate Deputy Administrator
National Aeronautics and Space Administration
Washington, D. C. 20546

Dear Mr. Shapley:

This is in response to your letter of June 6, 1969, requesting my approval for the direct procurement from the Communications Satellite Corporation (Comsat) of satellite communications circuits in support of the NASA Apollo program. These circuits would be between commercial earth stations in the United States and NASA tracking ships and earth stations on Grand Canary and Ascension Islands and at Carnavon, Australia. Service to these points is now being provided under direct contracts entered into in 1966 between NASA and Comsat, and the appropriate foreign carriers.

The principal reason given in your letter that a direct procurement would be in the national interest is that these communication services are critical to the success of manned missions, and a direct procurement not involving an intermediate terrestrial carrier would allow a greater margin of safety for the astronauts and create a greater probability for success of the Apollo missions. It is NASA's belief that contracting with the terrestrial carriers for its future requirements for the manned space flight program would introduce an unnecessary element of risk into the program and that this would not be in the national interest.

As I told you in our telephone conversation of June 10, I fully appreciate the inherent dangers involved in the manned space program, and I accept NASA's conclusion in this respect, because NASA is the agency with the responsibility for the safety and success of the Apollo program. One aspect of this which causes me some concern, however, is my understanding that if this direct procurement is authorized, NASA would

then discuss the matter with the terrestrial carriers with a view toward permitting them to show that procurement through one of them might be in NASA's best interest. If there is a possibility that such a presentation might persuade NASA that indirect procurement of this satellite service through one of the terrestrial carriers would be in NASA's best interest then I would suggest that the terrestrial carriers be heard by NASA before any action is taken by this office, or the FCC. It would not seem appropriate for me to send a letter to the FCC advising that a direct procurement is necessary for safety reasons and then have NASA take a position later that the same, or an adequate, margin of safety can be achieved through indirect procurement.

Even if there is no possibility that the terrestrial carriers can persuade NASA that indirect procurement would meet NASA's requirements, it would seem that NASA would be placed in a difficult position if no discussions are held in response to their request, or if such discussions are held after a NASA-DTM-FCC determination upon which the terrestrial carriers have had no prior opportunity to comment. It seems clear that either the FCC, NASA, or the DTM must give the terrestrial carriers a technical explanation of the reasons why NASA has concluded that a direct procurement of this service is in the national interest. The most appropriate place for this discussion is at NASA, which has the facts first hand and the responsibility for the Apollo program, and the most appropriate time is before a determination is made by the Executive Branch that a direct procurement would be in the national interest.

There is a statement in your letter that NASA will probably save at least 15% in the charge for this service if there is a direct procurement which eliminates the intermediate carrier. As you are well aware, I am sure, the rate permitted by the FCC to be charged for a particular communication service is not always directly related to the cost of providing that service. The FCC has established a composite rate policy with regard to international service which reflects the lower cost of providing some types of service by satellite; and the United States Government, as a major user of both cable and satellite circuits, benefits from this. As a matter of fact, at the time that the 30 circuit matter was pending, the Department of Defense estimated to the Holifield Committee that as a result of the consolidated rates which were scheduled to be put into effect by the FCC in 1966, the annual savings to DOD would be \$6.3 million. The Committee Report stated, "These savings contrast with the \$1.6 million annual savings which would have been realized by dealing with Comsat directly on the 30 circuit procurement." (See Seventh Report by the Committee on Government Operations, H. Rept. No. 613, 90th Cong., 1st Sess., pp 9-10.)



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WASHINGTON, D.C. 20546

JUN 6 1969

OFFICE OF THE ADMINISTRATOR

Honorable James D. O'Connell
Director of Telecommunications
Management
Executive Office of the President
Washington, D. C. 20504

Dear Mr. O'Connell:

As you are aware, in 1966 NASA entered into contracts with the Communications Satellite Corporation, and with three foreign carriers, for satellite communications services as part of the NCS/NASCOM communications network supporting the Apollo Program. These contracts will expire on September 30, 1969, and must be renewed or new contracts entered into for similar services.

For the past several months we have been conducting an intensive review of NASA's future requirements for communications support of Apollo and follow-on programs. In connection with identifying future requirements, we have also sought to determine the contractual scheme most appropriate for fulfilling them, taking into account the "authorized user" opinion of the Federal Communications Commission dated July 20, 1966, as amended by a further opinion dated February 1, 1967. NASA has concluded that it would be desirable for Comsat to continue to furnish the satellite communications services now being provided to NASA, subject to certain changes which will be discussed below, under direct contractual arrangements with NASA, and it is the purpose of this letter to request your approval of such arrangements.

The need for your approval of the continuation of NASA's direct contractual relationship with Comsat arises out of the position taken by the FCC regarding the authority of Comsat

to contract directly with an agency of the United States Government for the provision of communications satellite services. In its July, 1966 opinion, the FCC stated that Comsat would be authorized to deal directly with U. S. Government users:--

" . . . in only those instances where the requirement for satellite service is of such an exceptional or unique nature that the service must be tailored to the peculiar needs of the customer and therefore cannot be provided within the terms and conditions of a general public tariff offering."

The services which Comsat had been authorized to furnish to NASA for support of the Apollo Program were cited specifically by the FCC as a case in which a direct relationship between Comsat and the Government user was appropriate.

In its February, 1967 amendment to the "authorized user" opinion, the FCC broadened the criteria for determining those circumstances in which Comsat may deal directly with a Government agency. The FCC noted that its previous opinion had pointed out that " . . . Comsat may be authorized to provide service directly to the Government whenever such service is in the national interest." The FCC further stated that "Clearly, in view of the foregoing, the DTM is the focal point for the judgment of the Executive agencies as to the national interest." And, in emphasizing that it would rely heavily on the advice of the DTM in this regard, the FCC added that:--

"While no specific procedures or criteria (other than the national interest) are proposed with respect to this governmental facet, in all cases where Comsat seeks to deal directly with the Government we shall act promptly after receipt of advice from the DTM."

Thus, it appears that NASA will be able to continue its direct contractual relationship with Comsat for the services, provided you approve such an arrangement as being in the national interest, and so advise the FCC.

The services which Comsat is presently providing under its contract with NASA can be divided into two distinct categories: (1) service via satellites between U.S. earth stations and U.S. Navy-operated range instrumentation ships located in the Atlantic, Indian, and Pacific Oceans, and (2) service between U.S. earth stations and satellites located over the Atlantic and Pacific Oceans, which links up, respectively, with service provided by foreign carriers to earth stations located on Grand Canary Island (Spain) and Ascension Island (United Kingdom), and at Carnarvon, Australia.

With respect to the service between U.S. earth stations and the range instrumentation ships, the existing contract with Comsat provides for service from the Comsat earth station at Brewster, Washington, to a ship in the Pacific Ocean Area, and from the Comsat earth station at Andover, Maine, to two ships in the Atlantic/Indian Ocean Area. Service to the Pacific ship is provided on a full-time basis, while service to the Atlantic and Indian Ocean ships is provided on a shared basis with the earth stations on Grand Canary and Ascension Islands.

Experience in the use of the service to the ship stations, and the plans for future Apollo flights, have enabled NASA to reduce its requirements to actual use of only one ship at one time in the Atlantic/Indian Ocean Area and one ship at one time in the Pacific Ocean Area. Thus, although two ships may be physically located in the Atlantic/Indian Ocean Area, only one of them will actually be providing communications service at any given time. Similarly, if either of these ships is moved to the Pacific, which may be done in connection with certain missions, only one of the two ships then located in the Pacific will be actually providing communications service at any given time, although both may be utilized alternately in the course of the same mission. It is also a

possibility that all three ships will be located in the same ocean area at one time, with alternate use of one ship at any given time.

In addition, it is NASA's intention to reduce all of the communications service to and from the U.S. earth stations and the ships to part-time availability, with actual use amounting to approximately twenty days, on each of not more than four occasions a year. Government operation of the communications facilities aboard each of the three Government ships will continue.

The reduction of the ship service to actual use of only one ship at one time in the Atlantic/Indian Ocean Area and one ship at one time in the Pacific Ocean Area, and even that on a part-time basis, will create a variety of novel technical and operational problems. For example, channels will have to be switched rapidly from one ship to another in the same ocean area. Continuous coordination between Comsat and each of the Government ships will be required in order to assure the quality and reliability of the circuits. Furthermore, it is envisioned that Comsat will have to distribute these circuits to different satellites for different missions.

Because of the complex and constantly changing interfaces between the satellites and the Government-operated ship stations, and the need for close coordination between Comsat and the Government regarding differing requirements, a direct contractual relationship between Comsat and the Government will clearly meet the unique or exceptional circumstances test propounded by the FCC in its original authorized user decision. In addition, a direct relationship between NASA and Comsat should result in substantial cost savings to the Government. Although an approximate amount for such savings cannot readily be predicted at this time, because there is no basis for estimating the rates for the part-time service that Comsat and the commercial carriers might offer to fulfill NASA's future ship-service requirements, we believe it can be assumed that the differential in rates will be at least 15%, as discussed further below.

For the reasons, therefore, that NASA's requirements for satellite communications service to the range instrumentation ships are unique in nature, and that they could probably be furnished by Comsat at a significantly lower cost to the Government, NASA submits that the provision of such services by Comsat under a contract directly with NASA would be in the national interest.

NASA's requirements for communications satellite service to the earth stations at Carnarvon, Australia, and at Grand Canary Island and Ascension Island, will remain substantially the same, except that it has not yet been determined whether the service to the latter two stations will be required on a full-time, part-time, or shared basis. In determining whether NASA should contract for the U.S. portion of these services through Comsat, or through a commercial U.S. carrier or carriers, careful consideration was given first to the operational problems that might arise as a result of the interjection of commercial carriers between the NASA operating center and Comsat, as the operator of the earth stations and manager of the space segment. NASA's loss of direct access to Comsat could become a critical factor to the success of a manned mission, and the safety of the astronauts, in the event of a service outage during the launch, initial orbit determination, or trans-lunar insertion phases of the mission, when immediate restoration of the service would be vital. NASA believes, therefore, that contracting with commercial carriers for its future requirements would introduce an unnecessary element of risk into the manned space flight program, and that this would not be in the national interest.

NASA has also considered the relative cost of obtaining the U.S. portion of the services to the three foreign stations from Comsat and from a commercial carrier or carriers. Although we have not attempted to solicit quotations for these services from commercial carriers, other experience indicates that there would probably be a minimum differential of at least 15% between the rates offered by Comsat, and by a commercial carrier. On the basis of Comsat's present rates

to NASA for the U.S. portion of the services to these three stations, this 15% factor would result in about \$94,500 a year in additional costs to NASA for procuring the same type of service from a commercial carrier. In view of the budgetary limitations now confronting the U.S. space program, we believe that it would be decidedly in the national interest if NASA could avoid these additional costs by continuing to contract directly with Comsat for these services.

In the light of the above, it is requested that you approve, as being in the national interest, the continuation of the direct contractual relationship between Comsat and NASA for the provision of the service between the U.S. earth stations and the tracking ships, and of the U.S. portion of the service to the three foreign earth stations. We would also appreciate your prompt action on this matter, because of the comparatively short time remaining before the present contracts expire.

Sincerely yours,

Willis H. Shapley

Willis H. Shapley
Associate Deputy Administrator

NASA

June 6, 1969

MEMORANDUM FOR GENERAL O'CONNELL

In reply to your memorandum of June 5th, I think the following points should provide the information you require:

- A. While there is no stated United States policy with respect to the provision of launching service for operational satellite systems for other nations, you should assume that each request would be considered on its own merits. We have no problem with authorizing NASA to launch operational systems as a matter of principle. It would be reasonable to assume that NASA would be authorized to provide launch services for purely domestic communications satellites for other nations on a basis similar to the offer recently made to the Canadian government. Launch services for regional systems are another matter and would have to be considered when the occasion arises.
- B. The memorandum from the President authorizing the Canadian launch specifically stated that the provision of launch services was contingent upon a determination by INTELSAT of compatibility of the Canadian system with the INTELSAT system. It would be reasonable to assume that all future agreements of this type would contain the same provisions.
- C. While the agreement to provide the launch services to the Canadians included no explicit provisions to protect our own domestic communications satellite interests, it does not seem necessary to make any explicit statement that we would not launch a satellite for another nation that presented severe problems for our likely interests. In

-2-

this regard, I would expect that your office and the FCC would work closely with NASA to assure that our interests are not unduly prejudiced.

Clay T. Whitehead
Staff Assistant

cc: Mr. Flanigan
Mr. Whitehead
Mr. Hofgren
Mr. Rose
Central Files

CTWhitehead:ed

NASA

June 2, 1969

MEMORANDUM FOR MR. FLANIGAN

Attached is a memorandum to John Ehrlichman on preparations for Frank Borman to work with the White House on the moon landing project.

NASA's preference, I believe, would be not to use Borman very intensively on White House coordination; partly because he has not been familiarized with this project and partly because they would like to keep him on the space station project.

We certainly should move immediately to set up some coordinating machinery between the White House and NASA so that the various aspects relating to the mission itself can be resolved in a timely way. For instance, the plaque wording is a fairly urgent matter that should be resolved before the President leaves tomorrow. There is increasing public and Congressional attention to the ceremonies on the lunar surface, and we not only have to resolve these but give consideration to whether and when these details will be made public.

I suggest that Frank Borman be designated to serve in this capacity in spite of NASA's mild reluctance. He would certainly be better prepared than any of us to deal with NASA, since there are so many parts of NASA that are going to be involved, and would give us a good single point of contact for the many matters that we are going to have to deal with.

Clay T. Whitehead
Staff Assistant

cc: Mr. Whitehead
Central Files

CTWhitehead:ed

June 2, 1969

MEMORANDUM FOR JOHN EHRLICHMAN

NASA has agreed to make Frank Borman available at any time we would like to have him.

He will be on the West Coast through Saturday, June 7th, and will be available for discussions with you and Bob Haldeman whenever it is convenient.

Borman can be contacted through Julian Scheer at NASA headquarters, and I suggest you call to set up a meeting with Borman while you and he are in California this week.

One question NASA will want to give particular attention to is whether Borman will be expected to spend full time on this activity or will have time available for the space station project to which he was recently assigned. They will try to bring Borman up to speed on preparations so far discussed on the moon landing prior to meeting with you.

Peter M. Flanigan
Assistant to the President

cc: Mr. Flanigan
Mr. Whitehead
Central Files

CTWhitehead:ed

6/2/69

NASA

Mr. Flanigan:

The plaque for the len has
to be fabricated and installed
and they would like very much
to have some guidance on the
wording as early as possible
this week.

Tom

6/2/69

5:05 p.m.

At Tom's suggestion,
called Shapley's office
to tell them to figure
on having Boorman
meet with Haldeman
and Ehrlichman in
California some time later
this week -- but that we
would be back in touch
as soon as we hear any-
thing definite.

6/2/69

Nell:

Attached is the material
I mentioned on the phone.

Tom Whitehead is arranging
for this. He understands
the President will be taking
off tomorrow at 11:40 a. m.
and wondered if you would
want to get Borman in here
before the President leaves,
or if they would want to have
him go to California, or if
he would wait until the
President's return.

Eva Daughtrey
Ext. 2786 -- Rm. 103 EOB

MEMORANDUM

THE WHITE HOUSE
WASHINGTON

MAY 29, 1969

TO: PETER FLANIGAN
FROM: JOHN EHRLICHMAN

In planning for the various activities involved in the Moon shot, the President suggests that we arrange with NASA for Frank Borman to have White House standing and participate in the full-time management of the President's activities with relation to this shot and subsequent congratulation of the astronauts.

Since you are contact with NASA, would you kindly make arrangements for Colonel Borman to be detached effective immediately to the White House for preliminary conversations with Bob Haldeman, Dwight Chapin and me in planning these events?

plague working now.



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
WASHINGTON, D.C. 20546

NASA

OFFICE OF THE ADMINISTRATOR

May 29, 1969

Mr. Whiteland
MEMORANDUM FOR: Honorable Peter Flanigan
Assistant to the President

In confirmation of the telephone call to your office today, Dr. Paine will be leaving the city Sunday afternoon, June 1, for Providence, Rhode Island. On June 2, Dr. Paine will leave for a two-week trip to Europe returning to Washington on June 16.

During Dr. Paine's absence, Dr. Homer E. Newell, Associate Administrator, will be Acting Administrator except for the dates of June 12 and 13, when he also will be out of the city and Mr. Willis H. Shapley, Associate Deputy Administrator, will be Acting Administrator.

Clare F. Farley
Clare F. Farley
Executive Officer

NASA

Wednesday 5/28/69

10:40 I checked with Flanigan's office -- it will be O. K.
if you stop by five minutes before the meeting
with Dr. Paine.

Checked again with Julian Scheer's office (Public
Affairs Officer at NASA) -- they were to have
someone call me back about the ceremonial aspects
of the lunar landing.

She will have Mr. Scheer call me -- he was tied
up yesterday afternoon. Advised her that you
would like the information prior to a meeting you
will be having this afternoon.

(13) 35302 or 35404

5/27/69

Called Dr. Paine's office--they referred me to Schere (13) 35302 or 35404

Tom wants to know who is primarily handling the ceremonial aspects of the lunar landing -- arrangements for what is going to be done on the surface of the moon -- what their current thinking is on the wording will be on the plaque they leave behind.

5/28

Mr. Schere is to call me.

Tuesday 5/27/69

10:15 Mr. Flanigan will be meeting with Dr. Paine
tomorrow at 3 pm.

Ceremony for RN plaque signing
flag for Pres. office
ref God on plaque.
Conversation w/ Earth (ERN)

ITINERARY FOR DR. PAINE

EUROPE

June 2 - 14, 1969

<u>Monday - June 2</u>	Depart New York
<u>Tuesday - June 3</u>	Arrive London Lunch with Chairman, Science Research Council, et al Meeting with English space and technology officials
<u>Wednesday - June 4</u>	London to Amsterdam Visit Technology Center of the European Space Research Organization Press Conference
<u>Thursday - June 5</u>	Interview with Dutch Television Foundation Meeting with Dutch space officials Amsterdam to Paris Meeting with European Space Research Organization officials
<u>Friday - June 6</u>	Visit French National Center for Space Studies, Bretigny Lunch at Bretigny with French space officials Bretigny to Le Bourget Visit U.S. and other exhibits at the Air Show
<u>Saturday - June 7</u>	Air Show
<u>Sunday - June 8</u>	Open
<u>Monday - June 9</u>	Lunch with Ambassador Shriver and French scientific and space officials Paris to Cologne
<u>Tuesday - June 10</u>	Meeting with German scientific and space officials Visit German Laboratories Cologne to Frankfurt Frankfurt to Rome
<u>Wednesday - June 11</u>	Visit Aerospace Research Center, University of Rome Meetings with Italian space officials Rome to Madrid
<u>Thursday - June 12</u>	Visit NASA Tracking Station, Madrid Participate in ceremonies turning operation of station over to Spanish National Aerospace Institute
<u>Friday - June 13</u>	Madrid to London
<u>Saturday - June 14</u> (TENTATIVE)	Return to Washington

ADMINISTRATOR'S TRAVEL

The Administrator plans to be travelling during much of the next three weeks. He will visit the Manned Spacecraft Center, Houston, Texas, on Sunday, May 25, 1969, remaining through Apollo 10 splashdown and recovery activities on Monday, May 26, 1969. He will return to Washington on the 26th, then leave on June 2, 1969, for a two-week trip to Europe, returning on or shortly after June 14. The trip will involve conferences with European space officials, attendance at the Paris Air Show, and inspection of NASA and European space installations.

The trip and activities have been coordinated with the Department of State, and include visits to England, The Netherlands, Belgium, Germany, France, Italy and Spain, as indicated in the attached summary itinerary.

Manned Lunar Landing

Proposals for Presidential Activity

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A



Timeline for Apollo 11

- July 16 - 9:30 a.m. EDT - Liftoff
- July 20 - 2:22 p.m. - Lunar Module touches down
on Moon
- 2:22 p.m.- - Astronauts remain in
12:12 a.m. Lunar Module (9 hrs.,
50 min.)
- July 21 - 12:12 a.m. - Armstrong leaves Lunar
Module (remains on lunar
surface 2 hrs., 20 min.)
- 12:39 a.m. - Aldrin leaves Lunar Module
(remains on lunar surface
1 hr., 33 min.)
- 12:00 noon - Lunar Module lifts off from
lunar surface
- July 24 - 12:52 p.m. - Splashdown in Pacific Ocean
- July 25 - August 15 - Astronauts in quarantine
at Houston facility

B



Invitees

The President:

124 Heads of State, nations with which the United States has diplomatic relations.

Pope Paul, who has expressed great interest in the United States' manned flight program.

The Vice President:

Governors of each of the 50 states.

Administrator, NASA:

All Members of Congress.

Special guests including foreign science ministers, university presidents, scientists, artists, writers, business leaders, civic leaders, etc. A cross-section included a "quota" of opinion-makers from each state to give balance to total national representation.

Cabinet officers.

Agency heads.

Chief Justice and Members of Supreme Court.

e

Artifacts

A. General

1. Symbolic activities must not jeopardize crew safety or interfere with achievement of mission objectives. They should be simple, in good taste from a world-wide standpoint, and have no commercial implications or overtones.
2. The overall impression to be conveyed by the symbolic activities and by the manner in which they are presented to the world should be to signalize the first lunar landing as an historic forward step of all mankind that has been accomplished by the United States of America.
3. The "forward step of all mankind" aspect of the landing should be symbolized by a suitable inscription to be left on the moon and by appropriate statements made on the moon and on earth. The UN flag or other international or religious symbolism will not be used.
4. The "accomplishment by the United States" aspect of the landing should be symbolized by placing and leaving a U.S. flag on the moon. The placing of the flag on the moon should symbolize the American effort that made the landing possible but should avoid the implication of a U.S. exercise of sovereignty on the moon. The latter connotation would be contrary to our national intent and would be inconsistent with the Treaty on Peaceful Uses of Outer Space.

B. Symbolic articles to be left on the moon

1. A U.S. flag, on a metal staff with an unfurling device, to be emplaced in the lunar soil by the astronaut, with both the flag and the act of emplacement to be photographed and televised if possible.
2. A commemorative plaque affixed to the LM descent stage to be unveiled by the astronauts, with both the plaque and its unveiling to be photographed and televised if possible. The plaque will be inscribed with:
 - a. A design showing the two hemispheres of the earth and the outlines of the continents, without national boundaries. The launching site at Cape Kennedy may be indicated by an inset stone or otherwise.
 - b. A short and simple inscription commemorating the first landing of men from the earth as peaceful and as an achievement of all mankind.
 - c. The date (month and year).
 - d. The signatures of the three astronauts as the men making the voyage and of the President as the representative of the people of the U.S. who made the voyage possible.

C. Symbolic articles to be taken to the moon and returned to earth

1. Miniature flags (1 each) of:
 - a. The 50 states, District of Columbia, and U.S. Territories--for subsequent presentation to the Governors by the President.

- b. All nations--for subsequent presentation to Chiefs of State by the President.
- 2. Small U.S. flags (limited number)--for special presentation.
- 3. Two full-size U.S. flags--for presentation to the House and the Senate (to be stowed in Command Module).
- 4. Stamp die from which Post Office Department will print special postage stamps commemorating the first lunar landing.

D. Other

The LM descent stage itself will have symbolic significance as a permanent "monument" on the surface of the moon. For this reason, the name to be given to the LM should be consistent with the overall approach on symbolic articles and subject to approval by the Administrator.



D

Pre-Launch Activities

The President would have dinner with the Apollo 10 crew, Astronauts Stafford, Young and Cernan, and the Apollo 11 crew, Astronauts Armstrong, Collins and Aldrin, and wives, at The White House in a period between June 19-27.

The President would host a pre-launch dinner on the evening of July 15, eve of lift-off, in the Cape Kennedy area. This dinner could include Heads of States, Governors or various combinations of Special Guests.

The President would meet with the Apollo 11 crew on July 15, prior to lift-off, in a private meeting to wish them well.

E

Launch Day Activities

The President would view the launch of Apollo 11 from a selection of viewing possibilities:

1. From the deck of a Naval vessel off the Florida coast.
2. From a Firing Room at the Launch Control Center.
3. From an outdoor VIP site with other special guests.

(Special circuits to The White House through the Situation Room would be manned 24 hours a day during the mission with NASA personnel present to assist in keeping the President fully informed at any moment.)

F

Mission Period

On July 21 at approximately 1:00 a.m. EDT, the President would talk directly to the astronauts on the lunar surface from The White House.

On July 24 at approximately 2:15 p.m. EDT, the President would talk to the astronauts on the recovery vessel from The White House.

G



Post Mission Period

On July 25 the President would fly to the Manned Spacecraft Center in Houston to talk with the Apollo 11 crew upon their return. The astronauts will be in quarantine, but the President would view them through a glass partition and would discuss through a sound system the mission.

The President would also:

- * Invite the crew to The White House.
- * Order Congressional Medals of Honor for each crew member.
- * Call for a Special Day of Recognition for the Apollo 11 crew.
- * Announce a tour of the major regions of the United States for the crew and participate in some ticker-tape observances with them.
- * Announce a tour of foreign capitols on every continent for the crew.
- * Announce that the Apollo 11 spacecraft would tour the nation's 50 state capitols.

* Request international body to accept appropriate recommended name for spot where astronauts touched down.

Congressional leaders can be expected to call a Joint Session of Congress to hear the Apollo 11 crew. The President and Vice President would accompany the astronauts to the Joint Session.

Bureau of the Budget

ROUTE SLIP

TO

Tom WinterheadTake necessary action ☐Approval or signature ☐Comment ☐Prepare reply ☐Discuss with me ☐For your information ☐See remarks below ☐FROM Dick SpeierDATE 5-15-69

REMARKS

The attached articles seem to indicate that the United States has a reputation for extraordinary benevolence in international cost sharing. NASA is apparently expected to pay for its use of a foreign telescope but to offer our own facilities gratis.

NASA

Two-Year Life Expected for OAO Satellite

Washington—National Aeronautics and Space Administration is predicting a two-year lifetime for its Orbiting Astronomical Observatory 2, launched Dec. 7, 1968, despite two control mishaps and the failure of one of the on-board cameras.

The 4,400-lb. spacecraft, built by Grumman Aircraft Engineering Corp., had a design lifetime of one year and a mission success criterion of only one month, according to Joseph Purcell, OAO Project manager at Goddard Space Flight Center. "We are far past that," he noted.

OAO 2 is operating at 97% efficiency. That is, it is available for use by astronomers 97% of the time. With the amount of observing time available, NASA has been able to institute a guest observer program in addition to the two principal investigators, scientists from the Smithsonian Astrophysical Observatory and the University of Wisconsin (AW&T Oct. 21, 1968, p. 58).

Nine of these guest observers have been approved, including two from foreign countries, and they will study about 160 different celestial objects. Another nine observers are being considered.

The first control accident occurred

Aviation Week & Space Technology, May 12, 1969

now inoperative, having developed false stars as the result of its phosphor being burned away in spots.

There are two reasons for this problem. The first is the scattered light from the sunshade while the experiment was being operated on the sun side of the earth and, perhaps, excessive Lyman-alpha ultraviolet radiation from the geocorona about the earth. The experiments now are restricted to operation only when the spacecraft is in the earth's shadow. A tubular sun baffle will be incorporated in the next spacecraft of the OAO series.

The second reason for the difficulties

150th day in orbit, the experiment had been pointed at 645 different places and had taken 1,641 pictures.

The results, as outlined recently by Dr. Fred L. Whipple, director of the Smithsonian Astrophysical Observatory, included:

■ Lyman-alpha radiation at 1,216 Angstroms, stemming from solar excitation of the molecules of hydrogen surrounding the earth, is strongest when the satellite is on the sun side of the earth. The radiation does not decline until the sun is about 30 deg. below the horizon. This indicates that radiation is leaking into the earth's shadow. Whipple termed it a "nuisance" since in one spectral region it interferes with the observation of stars.

■ In the Great Nebula of Orion, the multiple star Theta Orionis is far brighter in the ultraviolet "than we can explain offhand with any simple, ready explanation," Whipple said. Nu Orionis is also fainter than expected, as is Iota

33

THE NEW YORK TIMES, THURSDAY, MAY 15, 1969

Sweden Is Seeking Top Telescope

GOTEBORG, Sweden (Reuters)—Sweden is likely to get the world's most advanced telescope by 1972, to keep the country abreast in space observations for the rest of the century.

Swedish scientists say it will allow them to trace spacecraft on flights both to Jupiter—estimated to take a year—and around the sun, and also perhaps to establish the outer limit of the universe.

Prof. Olof Rydbeck of the Chalmers Institute of Technology here has sought financial backing to expand the institute's observatory at Raahe to incorporate an atomic clock-driven telescope with a diameter of 300 feet.

It is one of two constructions especially developed for Chalmers and the Max Planck Insti-

tute in West Germany by the giant Krupp concern.

They will be the largest telescopes in the world, but, according to Professor Rydbeck, the Raahe one will be the more sensitive because of Sweden's lead in the electronic field.

Foresees Outside Help

"Also, we are getting the second model and can thus make any modifications that may prove necessary," Professor Rydbeck said. "With this telescope we should be able to fix the outer limit of the universe at between 10 and 20 billion light years. It is hardly likely to be greater as light rays from possible further stars have not reached here yet.

"We could also pick up

pictures from space craft visiting Jupiter even when the planet is over the horizon," he added.

The telescope, taller than a 14-floor building and with an outer lens area of almost two acres, would make the Raahe observatory the obvious central link in a huge east-west network, he confided.

Professor Rybeck is confident that Chalmers will receive the 31.5-million crowns (\$6-million) needed to realize the project.

"Even if our applications to three Swedish bodies are turned down, I am sure there would be foreign organizations such as NASA [United States National Aeronautic Space Administration] that would help finance us by buying time on the telescope," he said.



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
WASHINGTON, D.C. 20546

OFFICE OF THE ADMINISTRATOR

May 15, 1969

MEMORANDUM FOR: Mr. Peter Flanigan
Assistant to the President

It was good to talk with you yesterday. I will keep you informed of significant NASA items of concern to the White House.

As you know, the President appointed a Space Task Force under Dr. Charles Townes of Berkeley, after the election last year, to review and make recommendations on the Nation's space program. The Task Force Report was submitted to the President-elect in January. NASA has reviewed this report, and sent its comments to Dr. DuBridge, the Vice President, and other members of the Space Task Group. You may be interested in NASA's comments, which are attached.

T. O. Paine
Administrator

Enclosure
Ltr to Dr. Lee DuBridge frm
Dr. Paine, dtd. 5/6/69
re comments on the Space Task
Force Report



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WASHINGTON, D.C. 20546

OFFICE OF THE ADMINISTRATOR

MAY 6 1969

Honorable Lee A. DuBridge
Science Adviser to the President
Executive Office Building
Washington, D. C. 20500

Dear Dr. DuBridge:

About two months ago, you sent me a copy of the report of the Space Task Force chaired by Dr. Charles Townes. I have studied the report, and it has been read carefully by senior members of my staff. This letter presents our considered judgments, not only with respect to the report, but also about the subject it treats -- the future of the Space Program.

First, it is, in our view, a good report. We agree with much of what is said in the report and appreciate having it said by others whose objectivity will be accepted by those who read it. The report says the country must continue to have a vigorous manned space-flight program; that we must continue to explore the Moon after the initial Apollo landings; and that we must explore the planets. It says we must continue our advances in astronomy, in meteorology, in geophysics, and in other disciplines to which space has made exciting contributions; and that we must work diligently to enhance the practical benefits of space activities, in communications, in navigation, in weather prediction, and in the discovery and management of earth resources. All these things must be said again and again -- because they are too often taken for granted.

In commenting further on the Townes' Report, I want to direct attention to two concepts and, in doing so, to stimulate some critical thinking. First, let us examine the initial statement of the report, "The U. S. space effort is in a generally vigorous state."

What do we mean by the word "vigorous"? If we mean that we have recently placed in orbit one of the most advanced and scientifically productive spacecraft, the Orbiting Astronomical Observatory, that we have successfully launched two spacecraft toward the planet Mars, which, if successful,

will advance our knowledge of the planet far beyond its present extent, and that two American astronauts will very likely walk on the Moon this year and bring back to Earth some seventy pounds of lunar material -- if that is what we mean, then, indeed, our space program is vigorous.

But this is too shallow a view of the state of health of the U. S. space program. The present pace of activity is the result of ten years of concentrated preparation. We are describing the harvest of several decades of research and development; we are delineating a program that is in the autumn of its existence.

If, on the other hand, one associates vigor with youth, with growth, and with the promise of future accomplishments, one can only view the state of affairs in our space program with serious concern for the future.

There is no fully adequate index of space activity, but the one used most frequently is the number of major launches per year. We have plotted this index since the start of the space program, and we attempt continually to project it into the future. A recent projection was made in order to assess our future requirements for launch vehicles and range services. This projection shows, and all other indices available to us confirm, that the Space Program faces a depression of activity * during the early 1970's, and nothing we do now can change it. For three successive years, the previous Administration deferred decisions on future space programs; and although we foresaw the consequences, we were unable to make headway against a policy based on uncertainty about the future. What the new Administration can decide now is whether the decline in the U. S. Space Program is to continue or whether we are to start moving forward again.

Let me present another illustration of the present state of affairs. The two rocket engines that power the Saturn V, our largest launch vehicle, are the F-1 and the J-2. Development of the F-1 was started in 1958; the J-2 in 1960. In the intervening years, not one new launch-vehicle engine has been carried through the developmental process to actual use in the United States. The basic design of the Saturn V was laid down in 1962, and since that time not one new American launch vehicle has been started. By contrast, the previous decade (1952 - 1962) was one of remarkable productivity in rocket development. It brought into being the Redstone and its progeny: Jupiter, Juno II, and Saturn; the Vanguard and its descendants: Thor-Able, Atlas-Able, and Delta; the Atlas, Atlas-Agena,

* For example, NASA had 71 major launches in the three year period 1965-67 -- the corresponding number projected for 1970 through 1972 is 42, somewhat more than half the activity of the former period.

and Atlas-Centaur; the Scout, Minuteman, and Polaris; and the whole family of Titans. Without belaboring the reasons for it, we must accept that our Nation's progress in rocketry is now at its lowest level in almost twenty years.

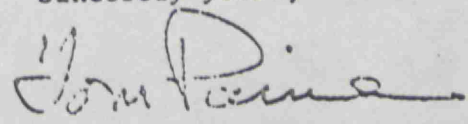
This brings me to the second point I would make about the Townes' Report, and that is its repeated opposition to the word "commitment". We must not commit, the report says, to a space station, to low-cost space transportation, to manned planetary exploration. I can understand this reluctance to make commitments, but I cannot sympathize with or accept it. I understand that the word "commitment" means to many scientists the type of commitment we made to Apollo, but I do not agree with those who regret or deplore that commitment. They see only its disadvantages. They do not realize that Apollo accelerated technological advances that will be of continuing benefit to space science and space applications, as well as to manned flight. Apollo spurred the development of computers, power supplies, guidance and navigation, tracking and data-acquisition systems, and methods of information management, all of which will promote the scientific and practical use of space. Concern for the safety of Apollo astronauts stimulated research in micrometeorites, in radiation and its physiological effects, in sun-spot prediction; Apollo's needs accelerated the analysis of lunar data obtained by Ranger, Surveyor, and Orbiter. Apollo gave more meaning to the space program because people identify more readily with men than with machines. It gave people a better understanding of our solar system, of celestial mechanics; it stimulated interest in the regions beyond the surface of the earth, and in the science that must be done to understand those regions. In short, the focusing effect of the Apollo commitment had both direct and indirect benefits to science and its practical uses.

Our most urgent need at this time in the Nation's space history is to provide a standard about which our human resources: engineers, scientists, administrators, and technicians, can rally; a set of goals and objectives that will give purpose and direction to the space efforts of government and industry, and those of the scientific and educational communities. We have been frustrated too long by a negativism that says hold back, be cautious, take no risks, do less than you are capable of doing. I submit that no perceptive student of the history of social progress doubts that we will establish a large laboratory in earth orbit, that we will provide a practical system for the frequent transfer of men and supplies to and from such a laboratory, that we will continue to send men to the Moon, and that eventually we will send men to the planets. If this is true, now is the time to say so. Now is the time for the President of the United States to say, "This country will establish a

scientific laboratory in earth orbit. This country will develop a practical space transportation system. This country will send men to the planets."

These statements should be made, even though all of us realize that practical considerations will influence the rate at which these undertakings are accomplished. We in NASA are fully conscious of practical limitations -- the need for a balanced budget, the need for social progress in many other areas, and, indeed, the limits of our own abilities. In the light of these considerations, we can be sensible and moderate about our requests for resources -- but we must know where we are going. With these thoughts and concepts in mind, I welcome examination of our goals in space, and I look forward to our discussions in the Space Task Group. I am eager to have your own thoughts and comments on these matters.

Sincerely yours,



T. O. Paine
Administrator

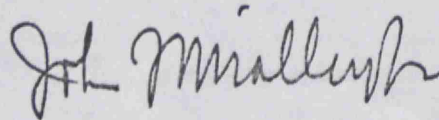
EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF TELECOMMUNICATIONS MANAGEMENT
WASHINGTON, D.C. 20504

May 21, 1969

NOTE FOR MR. WHITEHEAD

Mr. O'Connell is out of town, but before leaving he reviewed the attached memorandum in draft and approved it.

In order that you might have this as soon as possible, he asked me to sign it for him, and send it over to you today.

A handwritten signature in dark ink, appearing to read "J. J. O'Malley, Jr.", with a stylized, cursive script.

John J. O'Malley, Jr.

Attachment

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

OFFICE OF THE DIRECTOR

May 21, 1969

MEMORANDUM FOR MR. CLAY T. WHITEHEAD

This is in response to your memorandum of May 13, 1969, requesting my advice on the authority of the President to take the initiative in defining the broad characteristics of a domestic communications satellite policy and domestic communications satellite system. You also requested a summary of the "thirty circuit" procurement, including the issues involved, the FCC ruling, and the provision for DTM certification that direct procurement from Comsat is in the national interest.

1. Presidential Authority Regarding Domestic Satellite Service

As your memorandum notes, the Communications Satellite Act (CSA) of 1962 confers substantial authority and responsibility on the President relevant to the provision of domestic communications satellite services. Of course, we all recognize that the state of the communications satellite art has advanced considerably since Congress enacted the Satellite Act in 1962 when it would have been indeed difficult to envision the use of communication satellites for anything other than intercontinental communications services. We would quite agree with Assistant Attorney General Reynquist when he stated in a recent letter to the Legal Adviser of the State Department that Congress could not then foresee the specific organizational form domestic communications by satellite would have in relation to international communications. (See letter from Assistant Attorney General Reynquist to Legal Adviser, Department of State, dated 29 April 1969, pp. 5-6; copy attached.) The Congress did, however, make clear in the Satellite Act the objective of the United States that an international communications satellite system be established expeditiously, and on the basis of an international agreement that would protect the system not only from electromagnetic interference, but also from wasteful duplication of facilities created by competing foreign systems. To these ends, the Act, particularly Section 201(a), authorizes the President, among other things, to insure that arrangements be made for foreign participation in the system and to use this authority to obtain coordinated and efficient use of the electromagnetic spectrum.

The sum and substance of the Assistant Attorney General's opinion is that policy questions regarding a foreign domestic satellite system and the international system are "inextricably related," and for this reason alone no action should be taken approving a foreign domestic system without first determining its impact on the international (or INTELSAT) system. Mr. Reynquist's conclusion is that any United States launch assistance provided for a foreign operational domestic satellite system must have the specific approval of the President. It would certainly seem that if the policy issues regarding a foreign domestic system are significantly related to the international system, those affecting a United States domestic service or system must also be related. Therefore, the specific approval of the President should be required before any separate domestic United States system is authorized.

This is not to say that the Government ought to take the initiative in the technical planning for commercial communications satellite service. The United States domestic and international carriers, including Comsat, rather than the Government should take the initiative in developing the basic technical requirements for a satellite system; but this cannot be done very efficiently in the absence of a policy framework developed by the Government. As the carriers move forward in their planning we would contemplate the Presidential (or Executive Office) function to be to monitor developments carefully, including not only information coming into the State Department from abroad, but also by fairly frequent consultation with Comsat, the United States terrestrial carriers, the Departments of State and Defense, and NASA, to insure that the over-all policy concept set out in Section 102 of the Satellite Act is being followed.^{1/}

The fact that the President appoints three Comsat directors and is directed by the Act to make an annual report to Congress on the "national program" contemplated in Section 201(a)(1) of the CSA is further evidence of the intent of Congress to provide for a major role for the President in the development of sound communications satellite policy. Of course, the degree to which the Executive Office and the White House participate in the policy process is itself a policy matter, but the United States and Canadian domestic satellite issues seem to us to be of such transcending importance that if the White House role is to be meaningful at all, it must assert itself here.

^{1/} You are undoubtedly aware that Subsection 102(d) states that it is not the intent of Congress to preclude the use of "the communications satellite system for domestic communication services. . . ."

As you know, we have continuously opposed the provision of launch service for an independent Canadian domestic satellite. We adhere to that position. It is our view that the White House ought to promulgate the policy that our commitments to INTELSAT as well as the national interest of the United States would best be served if the United States domestic pilot program be serviced through INTELSAT satellites (or, at least, that INTELSAT be offered the opportunity to provide the service). At the same time the FCC should be urged that in order to make most efficient use of the radio spectrum and lower system costs as much as possible that a multiple purpose system, rather than a single purpose system, ought to be authorized.

In summary, the Act does not seem to place any practical limitation on the powers of the President in the provision of policy guidance for the development and operation of commercial communication satellites. However, we would not recommend the issuance of a formal statement of Presidential authority in this area, because it would not result necessarily in the solution of a particular problem, and might lead to a political debate over how the statement should be interpreted, and so forth. This is not to say that upon an appropriate occasion a Presidential statement resolving a specific issue might be very appropriate and helpful-- for example, a Presidential statement that the United States will take service for its domestic pilot program from INTELSAT, and will consider at a later time, depending on the circumstances, whether to take service from INTELSAT for any regular domestic system. Such a statement could then be transmitted to all other interested governments with a statement to the effect that launch service will not be provided to any foreign entity for any commercial system outside of INTELSAT.

2. The "Thirty Circuits" Problem

As you may know, this problem arose in 1966 when the Department of Defense decided to contract (subject to the approval of the DTM) directly with the Communications Satellite Corporation (Comsat) for thirty voice-grade satellite circuits between Hawaii and the Far East. The problem has been temporarily resolved after months of negotiating with the FCC, but it may become a serious problem again if NASA decides to contract directly with Comsat for shipboard service for its Apollo program.

The "thirty circuit" procurement became a policy problem because the Satellite Act does not specify who should be authorized to deal directly with Comsat for service. Subsection 102(c) of the Act states the intent of Congress to be "that all authorized users shall have nondiscriminatory

access to the system; Subsection 305(a)(2) authorizes Comsat to "furnish, for hire, channels of communication to United States communications common carriers and to other authorized entities, foreign and domestic. . .;" and Section 305(b)(4) authorizes Comsat "to contract with authorized users, including the United States Government, for the services of the communications satellite system. . . ." While the Satellite Act clearly does not limit Comsat's role to that of a "carrier's carrier," it is silent on precisely how a user would be authorized to deal with Comsat. We maintained from the outset of the "thirty circuits" case, and the Department of Justice agreed, that the United States Government was an authorized user as a matter of law, and that it can contract directly as a matter of right with Comsat for satellite service. Of course, the terrestrial carriers maintained, understandably, that Comsat was intended by Congress to be a "carrier's carrier" and that it could not provide service directly to the Government or the public, except in unique or exceptional circumstances.

Teletypewriter and other record services are provided to the Government and the public over circuits which the record (telegraph) carriers have purchased in the telephone cables from AT&T. In the TAT-4 cable, for example, the record carriers paid \$217,000 for each voice circuit, which they can subdivide into 28 teletypewriter circuits. A practical problem underlying the "thirty circuits" dispute was the deep concern that we shared with the Department of Defense over the excessively high charges that DOD was paying for international private line teletypewriter services, particularly in the Atlantic cable complex. At the rate set by the FCC prior to the "thirty circuits" case, an American carrier could, if it were deriving the maximum of 28 teletypewriter circuits from each voice circuit, receive a rate of \$4,375 per month per circuit and could, therefore, amortize its investment in less than two months.

The "thirty circuit" dispute took place in the context of an FCC proceeding of a much larger scope which the Commission had initiated in June 1965. The proceeding was a formal inquiry, in which the public was invited to submit comments, addressed to whether, or to what extent, the Commission ought to permit entities other than communications common carriers to obtain service directly from Comsat. This office did not interject itself in the proceeding formally, although the General Services Administration (GSA) did state in a filing before the Commission in the fall of 1965 that the Government is in a unique category and can, as a matter of right, contract directly with Comsat for service. Although we felt that while the Government has the legal right to go to Comsat directly for service, the

DOD maintained, and we agreed that a requirement exists for both satellite and cable service. It is our view, therefore, that the only permanent solution to this problem would be a merger of all the international communication carriers; but in the meantime, in view of the difficulties involved in the orderly introduction of communication satellite service, there seemed to be an immediate need for the establishment of an Executive Branch policy to guide the Government departments and agencies in the procurement of commercial communications satellite service. In the course of the development of that policy in late 1965 and early 1966, I held a number of meetings with representatives of the interested Government agencies in order to get their views and assistance in developing the substance of that policy. However, the FCC, which had been represented at all of those meetings, sent me a memorandum on April 20, 1966 advising, in effect, that it had its own proceeding going on the general question of authorized use of Comsat services; and that neither Comsat nor the terrestrial carriers could provide service directly to the Government unless the Commission should issue appropriate authorization to do so. While the Commission memorandum, which was signed by the Chief of the FCC Common Carrier Bureau, did not have the status of official Commission policy it clearly implied that despite whatever policy might be established by the Executive Branch for procurement of satellite service for the Government the Commission would adhere to the concept of Comsat as a carrier's carrier and would permit direct procurement by entities other than carriers only in "exceptional and urgent circumstances." Of course, when DOD learned of the way the FCC staff was leaning on this issue it accelerated its negotiations with Comsat, and as a reaction to this the FCC staff moved forward rapidly with the preparation of an opinion in the Authorized User proceeding. The race was on between DCA and the FCC. (For an extended discussion of developments within the Department of Defense, and between DOD and the carriers, see House Report No. 2318, 89th Cong., 1st Sess., "Government Use of Satellite Communications - 43rd Report by the Committee on Government Operations" October 19, 1966, especially Part IV.)

As a result of its negotiations with the carriers, DOD (acting through the Defense Communications Agency) on May 31, 1966 had received bids to furnish the thirty half-circuits from Comsat and from four terrestrial carriers. The bids ranged from \$4,200 per month for Comsat to \$12,500 per month for Hawaiian Telephone Company. On June 1, 1966, DCA

entered into a master contract with Comsat,^{2/} and on June 23, 1966 the FCC issued a public notice stating in substance that if the U.S. Government wished to lease commercial satellite circuits it must do so through the terrestrial carriers and deal directly with Comsat only in "unique or exceptional circumstances." Needless to say, this disturbed us a great deal, because it put the Government in no different position than the general public in the procurement of satellite service. I wrote to Chairman Hyde on June 28, 1966 expressing my disappointment in the Notice, and advised him that all the Government agencies, including the Department of Justice, were in agreement on the Government's right to procure satellite service directly from Comsat; that I was concerned about the economic well being of the carriers but that, based upon current charges for cable circuits the Government might possibly save \$6 million over a 3-year period by going directly to Comsat. My letter apparently had no effect on the Commission, which on July 21, 1966 released its formal opinion--just a few days before DCA issued a purchase order to Comsat.

Almost immediately, informal discussions were begun with the Commission looking toward a modification of the Authorized User opinion. The Assistant Attorney General in charge of the Office of Legal Counsel was persuaded to take an active part in the matter; but, despite all our efforts, it became necessary for GSA to file a formal petition for reconsideration with the Commission on August 21, 1966, because the Commission indicated that it would not budge in its refusal to permit Comsat to provide thirty circuits directly to the Department of Defense. Discussions continued during the fall of 1966 until, finally, on January 1967 the Commission agreed to modify its opinion to recognize the unique position of the United States Government.

On February 3, 1967, therefore, the Commission released a memorandum opinion (copy attached) terminating the proceeding and authorizing the terrestrial carriers to provide service to the DOD. DOD had agreed in advance to assign the Comsat contract to the terrestrial carriers as a quid pro quo for the establishment of composite rates which would afford substantial savings to the Government on a global basis. The composite

^{2/} The contract contained a clause permitting its assignment to the terrestrial carriers if the Government so chose.

rates were about half way between the satellite rates and the previously existing cable rates.^{3/}

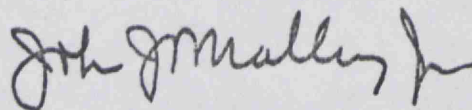
We accepted the FCC disposition of the matter as in the best interests of the Government at the time, primarily because it would allow substantial savings to the Government in its procurement of international communication services and also because it recognized that special position of the Government vis-a-vis the direct procurement of services from Comsat.

To be perfectly clear, the revised FCC authorized user decision leaves wide open the question of who--the FCC or the Executive Branch-- has the right to make the final decision as to whether a Government agency can go directly to Comsat in a particular case. However, the revised opinion does recognize not only the responsibility of the DTM in this area, but also that Comsat may be authorized to provide service directly to the Government whenever such direct service is "in the national interest." Thus, the Commission modified the "unique and exceptional" test for direct Government procurement. The present status of the matter is that there is a "gentlemen's agreement" between the Executive Branch and the FCC whereby the Commission has agreed to look to the DTM as the focal point in those cases where a department or agency wishes to procure service directly from Comsat. Before a direct procurement by the Government is permitted the DTM must certify to the Commission that the direct procurement is in the "national interest," but the Commission has not agreed to accept this certification as binding. Thus, it is possible that another "thirty circuits" case can develop.

It seems to us that another confrontation will probably not develop with the FCC if the Executive departments and agencies cooperate with this office in the development of a sensible policy which is coordinated with the FCC at the level of the Chairman. We hope that the Commission will maintain an aggressive policy looking toward progressively lower composite rates. If, however, this should not prove to be the case the Government can either seek to re-assert its rights to go directly to Comsat or expand the services provided in the Government-owned communications satellite system.

^{3/} In order to keep this matter as simple as possible, I have not referred to the complications which were introduced after DCA decided to assign the Comsat contract to the three record carriers (ITT, WUI, RCAC) and the Hawaiian Telephone Co. on an apportioned basis. Japan refused to permit WUI to provide service there; Thailand would deal only with RCAC; and the Philippine Government expressed the wish to continue to deal directly with Comsat. The matter was finally resolved in May 1968, after lengthy negotiations between DCA, the State Dept., the carriers, and the foreign governments concerned.

For your convenience, I have attached copies of the FCC opinions of July 21, 1966 and February 3, 1967; my letters to Chairman Hyde of June 28, 1966 and January 31, 1967; and the letter from Assistant Attorney General Reynquist to the Legal Adviser of the State Department, dated April 29, 1969.



Fur

J. D. O'Connell

Attachments

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

OFFICE OF THE DIRECTOR

June 28, 1966

The Honorable Rosel H. Hyde
Chairman
Federal Communications Commission
Washington, D. C. 20554

Dear Mr. Chairman:

I appreciate your taking the time last Tuesday to discuss the matter of Government utilization of communications satellite services. I also appreciate your calling me on Thursday to advise that the Commission would be issuing a Public Notice that day which would state, among other things, that the Communications Satellite Corporation (COMSAT) would be authorized to provide service directly to the Government only in those cases where there are unique or exceptional circumstances warranting the authorization. My staff and I have studied the Public Notice. As you realize, we are disappointed that the Commission contemplates taking a position which would attempt to restrict the right of procurement of communications satellite services by the Government. As I pointed out to you in our meeting on Tuesday, we are of the opinion that Congress gave the Government the right to directly procure communications satellite services from COMSAT.

Based upon our meeting of last Tuesday, I feel that there may be some misunderstanding as to our position in this matter. The main reason I am writing now is to clarify that position to the extent that it may not be completely understood by the Commission.

In the first place, I recognize the Commission's concern that commercial communications satellite service should be implemented in a way which is not unduly disruptive to established communication systems.

We recognize the Commission's right to prescribe the relationship that ought to exist between COMSAT and the carriers. We disagree, however, with the Commission's position that it has the authority, under the Communications Satellite Act of 1962 and/or the Communications Act of 1934, to prescribe the conditions under which the Government can obtain service from COMSAT.

The Honorable Rosel H. Hyde

This subject has been discussed with other departments and agencies of the Executive Branch, including the Department of Justice. All are in complete agreement that the Communications Satellite Act of 1962 clearly designates the Federal Government as an authorized user. I wish to make it clear, however, that the Department of Justice is the appropriate agency to speak on any legal interpretations involved.

Aside from the question of Congressional intent as expressed in the Communications Satellite Act of 1962, I would like to point out some of the effects which can be foreseen if the Commission should rule to regulate COMSAT's right to provide service to the Government or to affect the Government's authority to deal directly with COMSAT.

A major purpose served by the Communications Satellite Act in granting the Government authority to deal directly with COMSAT will be to expedite the furnishing of service under any conditions, particularly emergencies. In the past, formal procedures and legal restrictions have sometimes created delay and uncertainty concerning the provision of common carrier services to the Government. The Government needs an assured and uncomplicated responsiveness in the provision of all types of communication services if it is to cope adequately with the world requirements of the present day. Unless the provision of communication services can be made adequately responsive to the needs of the Government, it would appear important to review the general question of whether the Government should continue the policy of relying upon the common carrier/regulatory systems for the provision of the bulk of its services.

You know that our policy position has been to utilize the common carriers to the maximum extent possible considering responsiveness, reliability, assurances of service in the shortest possible time, and reasonable comparative costs. We have been working toward the development of an over-all pattern of procedures which would permit both this office and the Commission to seek new and more responsive ways for the common carrier/regulatory systems to meet the needs of the Government. The Commission's Public Notice indicates an entirely different approach to this serious problem. It is my hope that a careful review of Governmental needs in the present day will make it possible for us to work together toward the improvements that are needed.

The Honorable Rosel H. Hyde

I am also hopeful that we can avoid the necessity of a lengthy review of this matter in the courts and in the Congress.

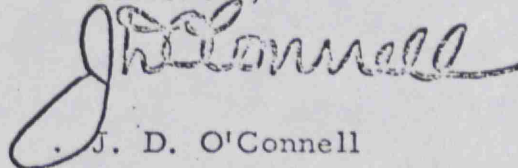
It has never been our position that because the Government has the right to procure services directly from COMSAT that such right should be exercised indiscriminately and without taking into account the impact that such direct acquisition of services may have on the industry. I should also make it clear that even in those instances where direct service is authorized we have always recognized the right of the FCC to establish rate schedules as well as to issue appropriate licenses and permits.

The question of cost is also an important element of this matter. On the basis of the recent common carrier tariff filings for cable circuits in the Pacific, the charges proposed by COMSAT for the half-circuit cost associated with a current Department of Defense procurement amounted to an over-all saving on the order of \$6 million for 30 voice channels over a 3-year period. These savings are obviously substantial and in the interest of Government economy should be given serious consideration.

Since the Commission has, in the past, followed the policy of respecting the findings of the Executive Branch with respect to matters of urgency and military necessity, I am assuming that the Commission does not intend to change this policy and to enter upon an alternate course of questioning the nature of Governmental need of contracts placed for the provision of communications satellite services.

In view of the potential problems and conflicts introduced by that portion of the Commission's Public Notice of June 23, 1966, which deals with the U.S. Government as an authorized user, I would like to suggest reconsideration by the Commission and further effort to reach a cooperative policy which will better serve the needs of the Federal Government.

Sincerely,



J. D. O'Connell

FEDERAL COMMUNICATIONS COMMISSION



WASHINGTON, D. C. 20554

87035

PUBLIC NOTICE -C

July 21, 1966

FCC ISSUES FORMAL OPINION IN MATTER OF COMSAT "AUTHORIZED USER" SERVICES

The Commission has adopted a Memorandum Opinion and Statement of Policy in its inquiry into legal and policy questions concerning authorization relating to the provision of satellite communications services by ComSat directly to non-carriers. (Docket No. 16058) As stated in an advance announcement (Public Notice of June 23, 1966, FCC 66-563), the Commission has concluded that: (a) ComSat may, as a matter of law, be authorized to provide service directly to non-carrier entities; (b) ComSat is to be primarily a carrier's carrier and in ordinary circumstances users of satellite facilities should be served by the terrestrial carriers; and (c) in unique and exceptional circumstances ComSat may be authorized to provide services directly to non-carrier users, therefore, the authorization to ComSat to provide services directly is dependent upon the nature of the service, i.e., unique or exceptional, rather than the identity of the user. The policy recognizes that the United States Government has a special position, because of its unique or national interest requirements and that ComSat therefore may be authorized to provide service directly to the Government, if such service is required to meet unique governmental needs or if otherwise required in the national interest, in circumstances where the Government's needs cannot be effectively met under the carrier's carrier approach. The Memorandum Opinion also indicated the nature of the procedures to be followed by ComSat seeking authority to provide service to non-carriers.

These conclusions are based upon Commission determinations that the terrestrial carriers cannot under existing law themselves be licensed to operate the international space segment and therefore cannot compete effectively with ComSat in furnishing satellite service to the public. ComSat is not and does not propose to be a full service carrier meeting directly the needs of the vast majority of users of international services for all classes of communication services. If ComSat were to be permitted to provide leased channel services directly to users, other than in unique or exceptional circumstances, the basic purposes of Congress in enacting the Satellite Act -- reflection of the benefits of the new technology in both quality of service and charges therefor -- would be frustrated. A requirement that, except in unique and extraordinary circumstances, users take service from the terrestrial carriers, should not have adverse effects upon either ComSat or the users

(over)

but instead should make it possible to reduce rates for all classes of users.

* The Commission also announced that, in furtherance of the aforementioned statutory policy with respect to rates, it expects the common carriers promptly to give further review to their current rate schedules and file revisions which fully reflect the economies made available through the leasing of circuits in the satellite system. Failure of the carriers to do so promptly and effectively, the Commission stated, will require the Commission to take such actions as are appropriate.

-FCC-

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

FCC 66-677
86505

In the Matter of)

Authorized entities and author-)
ized users under the Communica-)
tions Satellite Act of 1962)

Docket No. 16058

MEMORANDUM OPINION
AND STATEMENT OF POLICY

By the Commission: Commissioner Johnson not participating.

Preliminary Statement

1. During April, May and June, 1965, the Commission received requests from several concerns (including press wire services, a newspaper, a television network, and an airline) for information regarding procedures to be followed in order that such concerns might be authorized to obtain satellite telecommunication services directly from the Communications Satellite Corporation (ComSat). On May 28, 1965, ComSat forwarded to the Commission its initial tariff, offering channels of communication via satellite to communications common carriers only. In an accompanying letter of transmittal, the Corporation stated that in the event that any other entities, foreign or domestic, were to be authorized to obtain channels directly from ComSat, it would expect to supplement its tariff to provide for the offering of such channels.

2. On June 16, 1965, the Commission issued a Notice of Inquiry stating that the foregoing developments presented issues concerning the extent to which, as a matter of law, entities in the United States other than communications common carriers can be authorized, under the Communications Satellite Act of 1962 (Satellite Act), to obtain telecommunication services directly from ComSat; the extent to which, as a matter of policy, such entities should be authorized to obtain services; the nature and scope of such services; the type of entities which may be deemed eligible to obtain the services; the nature and extent of the authorization required; and the policies and procedures which the Commission should establish to govern applications for such authorization.

3. Legal briefs and comments were received on or before November 1, 1965, from Aeronautical Radio, Inc. (ARINC) and the Air Transport Association of America (ATAA), filing jointly; the American Telephone and Telegraph Company (AT&T); the Columbia Broadcasting System, Inc. (CBS); the Communications Satellite Corporation (ComSat); the Administrator of General Services (GSA); the GT&E Service Corporation (GT&E); the Hawaiian Telephone Company (Hawaiian); the International Business Machines Corporation (IBM); the International Educational Broadcasting Corporation (IEBC); ITT World Communications, Inc. (ITT); Merrill Lynch, Pierce, Fenner & Smith, Inc.; the Communications Committee of the National Association of Manufacturers (NAM); United Press International, Inc. (UPI); the United States Independent Telephone Association (USITA); Western Union International, Inc. (WUI); and the Western Union Telegraph Company (WU).

4. In addition to the briefs and comments received from the above listed parties, general comments or statements were received from American Broadcasting Companies, Inc. (ABC); the American Communications Association (ACA); the American Newspaper Publishers Association (ANPA); the American Petroleum Institute (API); the American Trucking Association (ATA); the Associated Press (AP); the Communications Workers of America AFL-CIO (CWA); Dow Jones & Company, Inc.; Eastern Airlines, Inc.; RCA Communications, Inc. (RCAC); and the Washington Post Company (the Post).

5. On or before January 3, 1966, reply comments were received from ARINC and ATAA filing jointly; AT&T; the Association of American Railroads (AAR); ComSat; GSA; Hawaiian; IBM; ITT Worldcom; RCAC; WUI; and WU.

6. An analysis of the briefs, comments and reply comments indicates that the filing parties have focused primarily on the initial question of the Notice of Inquiry, i.e., the extent to which, as a matter of law, entities in the United States other than communications common carriers may be granted access to the facilities and services of ComSat. The second point to which attention was given is the question of policy relating to non-carrier access to the satellite system directly through ComSat. Relatively few parties addressed themselves to the questions of the nature of authorized entities, the nature and scope of authorized services, and the policies and procedures to be adopted by the Commission for handling and disposing of applications for authorization of direct access to the satellite system.

7. We shall discuss first the basic legal questions raised and then the policy issues. However, the two are inter-related and aspects of policy are necessarily developed in the ensuing discussion of the legal issues.

Basic Legal Issues

8. The critical question is the extent to which the Satellite Act contemplates, permits or requires that ComSat be authorized to provide service directly to entities other than carriers. In general, respondents to our Notice took one of the following positions:

(a) The terrestrial carriers allege that the Satellite Act does not contemplate or permit ComSat to be authorized to provide service to any non-carrier entity, with the possible exception of the Government;

(b) The non-carrier entities allege that the Act contemplates that ComSat should be permitted to provide service to them and that the Commission should issue authorizations upon appropriate findings that the particular service sought would be in the public interest;

(c) The Administrator of General Services (GSA) alleges that ComSat is authorized by the Satellite Act to provide service directly to the Government without restriction or limitation whenever the Government desires to take such service;

(d) ComSat alleges that it should provide service to non-carriers when (i) the carriers fail to provide a requested service via satellite although capacity is available; (ii) there is a need for development of technology or provision of new satellite services and then only during the early developmental stage; and (iii) in which and any other case there is a finding that the public interest would be served by the authorization. ComSat also took the position that it is authorized by the Satellite Act to provide service directly to the Government in any instance when the Government requests service.

9. We note that the term "authorized users" appears twice in the Satellite Act. The first time is in the section setting forth the policy and purpose of the Act where, among other things, it is declared that "It is the intent of Congress that all authorized users shall have nondiscriminatory access to the system ..." (Section 102(c)). The second time is among the powers and purposes of ComSat when it is stated that ComSat is authorized "to contract with authorized users, including the United States Government, for the services of the communications satellite system ..." (Section 305(b)(4)). Reference is also made to another term "authorized entities" in Section 305(a)(2), which states that ComSat may "furnish, for hire, channels of communication to United States communications common carriers and to other authorized entities, foreign and domestic..." Neither the term "authorized user" nor "authorized entity" is defined in the Satellite Act, nor is the use of the different terms, "channels of communications" in 305(a)(2) and "service of the communications satellite system" in Section 305(b)(4), explained in the Act or the legislative history. In addition to those terms the Satellite Act makes reference to "authorized carriers," particularly in Section 201(c)(2) and (c)(7). This term is defined in Section 103(7) as part of the definition of "communications common carrier". 1/

1/ Communications Satellite Act of 1962, Section 103(7):

As used in this Act, and unless the context otherwise requires -- the term "communications common carrier" has the same meaning as the term "common carrier" has when used in the Communications Act of 1934, as amended, and in addition includes, but only for purposes of Sections 303 and 304, any individual, partnership, association, joint-stock company, trust, corporation, or other entity which owns or controls, directly or indirectly, or is under direct or indirect common control with, any such carrier; and the term "authorized carrier", except as otherwise provided for purposes of section 304 by section 304(b)(1), means a communications common carrier which has been authorized by the Federal Communications Commission under the Communications Act of 1934, as amended, to provide services by means of communications satellites.

The Contention That "Users" and "Entities" Are "Carriers".

10. AT&T contends that because there are different possible categories of "carriers" it was necessary "to recognize in the language of Section 305 that ComSat could deal with foreign entities authorized by the Commission to act as carriers here in the United States." (AT&T brief, Nov. 1, 1965, p. 13). AT&T also claims "it must be recognized that there are United States telecommunications entities which operate offices abroad, such as RCA Communications, Inc. and Globe Wireless, Ltd." (Ibid.) It is not explained why both classes of entities are not reasonably to be considered as included in the term "carriers", but AT&T concludes that because of the non-domestic status of these "carriers" they had to be referred to as "entities" or "users" in the Act. This contention completely ignores the language of Section 305(a)(2) and (b)(4) and the broad language of Section 102(c).

11. In particular, Section 305(a)(2) refers to "United States communications common carriers and to other authorized entities, foreign and domestic." In Section 305(b)(4) the Act provides that ComSat is authorized "to contract with authorized users, including the United States Government..." In these provisions it is clear that Congress contemplated that ComSat could be authorized to provide service directly to entities other than common carriers. We note that that finding is further supported by the declaration in Section 102(c) that, "It is the intent of Congress that all authorized users shall have nondiscriminatory access to the system" Since "authorized users" may include the United States Government, a non-carrier (Section 305(b)(4)), and since under the Act ComSat may be authorized to furnish channels for hire to carriers and "other authorized entities, foreign and domestic", the terms "authorized users" and "authorized entities" must include more than only "communications common carriers." We therefore reject the contention that the terms "carriers", "entities" and "users", as used in the Satellite Act, are synonymous, and must be read as synonymous.

12. ITT Worldcom contends that in view of the necessity for any "authorized user" to utilize earth terminal station facilities for access to the satellite system, and in view of the specific language of the Act, particularly Section 201(c)(7), limiting authorized construction and operation of satellite earth terminal stations to ComSat and "authorized carriers":

"the term 'authorized users' in Section 305(b)(4) can thus include only those authorized to use the satellite system to create telecommunications channels pursuant to authority to operate a satellite terminal. No one else: neither television networks, news wire services, nor other users of leased channels are or can be within the scope of the term." (Brief, October 29, 1965, pp. 7-8)

ITT is confusing authorized operation with access. Authority to operate satellite terminal stations is limited as ITT alleges. However, Congress differentiated between the two matters by its statement in Section 102(c) that: "... it is the intent of Congress that all authorized users shall have nondiscriminatory access to the system" (emphasis supplied). In view of this statement of intent and in the absence of any provision excluding any entity not an operator from access to the system, we reject ITT's contention that to be a user of the system one must be eligible to construct and operate a satellite terminal facility.

The Contention That the Commission is Empowered Only
To Authorize Carrier Access to the Satellite System.

13. AT&T, RCAC and others point out that, as a matter of law, the Commission may exercise only those powers expressly delegated to it by Congress. All concur that the Satellite Act empowers the Commission to authorize "carriers" to use and have access to the facilities of the satellite system. However, RCAC, after citing selected provisions of Section 201(c), contends that "these are the only provisions of the Satellite Act which grant the Commission the power to authorize use of the satellite system and, as is evident, they are limited to carriers." (Statement of RCAC, November 1, 1965, p. 4).

14. We agree that the provisions of Section 201(c) of the Satellite Act delegate to the Commission positive power to assure equitable and nondiscriminatory access to the satellite system by communications common carriers. We believe, however, that this provision was inserted because of the fact that ComSat was to serve primarily as a carrier's carrier. Heretofore, under the Communications Act of 1934, as amended, the rendering of service by a carrier to a carrier has not been considered a common carrier function subject to regulation in the same way as service to the public. Instead, such control as the Commission found essential has been exercised by the imposition of conditions in instruments of authorization. Congress was

fully aware of this situation and made both general and specific provisions to assure that the Commission had ample direct legislative authority to deal with the matter. In Section 401 of the Satellite Act it made the services rendered by one carrier to another a regulated service, and in Section 201(c)(2) specifically spelled out how this requirement was to be implemented in the case of access to earth terminals.

15. A similar situation does not obtain with respect to any possible service ComSat may be authorized to provide to non-carrier entities. The Satellite Act provides specifically (Section 401) that ComSat is deemed a common carrier within the definition of that term in the Communications Act and is fully subject to the provisions of Titles II and III of the Communications Act not inconsistent with the Satellite Act. Thus, any non-carrier entity whom ComSat might be authorized to serve is already guaranteed just and reasonable charges by Section 201(b) of the Communications Act and protected against unjust or unreasonable discrimination in charges, practices, classification, regulations, facilities or services by Section 202 of that Act. These provisions are further implemented by detailed requirements for tariff filing and powers given the Commission to prescribe charges and practices. Under these circumstances no additional provisions were necessary to protect the rights of non-carrier entities. The carriers would have us read Section 201(c)(2) of the Satellite Act as a directive to exclude all non-carrier entities from access to the system. The above discussion makes it clear that the carriers are attempting to convert a shield included by Congress to protect them against possible improper acts into a sword to strike down others who might seek to be given such access under other provisions of law. This is not what Congress meant by this provision. The Satellite Act must be read as a whole and administered to give effect to its general purposes. We therefore reject this contention of the carriers.

The Contention That the Commission Is Without Guidelines
Or Criteria To Authorize Non-Carrier Access.

16. The carriers contend that the Satellite Act contains no standards pursuant to which the Commission might authorize access to the system by any entity other than a communications common carrier. The Satellite Act and the expressly incorporated Communications Act provide for necessary determinations of this kind by the Commission. The Communications Act directs that the Commission, acting in accordance with the standard of public convenience, interest, or necessity, grant radio licenses (Section 307(a)); "prescribe the nature of the service to be rendered by each class of licensed stations and each station within any class" (Section 303(b)); study new uses for radio and generally encourage the larger and more effective use of radio in the public interest (Section 303(g)); and make such rules and regulations and prescribe such restrictions and conditions; not inconsistent with law, as may be necessary to carry out the provisions of the Act. (Section 303(r)).^{2/} Complementing these provisions, which are expressly incorporated into the Satellite Act (Section 401 of that Act), the Satellite Act itself contains the declaration that "It is the intent of Congress that all authorized users shall have nondiscriminatory access to the system; . . . [and] that the Corporation created under this Act be so organized and operated as to maintain and strengthen competition in the provision of communications services to the public. . ." (Section 102(c)). To implement this intent, the Commission is directed to "make rules and regulations to carry out the provisions of this Act." (Satellite Act, Section 201(c)(11)).

17. Congress thus specified the necessary broad standards or guidelines to be followed by the Commission in making requisite judgments. NBC v. U.S., 319 U.S. 190 (1943). It did not establish rigid or detailed criteria for regulation of new and dynamic techniques of communication. See Philadelphia Television Broadcasting Co. v. FCC, ____ U.S. App. D.C. ____, 359 F.2d 282, decided March 28, 1966. Rather, Congress left to the informed discretion of the Commission the establishment of the methods, procedures, and particular criteria for authorization of provision of services by communications common carriers to other carriers and the general public. The Commission is to make its judgment based upon an evaluation of the often changing situation and the Congressional concern with the public interest in (1) encouraging wider and more effective use of radio techniques; (2) assuring that competition is maintained and strengthened in the provision of communication services to the public; (3) assuring that

^{2/} Further, Section 201(b) provides that communications by wire or radio subject to this Act may be classified into such ". . . classes as the Commission may decide to be just and reasonable. . .".

access to the satellite system shall be available to all authorized users on a nondiscriminatory and equitable basis; and (4) assuring that the benefits of new technology shall be reflected in service made available to the public through both improvements in the quality of service and the realization of all possible economies. The standards established by the Communications Act for authorizing carriers to provide service to the public are applicable to satellite services as well as to other telecommunication services. The contention that the Commission cannot authorize ComSat to provide non-carrier users direct access to the satellite system because there are no guidelines or standards for such authorization is, therefore, without merit.

The Contention that the Legislative History Of the Act
Indicates Congressional Intent to Limit Access Exclusive-
ly to Carriers.

18. We think that the Act clearly empowers the Commission to authorize ComSat to provide service to entities other than carriers. The legislative history of the Satellite Act further supports this conclusion. ComSat was intended by Congress to serve primarily as a carrier's carrier, that is, ComSat is to use its licensed facilities primarily to provide satellite capacity to other carriers which in turn will utilize such capacity, together with all of their other facilities (e.g., cable, HF radio, scatter systems), to furnish service to the using public. But the legislative history of the Act indicates Congressional intent that entities other than communications common carriers could be authorized direct access to the satellite system under appropriate circumstances. In a speech made on the floor of the Senate immediately prior to Senate passage of the Satellite Act (108 Cong. Rec. 16920), Senator John O. Pastore explained that "... the satellite corporation under H.R. 11040 will serve mainly the carriers" (emphasis added). Significantly, he did not say that ComSat would serve exclusively as a carrier's carrier.

19. On February 7, 1962, President Kennedy submitted a proposal to the Congress calling for establishment of a privately owned communications satellite corporation in which carriers were to have a share of ownership. The President's letter of transmittal states that the administration's proposed bill sets forth "purposes and powers of the new corporation (which) would include furnishing for hire channels of communication to authorized users, including the U.S. Government." In the course of subsequent hearings, testimony was heard from all Government agencies concerned with the legislation, several Senators, communications common carriers, and other interested persons. The comprehensive and detailed Committee Report on the bill, delivered by Senator Pastore from the Senate Committee on Commerce on June 11, 1962, states:

It will be the purpose of the Corporation to plan, initiate, construct, own, manage and operate, in conjunction with foreign governments and business entities, a commercial communications satellite system, including satellite terminal stations when

licensed therefor by the Federal Communications Commission. It will also be its purpose to furnish for hire channels of communication to United States communications common carriers who, in turn, will use such channels in furnishing their common carrier communications services to the public. Provision is also made whereby the corporation may furnish such channels for hire to other authorized entities, foreign and domestic. (pp. 10-11) (Emphasis added).

Thus, both the President's message transmitting the bill to Congress, and the Report of the Senate Commerce Committee recognized that the Corporation could be authorized to render telecommunication services to entities other than communications common carriers. We conclude that it was the intent of Congress that the Commission could authorize ComSat to afford access to the satellite system by non-carrier entities upon a proper finding that such access would serve the public interest and comport with the purposes and policies of the Satellite Act.

Authorization of Non-Carriers to Deal With ComSat Must Be Regulated by the Commission and Be On A Specified Basis.

20. ComSat can thus be authorized to serve non-carriers directly. But it does not follow, as some of the non-carriers appear to contend, that such authorization is to be left unregulated -- that ComSat and the non-carriers are free to contract as they wish. Were that the case, ComSat could readily become, to a very substantial extent, a common carrier dealing directly with the public. But as stated (par. 18), and indeed acknowledged by all parties, ComSat was and is to serve primarily as a common carrier's common carrier.^{3/} Further, under unrestricted dealings between ComSat and non-carriers, large users might tend to contract directly with ComSat, while members of the general public are left to deal with the carriers. In such circumstances, it would be clearly impossible for the Commission to carry out its responsibility under Section 201(c)(5) to "...insure that any economies made possible by a communications satellite system are appropriately reflected in rates for public communication service." We also note here our responsibility under the Communications Act to conduct our regulatory activities in such fashion,

"...as to make available, so far as possible, to all the people of the United States a rapid, efficient, Nation-wide, and world-wide wire and radio communication service with adequate facilities at reasonable charges. . ."

^{3/} Senate Committee on Commerce, Report No. 1584, June 11, 1962, pp. 18, 28-29; see also remarks by Senator Pastore on the floor of the Senate, 108 Cong. Rec. 16920.

There is another basic tenet of the Satellite Act which would be violated by unrestricted dealings between ComSat and non-carriers. At least insofar as international common carrier communications services are concerned, ComSat is given a virtual statutory monopoly position with respect to the operation of the space segment of the commercial communications satellite system. See Sections 102(d) and 305(a)(1) of the Act. The Commission is not given authority to license any other United States carrier to operate the space segment of a satellite system to provide international communication service; instead, such carriers must procure the space segment facilities from ComSat. Clearly, if there were to be unrestricted dealings of ComSat with the public, it would mean that ComSat would be using its monopoly position to the detriment of the other carriers and, indeed, to deprive them of the opportunity to serve segments of the public under fair and equitable conditions.

21. Direct access by non-carriers to the satellite system must therefore be regulated in such manner as to insure consistency with the Acts' purposes and with ComSat's primary role as a common carrier's common carrier. There is no question but that such regulation is a function which the Commission must discharge. This follows from the provisions of the Communications Act and the Satellite Act cited in par. 16. Just as the Commission is to authorize the communications common carrier, so also it is the agency to specify the "other authorized" domestic entities referred to in Section 305(a)(2) (and see 305(b)(4)); indeed, the user must be "authorized" and no one can seriously argue, in light of the statutory scheme, that such authorization can stem from other than this agency. 4 / For, under Section 401 of the Satellite Act, ComSat is designated as a communications common carrier subject to the provisions of Titles II and III of the Communications Act. In the process of issuing authorizations to ComSat as a common carrier and reviewing its tariffs, the Commission is required, under the public interest standard, to take into account and specify the conditions under which ComSat can depart from its primary role as a common carrier's carrier and provide service directly to the public. 5 / Further, it is the Commission's

4 / Significantly, the "authorized user" provision in Section 305 is in the section setting forth "the purposes and powers of the corporation"; the corporation, in turn, is subject to the regulation of the Commission ("the FCC shall be responsible for the regulation of the corporation", Sen. Rept. 1584, 87th Cong., 2d Sess., p. 12).

5 / There is nothing unusual about the concept of a special purpose carrier. The Commission has, since its inception, licensed Press Wireless, Inc., except in unique circumstances, to handle only press traffic. The contention of ARINC and ATAA that "there would appear to be no need for the Commission additionally to undertake the unprecedented action of regulating users of ComSat" (Comments of ARINC and ATAA, November 1, 1965 p. 12), is thus based upon a misconception of the Commission's role.

responsibility to issue regulations or policy statements to insure that authorized users have nondiscriminatory access to the system. See Sections 102(c); 201(c) (11) of the Satellite Act. Finally, we note here that the intent of Congress was stated by then Deputy Attorney General Katzenbach in response to questions from Senator Kefauver regarding use of the services of ComSat for various purposes, including weather reporting:

"You have to have an agency [the Federal Communications Commission] which is going to control these users, which is going to act in the governmental interest . . ."6 /

The Government's Position As Authorized
User - GSA's Contentions.

22. We turn now to consideration of the Government's position as an authorized user. There is no question but that the Government is to be included in the category of "authorized user". See Section 305 (b) (4). We disagree, however, with GSA's assertion that ComSat may provide direct satellite communications service to the Government, without any limitation or restriction. Rather, the Satellite Act makes clear that ComSat's direct dealings with the Government must be of such a nature as to be consistent with the Act's purposes and objectives. Thus, ComSat is authorized in Section 305 to furnish channels of communication " . . . to other authorized entities . . ." ((a) (2)) and "to contract with authorized users, including the United States Government . . .", in "order to achieve the objectives and to carry out the purposes of the Act" (emphasis supplied). These provisions must therefore be read in terms of the objectives and purposes of the Act. Section 102 (c) sets forth the following pertinent purposes:

" . . . It is the intent of Congress that all authorized users shall have nondiscriminatory access to the system; that . . . the corporation created under this Act be so . . . operated as to maintain and strengthen competition in the provision of communications services to the public . . ."

6 / Hearings before the Subcommittee on Antitrust and Monopoly of the Senate Committee on the Judiciary, 87th Cong., 2d Sess., pp. 55-56 (1962).

23. Some further brief comment upon the last listed statutory purpose is appropriate. Were ComSat to be operated as GSA urges -- unrestricted direct dealings with the Government -- the result, as we develop with specific figures (see par.), would not be to maintain or strengthen competition in the provision of communications services to the public. Rather, it would seriously weaken the competitive forces. Section 201 (a) (6) lends added support to the Congressional intent to maintain or strengthen competition in the provision of communications services to the public. The main thrust of that section is to insure that satellite facilities provided by ComSat will be utilized for general governmental purposes except where a separate system is required in the national interest. See Senate Report No. 1319, 87th Cong. 2d Sess., p. 4; 7/ Senate Report No. 1584, 87th Cong., 2d Sess., p. 15.

24. The foregoing considerations are thus consistent with the general concept pervading the Satellite Act of ComSat as a monopoly (insofar as the space segment of international communications is concerned) and as primarily a carrier's carrier, created to provide at least the space segment of international communications as part of an improved global communications network consisting of all means of providing such communications services, so that lower rates should be possible to all the using public. There is, we believe, every indication in the statute that the nature and extent of direct dealings between ComSat and GSA or any other government agency, in its role as a user, must be considered in the light of the effect of such dealings upon the statutory scheme, the rights of the other carriers in the face of ComSat's monopoly, the total global network of services, which includes cables, HF radio and other media as well as satellite facilities, and the quality of services or charges to the general using public.

7/ The Committee, which originated the provision essentially in the form in which it now stands, described the provision in the following terms: that the President is to ["t]ake necessary steps to insure utilization of the commercial system for general governmental purposes whenever there is no requirement for a separate communications system to meet unique governmental needs". Senate Report No. 1319, p. 4.

25. This does not mean that the Government does not have a special status under the Satellite Act. As shown by the provision in Section 305 (b) (4), it clearly does. We believe that the explicit specification of the Government as an authorized user stemmed from Congressional recognition of the special or unique nature of the communications needs that may arise in the Government's case, precisely because of the special or unique functions of the Government. We believe that the standard for direct dealings between ComSat and the Government is thus embodied in the Act in the sections dealing with the somewhat related question of a separate Government system -- namely, if such dealing "is required to meet unique governmental needs, or is otherwise required in the national interest" (Section 201(a) (6); Section 102 (d)). Clearly, if resort can be had to a separate governmental system in order to meet unique Government needs or if otherwise required in the national interest, a fortiori, such circumstances warrant departure from the carrier's carrier approach if that approach would not effectively meet the Government's unique needs or the national interest. In short, we stress our full recognition that in the Government's case, unique or national interest circumstances can and do arise where the needs of the Government cannot be effectively met under the carrier's carrier approach. The authorization to ComSat to meet the needs of NASA's Apollo project through a specially designed system is a current example of such unique circumstances. See also Bendix Aviation Corp. v. United States, 106 U.S. App. D.C. 304, 272 F 2d 533, cert. den., 361 U.S. 965. We emphasize that in all cases where such national interest circumstances exist, we shall act promptly to authorize ComSat to provide service directly to the Government at just and reasonable rates.

Basic Policy Issues

26. In reaching our basic policy determinations we are aware that in this instance we are not confronted by a normal competitive situation, namely, one where one entity through its initiative, ability or inventiveness produces a cheaper or better means of providing service and thus captures a market. Instead, we have a situation where there is an artificial restraint upon the terrestrial carriers. They cannot ordinarily be licensed to provide the essential space segment of the international satellite circuits and thus compete with ComSat on equal terms, but must rely on ComSat which was created to provide these facilities to them. Sound policy indicates that, absent a statutory requirement to the contrary, that they should not be required to depend solely on ComSat for satellite circuits while ComSat is simultaneously allowed to siphon the most profitable part of the business from them. Neither ComSat nor anyone else proposes that ComSat meet the needs of all users, i.e., message, TELEX, and all other switched services. Thus, this is not a situation where a proposed competitor would meet all or even a major portion of the essential public needs should it supplant the other carriers.

27. No lengthy discussion of the policy considerations is needed since we have already covered a number of these considerations in the foregoing treatment of Sections such as 102(c) and 201(c)(5) of the Satellite Act. In light of those considerations and the Act's basic concept of Comsat as primarily a carrier's carrier, we believe that it would be in derogation of the policy of the Act to permit Comsat to compete with the conventional carriers in furnishing to users those communication services and channels which customarily and conventionally are or can be furnished by such carriers within the framework of their general tariff offerings. In other words, Comsat would be authorized to deal directly with the users in only those instances where the requirement for satellite service is of such an exceptional or unique nature that the service must be tailored to the peculiar needs of the customer and therefore cannot be provided within the terms and conditions of a general public tariff offering. In this connection, a current example is the satellite service which Comsat has been authorized to furnish to NASA for support of the Apollo program. Of course, Comsat should also be permitted to furnish a satellite service or channel to a user in any case where the conventional carriers fail or refuse to meet reasonable demand therefor, although they are or would be otherwise capable of doing so in accordance with general tariff offerings.

28. The wisdom of this policy is evident from the serious adverse consequences that would result if Comsat were permitted without limitation to furnish service in competition with their principal customers for satellite services and channels - the conventional carriers. In this connection, we have reviewed the nature of the proposals before us from entities which seek to be "authorized users" and take service directly from ComSat. It is clear from the filings herein that the services sought are primarily leased channel services, i.e., service which customarily and conventionally are provided by common carriers within the framework of their general tariff offerings. ComSat does not

propose to, nor does anyone seek to have ComSat, provide message telegraph, message telephone, or any other exchange type of service. Yet these exchange-type services provide the bulk of the international or transoceanic services offered the public. In 1965 there were 24.2 million overseas telegrams which originated in, terminated in, or transited the United States. In the same year there were 7.9 million telephone calls between the United States and foreign or overseas points or transiting the United States between foreign points. Insofar as TELEX is concerned, in 1965 there were 3.9 million messages originating in, terminating in or transiting the United States.^{9/} On the other hand, in 1965 there were a total of about 200 voice-grade circuits (179 to U.S. Government agencies) and 400 telegraph-grade circuits (68 to U.S. Government agencies) leased between the United States and overseas points. Essentially, therefore, only a very small part of the using public using international communications facilities had sufficient traffic to justify or require leased circuit facilities.

29. When we turn to the revenue side of the picture, we find that revenues from leased circuits provide an important, if not indispensable, part of the carriers' total receipts. Thus, in 1965 all overseas carriers, voice and record, other than ComSat, reported that leased circuits provided about 16 per cent of total overseas revenues or some \$34,900,000 (\$25,300,000 from leases to U.S. Government agencies) out of a total of \$22,700,000. The importance of revenues from leased circuit traffic becomes manifest when such revenues are compared with the international record carriers' net operating revenues before federal income taxes. Reports to the Commission show that in 1965 these carriers, as a whole, had net operating revenues, before federal income taxes, of about \$20,300,000. Their revenues from leased circuit services for the same year were \$20,200,000 (\$11,083,000 from leases to U.S. Government agencies). Because of the relatively low non-fixed or variable costs associated with this service, the loss of such business could come close to wiping out completely the record carriers' earnings, unless the facilities could be immediately used for other services and produce substantial revenues, which appears unlikely.

30. Separate figures regarding net revenues or earnings of telephone carriers from overseas communication services are not readily available. However, data filed with the Commission indicate that total revenues for such services in 1965 were about \$116 million. Leased circuit services provided about \$14.7 million or 12.7 percent of these revenues. In the case of Hawaiian Telephone Company, the ratio of its leased circuit to total revenues is much greater, accounting for about one-third of its total gross overseas revenues.

^{9/} All figures exclude U.S.-Canada and U.S.-Mexico traffic.

3i. The danger of the loss by the terrestrial carriers of existing or additional leased circuit business to satellite facilities is not merely theoretical.^{10/} A recent complaint filed by ITT World Com, and a press release issued by Comsat in response thereto, indicate that ComSat would propose to charge both authorized users and carriers approximately the same amount for leased circuits and that the amount is substantially below current or recently proposed charges for leased cable circuits. Accordingly, the terrestrial carriers could reasonably be expected to lose a substantial share of their leased circuit revenues to ComSat. Under these conditions and in light of the data set forth above, it could very well be necessary to permit these carriers to increase rates charged other users in order to enable them to earn a fair return. Certainly such detriment to the vast majority of users for the apparent benefit of a few large users would be in derogation of the objectives of the Act.^{11/} The fact is that the Satellite Act requires the opposite result, namely, that the benefits of these lower rates be made available to all users.

10/ The situation here is not unlike that facing the international telegraph carriers when AT&T laid its trans-Atlantic high capacity cables which made voice-grade leased circuits feasible. During 1960 the government cancelled leases for circuits to Europe with Commercial Cable and Western Union's cable system resulting in a loss of revenues in that year of about \$0.5 million for each of the carriers as compared with 1959. The full annual effect of these cancellations was much greater. They could not compete effectively with AT&T because the latter proposed to lease voice-grade circuits to them at the same price as it leased these circuits to the ultimate users. The problems raised by this development were finally resolved in our TAT IV decision, American Telephone and Telegraph Company, 37 FCC 1151 (1964), wherein we required that the necessary cable facilities be owned jointly and excluded AT&T from all participation in future international voice-data leased business. This was done because of the effects that provision of such service could have on the ability of the international record carriers to provide efficient and economical record services to the public as well as the fact that the carriers could not be expected to obtain a meaningful share of the business in competition with AT&T.

11/ We say "apparent benefit" because we will show hereinafter that even most large scale users would probably suffer no economic detriment by a requirement that they take service from the carriers rather than directly from ComSat.

32. In light of GSA's contentions, we believe it appropriate to consider the revenue effects of ComSat providing service on an unlimited basis to the Government. We have analyzed above the potential effect of a loss of leased circuit revenues upon the terrestrial carriers. The Government as a user provided over 70% of total leased circuit revenues. In the case of voice-grade circuits which provide the bulk of such revenues, the Government is an even more important factor as it accounted for 90% of the total number of circuits leased by all users. The importance of revenues from Government leases to the international telegraph carriers and to the Hawaiian Telephone Company is shown by the table below:

Year 1965
(Thousands of dollars)

<u>Carrier</u>	<u>Total Revenues</u>	<u>Net Revenues Before F.I.T.</u>	<u>Total Leased Circuit Revenues</u>	<u>U.S. Gov't Leased Circuit Revenues a/</u>
ITT World Com	\$29,808	\$ 4,546	\$ 5,952	\$ 3,200
RCAC	51,054	11,512	11,438	6,433
WUI	18,124	2,543	1,924	1,407
Hawaiian <u>b/</u>	14,280	N.A.	4,741	4,606

N.A. - Not available.

a/ Partly estimated.

b/ Data are for overseas services only.

For each carrier, revenues from services to the Government are essential to a fair rate of return and provide a sizeable part of its total profit margin. Thus the loss of a substantial proportion of government leased circuit revenues could have serious adverse effect upon the carriers. Instead of being able to reduce rates to reflect the lower costs of satellite circuits, they would probably have to seek substantial rate increases.

33. It might be argued that in our discussion thus far we have ignored the interests of ComSat in our concern about the potential effects of direct service by ComSat to "authorized users." This is not so. It will be recalled that ComSat has a virtual monopoly in the provision of at least the space segment for international common carrier service. Thus, to the extent that any United States user desires to lease satellite circuits or to the extent that ComSat, by selling activities, induces users to demand such circuits, the carriers must come to ComSat for at least the space segment of the facilities. Since, as noted above, ComSat's proposed charges to the carriers and other users would be substantially the same, it should realize substantially the same revenues whether the carriers or others lease the circuits from it.

34. We now address ourselves to the question of the effect upon prospective users of any refusal to permit ComSat to lease circuits directly

to them. It appears to us that in general these users would also benefit from such a policy. We are mindful of the injunction in Section 204(c) of the Satellite Act that the Commission shall:

"insure that any economies made possible by a communications satellite system are appropriately reflected in rates for public communication services;"

Satellite circuits now becoming available should enable the carriers to secure facilities at lower costs in relation to terrestrial facilities and thereby permit them to reduce rates to reflect such cost reductions. We therefore expect the common carriers promptly to give further review to their current rate schedules and file revisions which fully reflect the economies made available through the leasing of circuits in the satellite system. Failure of the carriers to do so promptly and effectively will require the Commission to take such actions as are appropriate. Even though satellite circuits are not now and will not for some time be available to all points to which users presently lease circuits from terrestrial carriers, implementation of this policy by the carriers should also reduce charges to many points to which satellite circuits are not now available. Furthermore, major users, require redundancy and diversity in their facilities and thus would normally be expected to use a combination of terrestrial and satellite facilities to the same points to provide such redundancy. These users may very well find that the average charge per circuit will be less if the terrestrial carriers supply all their needs than if ComSat were to be permitted to lease satellite circuits to them at lower rates, while the other carriers meet their needs for diversity and redundancy at rates reflecting the higher cable costs associated with conventional facilities such as cable and high frequency radio.

35. Aside from the foregoing considerations we note that entities which have sufficient traffic to require the lease of circuits are also large users of other international services such as message telephone, message telegraph and TELEX. To the extent that loss of leased circuit revenues might require upward adjustments or prevent contemplated reductions in rates for other services, such large users could very well find their total international communications bills increased if ComSat were to be permitted to provide leased service directly to them without limitation.

36. We therefore conclude that only in unique or exceptional circumstances should non-carrier entities deal directly with ComSat. We believe that the ascertainment of such circumstances must be left to a case-by-case approach, since it is dependent upon the nature of the particular service requested. We can state, however, that refusal or failure of the terrestrial carriers to provide, upon reasonable demand, satellite leased circuit facilities, otherwise available, would, in absence of a valid explanation, constitute exceptional circumstances. Similarly, we believe it our duty to encourage development of new uses of satellite facilities and will, upon application, issue authorizations which are best designed to further such ends. Finally, as already set forth more fully in paragraph 26, we again stress the special position of the Government, and specifically, that in the Government's case, unique or national interest circumstances can and do arise where the needs of the Government cannot be met under the carrier's carrier approach.

CONCLUSIONS

37. We have reached the following policy conclusions:

- (a) The terrestrial carriers cannot under existing law themselves be licensed to operate the space segment of the international system and therefore cannot compete effectively in furnishing satellite service to the public.
- (b) ComSat is not and does not propose to be a full service carrier meeting directly the needs of the vast majority of users of international services for all classes of communication services.
- (c) If ComSat were to be permitted to provide leased channel services directly to users, other than in unique or exceptional circumstances, the basic purposes of Congress in enacting the Satellite Act -- reflection of the benefits of the new technology in both quality of service and charges therefor -- would be frustrated.
- (d) A requirement that, except in unique and extraordinary circumstances, users take service from the terrestrial carriers should not have adverse effects upon either ComSat or the users but instead should make it possible to reduce rates for all classes of users.

38. Our ultimate conclusions are:

- (a) ComSat may as a matter of law be authorized to provide service directly to non-carrier entities;
- (b) ComSat is to be primarily a carrier's carrier and in ordinary circumstances users of satellite facilities should be served by the terrestrial carriers;

- (c) In unique and exceptional circumstances ComSat may be authorized to provide services directly to non-carrier users; therefore, the authorization to ComSat to provide services is dependent upon the nature of the service, i.e., unique or exceptional, rather than the identity of the user. The United States Government has a special position because of its unique or national interest requirements; ComSat may be authorized to provide service directly to the Government, whenever such service is required to meet unique governmental needs or is otherwise required in the national interest, in circumstances where the Government's needs cannot be effectively met under the carrier's carrier approach.

39. We do not now propose to set forth specific procedures. However, any request by ComSat for authorization to provide service directly to any user desiring to take such service in particular circumstances should include showings by ComSat as to:

- (i) Whether the proposed service via satellite is available from terrestrial carriers, including evidence of request made therefor and the response of the carriers;
- (ii) Whether the facilities to provide this service are available, and, if not, a description of the new or expanded facilities required as well as the cost thereof;
- (iii) A statement showing why the circumstances involved are so unique and exceptional as to require service directly from ComSat or what the national interest requirements are that indicate that service cannot be provided under the carrier's carrier approach.
- (iv) Any other facts which would indicate that the public interest would be served by a grant.

The above required information shall be set forth in support of the applications for modification of the applicable earth station and/or satellite station licenses as well as for authorization to acquire units of satellite utilization which ComSat shall file in each case in which it is requested to provide a particular service directly to any non-carrier users. Unless and until such authorizations are granted, ComSat shall not provide services to any non-carrier entity. In addition ComSat, of course, must also have an effective tariff on file before it can provide service directly to any non-carrier entity it may be authorized to serve.

40. This inquiry was instituted under authority set forth in Section 403 of the Communications Act of 1934, as amended; the policies and procedures set forth herein are adopted pursuant to authority contained in Sections 4(i), 4(j), 201(b), 303 and 307 of the Communications Act of 1934, as amended, and Sections 102(c), 201(c)(11), 305(a), 305(b) and 401 of the Communications Satellite Act of 1962.
41. Accordingly, IT IS ORDERED, This 20th day of July, 1966, That the Statement of Policy set forth in this Memorandum Opinion and Order IS ADOPTED and that the proceeding IS TERMINATED.

FEDERAL COMMUNICATIONS COMMISSION

Ben F. Waple
Secretary

Released: July 21, 1966

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

OFFICE OF THE DIRECTOR

January 31, 1967

The Honorable Rosel H. Hyde
Chairman
Federal Communications Commission
Washington, D. C. 20554

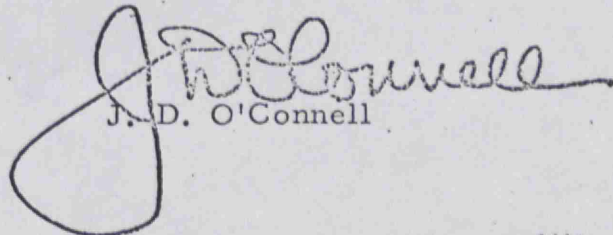
Dear Mr. Chairman:

This is in reference to the pending application by the Communications Satellite Corporation for the furnishing of 30 satellite circuits in the Pacific.

It is requested that ComSat be given appropriate authorization to proceed with implementation of the Department of Defense requirement. Upon establishment of composite rates which afford substantial savings on a global basis, and upon the completion of suitable discussion with and approval by the foreign entities involved, the contract with ComSat for the provision of this service will be assigned to one or more of the carriers shortly after the date of initiation of service. However, prompt action on the ComSat application is called for so that ComSat may make any arrangements necessary to facilitate the provision of this vitally needed communications service.

Finally, in the circumstances, it is also requested that the Commission promptly grant the pending applications of the carriers for authorization to lease and operate the channels required to furnish the service in question. It is understood that any authorizations would establish the applicability of the reduced rates to this service (e.g., the basic \$7,100 composite rate figure).

Sincerely,



J. D. O'Connell

FEDERAL COMMUNICATIONS COMMISSION

WASHINGTON

OFFICE OF
THE CHAIRMAN

February 2, 1967

General James D. O'Connell
Director of Telecommunications Management
Office of Emergency Planning
Executive Office Building
Washington, D. C. 20504

Dear General O'Connell:

I am writing in light of the action taken today on the "30 circuits" and "authorized user" matters. I want to express my appreciation for your efforts in resolving these important matters. The actions taken were possible largely because of the assurance in your letter that in view of the \$7100 composite rate already put into effect by the carriers in the Pacific, the assignment clause would be exercised by DOD shortly after the initiation of service.

As you know, there are also lower rates in the Atlantic, with plans for still further reductions on the institution of 24-hour satellite service. I want to assure you that lower composite rates, wherever satellite service is instituted, are a fundamental aspect of the Commission's regulatory policies in this area.

I believe that this experience again points up the soundness and wisdom of our joint efforts to understand each other's problems and to work together to get the solution best serving the national interest.

Sincerely yours,

Rosel H. Hyde
Chairman

FEDERAL COMMUNICATIONS COMMISSION



95477

PUBLIC NOTICE --C

WASHINGTON, D. C. 20554

February 2, 1967

AUTHORIZATIONS FOR DOD PACIFIC SATELLITE CIRCUITS; FURTHER DECISION IN AUTHORIZED USER PROCEEDING

The Federal Communications Commission has issued authorizations to Hawaiian Telephone Company, ITT World Communications Inc., RCA Communications, Inc., and Western Union International, Inc., to acquire voice-grade satellite circuits from the Communications Satellite Corporation (ComSat) to meet requirements of the Department of Defense (DOD) for thirty such circuits between Hawaii and the Far East. At the same time a short-term temporary authorization to furnish such channels to DOD was granted to ComSat at the request of the Director of Telecommunications Management (DTM) in order to permit it to make any arrangements necessary to facilitate the provision of the service. The Commission was advised by the DTM that the circuits will be assigned to the conventional carriers shortly after the initiation of service through ComSat.

At the same time the Commission acted upon petitions for reconsideration filed by various parties with respect to its Memorandum Opinion and Order and Statement of Policy (Docket No. 16058) released on July 21, 1966 dealing with the circumstances under which ComSat may be authorized to furnish satellite channels and services to entities other than the conventional common carrier. Among other things, the Commission clarified certain aspects of its earlier opinion concerning requests by ComSat for authorization to provide service directly to the U. S. Government.

The foregoing actions were taken by the Commission by the adoption of Memoranda Opinions and Orders.

- FCC -

FCC 67-163
94724

1/ WUI also requested authorization to lease satellite circuits unrelated to the 30-circuit requirement of DCA. By separate applications, the other carriers have applied for satellite circuits unrelated to the DCA requirements for 30 circuits. We are not treating these requests herein.

interconnected via the satellite with ten voice-grade satellite circuits from an earth station in Japan, ten voice-grade circuits from an earth station in Thailand, and ten voice-grade satellite circuits from an earth station in the Philippines, so as to provide through alternate voice/data leased channel service between Hawaii and each of these three foreign countries. Authority is also requested to acquire necessary connecting facilities in Hawaii.

2. Pursuant to our decision in the so-called Authorized User Case, Docket No. 16058, ComSat on September 6, 1966 applied (File No. T-C-2032) to us for authorization to provide such service directly to DOD, as well as for related authorizations. Thus, ComSat requests authority to acquire, from the International Telecommunications Satellite Consortium, thirty full-time units of satellite utilization in Intelsat II, to acquire from the respective foreign communications entities ten full-time voice-grade circuits between the satellite and each of the three foreign points and to provide through service to DOD by combining such units and circuits into thirty full-time alternate voice/data circuits. ComSat based its application on an order for such circuits from DOD, acting through DCA, pursuant to its procurement regulations. The DCA order, it should be noted, is made through a Communications Service Authorization (CSA) which contains a clause permitting DCA to assign the order to a carrier or carriers other than ComSat.

3. According to information before us, Thailand and the Philippines will be able to participate in the desired service by April 1, 1967, through transportable earth stations now being installed. Japan, which is presently modifying its earth station at Ibaraki, will be in operation to provide the service some months later.

4. Initially, both DOD and ComSat, in pleadings filed with the Commission, opposed the grant of the authorizations requested by the carriers. ComSat requests that we dismiss or defer consideration of the carriers' applications. It urges, among other things, that it has a contract to furnish the 30 circuits to DOD and that no action should be taken upon the carriers' applications until its own application has been disposed of. It also refers to its pending petition for reconsideration in the Authorized User Case, in which we determined the conditions under which ComSat may be permitted to furnish services directly to the Government and others. DOD originally opposed a grant of the carriers' applications on the ground, among others, that, since it has chosen ComSat to provide the service, there is no need for a grant of other applications.

5. In our Memorandum Opinion and Order (concomitantly being issued with this document) on petitions of ComSat, General Services Administration, and RCAC for reconsideration of our determinations in the Authorized User Case regarding the circumstances under which ComSat may be authorized to serve the Government directly, we point out that the DTM is "the focal point for the judgment of the Executive agencies as to the national interest," and that "in all cases where ComSat seeks to deal directly with the Government we shall act promptly after receipt of advice from the DTM."

6. We have received advice from the DTM concerning this matter. In a letter dated January 31, 1967, DTM has stated:

"It is requested that ComSat be given appropriate authorization to proceed with implementation of the Department of Defense requirement. Upon establishment of composite rates which afford substantial savings on a global basis, the contract with ComSat for provision of this service will be assigned to one or more of the carriers shortly after the date of initiation of service. However, prompt action on the ComSat application is called for so that ComSat may make any arrangements necessary to facilitate the provision of this vitally needed communications service. Finally, in the circumstances, it is also requested that the Commission promptly grant the pending applications of the carriers for authorization to lease and operate the channels required to furnish the service in question; it is understood that any authorizations would establish the applicability of the reduced rates to this service (e.g., the basic \$7,100 composite rate figure)."

7. In view of the particular circumstances of this matter, its history and posture and the representations made by DTM on behalf of the Executive branch, it appears that the objections heretofore raised by the parties are moot and that we should act to grant the regular authorizations to the carriers and the short term temporary authorization to ComSat. As to the latter, the short term temporary authorization to ComSat will, we believe, facilitate both the provision of this vitally needed service and an orderly transition from ComSat to the other carriers, and is thus consistent with our policies in this area. As to the former, there is now the express representation that this service will be assigned to one or more carriers shortly after date of the initiation of the service; we recognize, of course, that DCA will determine to which carrier or carriers any particular assignment should be made. In this connection, it is to be noted that the \$7100 composite rate referred to by the DTM has in fact been implemented in tariff schedules which became effective January 20, 1967.

ACCORDINGLY, IT IS HEREBY CERTIFIED, That the present and future public convenience and necessity require the grant of the applications as conditioned below or the denial thereof as also set forth below:

IT IS ORDERED, This 1st day of February, 1967, that ComSat is granted a short term temporary authority to provide, with the respective entities in Japan, the Philippines and Thailand, to the Defense Communications Agency acting on behalf of the Department of Defense, 10 voice-grade satellite circuits between Hawaii and Japan, 10 voice-grade satellite circuits between Hawaii and the Philippines, and 10 voice-grade satellite circuits between Hawaii and Thailand, for alternate voice/data leased channel service;

IT IS FURTHER ORDERED, That the short-term temporary authorization granted to ComSat by this Order and Certificate is subject to termination, without hearing, upon such notice as may be specified;

IT IS FURTHER ORDERED, That ComSat shall file with the Commission a separate tariff applicable to the service to be provided pursuant to the temporary authorization granted by this Order and Certificate, on not less than thirty days' notice to the public; that this tariff shall take into account the standards heretofore established by the Commission with respect to this matter, and that this tariff shall provide that it expires on the date the temporary authorization granted herein is terminated;

IT IS FURTHER ORDERED, That, except for the temporary authorization granted to ComSat by this Order and Certificate, and the previous authorization granted to ComSat to acquire units of utilization to provide the 30 circuits by the Commission's letter of January 26, 1967, the application of ComSat filed on September 6, 1966, File No. T-C-2032, IS DENIED.

IT IS FURTHER ORDERED, That ITT World Communications Inc., Western Union International, Inc., RCA Communications, Inc., and Hawaiian Telephone Company are each authorized to lease and operate up to 30 voice-grade circuits between Hawaii and the INTELSAT II (F-2) satellite in order to furnish up to ten circuits for alternate voice/data leased channel service to the Defense Communications Agency acting on behalf of the Department of Defense between Hawaii and each of the following points: Japan, Thailand, and the Philippines; Provided, however, (1) that the actual number of circuits that any such carrier may lease and operate pursuant to this authorization shall not exceed the number of circuits ordered from such carrier by the Defense Communications Agency; and (2) that the initial tariff rate for each such circuit between Hawaii and the INTELSAT II (F-2) satellite shall not exceed \$7,100 per month;

IT IS FURTHER ORDERED, That the carriers may file tariffs on not less than one day's notice to provide the services to those points when they receive orders from the Defense Communications Agency;

IT IS FURTHER ORDERED, That as circuits to a particular point (Thailand, the Philippine Republic, or Japan) are ordered by the Defense Communications Agency from a carrier in lieu of ComSat, the short-term temporary authorization herein granted to ComSat shall terminate without further action by the Commission upon the institution of service by such carrier;

IT IS FURTHER ORDERED, That ComSat and the carrier applicants are authorized to acquire any necessary connecting facilities in Hawaii so long as their respective authorizations are in effect; and

IT IS FURTHER ORDERED, That each of the carrier applicants shall notify the Commission of the acquisition, by that applicant, of any of the circuits herein authorized within five days of such acquisition.

FEDERAL COMMUNICATIONS COMMISSION

Ben F. Waple
Secretary

Released: February 3, 1967

In the Matter of)

Authorized entities and Authorized)
users under the Communications Satellite)
Act of 1962)

Docket No. 16058

MEMORANDUM OF OPINION AND ORDER

By the Commission:

Preliminary Statement

1. We have before us several petitions for reconsideration and clarification of our Memorandum Opinion and Statement of Policy released July 21, 1966, in this proceeding. These petitions, which vary as to the relief sought, were timely filed on August 22, 1966 by the Communications Satellite Corporation (ComSat); the Administrator of General Services (GSA); and RCA Communications, Inc. (RCAC). Oppositions to either or both the Comsat and GSA petitions were filed on September 16, 1966, by the American Telephone and Telegraph Co. (AT&T); ITT World Communications Inc. (ITT WorldCom); Hawaiian Telephone Co. (HTC); Western Union Telegraph Co. (WU); Western Union International, Inc. (WUI); Aeronautical Radio, Inc., and the Air Transport Association of America, jointly (ARINC and ATA); and RCAC. Comsat on September 16, 1966 filed a response to the RCAC and GSA petitions, opposing the former and supporting the latter. It filed a reply to the oppositions to its own petition on October 14, 1966.

2. The document to which the petitions are addressed grew out of our inquiry into, among other things, the extent to which Comsat may be authorized to provide channels or services to persons other than communications common carriers, and the extent to which Comsat should, as a matter of policy, be so authorized by the Commission. In essence, we held, for the reasons set forth in our decision that, although Comsat may lawfully be authorized to provide service to non-carriers, it was primarily a carrier's carrier and should serve non-carriers directly only in unique or exceptional circumstances. The petitioning parties express widely divergent views. RCAC seeks more specific procedural controls on ComSat's negotiations with the various entities, including foreign users; GSA seeks clarification of the unique position of the government as a user; ComSat seeks broader authority to deal with users other than common carriers, including the Government itself.

3. We shall deal first with the contentions directed to the Government's position as a user (See Part I, below). We shall then deal with the other contentions, and, in particular, those of ComSat as to the alleged restrictive effects of our decision (Part II) and of RCAC as to the need for certain procedural revisions (Part III). Any contention not treated in the following discussion is rejected for the reasons set forth in our prior report.

Part I. The Contentions With Respect to the Government's Position as Authorized User

4. GSA and ComSat filed petitions for reconsideration with respect to that portion of our decision dealing with the Government's position as an authorized user. As to some of the matters raised, our prior decision already sets forth our position, and we will not, therefore, here repeat the discussion in that decision. However, we agree with GSA that clarification of our July 21 decision in some important respects is called for.

5. First, we shall, as requested by GSA stress again the wide area of agreement. We agree -- and so stated in our decision of July 21 -- that the Government has a special status under the Satellite Act. See par. 25 and discussion therein; Section 305(b)(4) of the Satellite Act. We also agree that with respect to this matter the Director of Telecommunications Management (DTM) has a special role and responsibility, in view of the special duties assigned to the DTM by the President in the telecommunication field (e.g., Executive Order 11191). We pointed out in our July 21 decision that in certain instances the Government has a special position because of its unique and national interest requirements, and that ComSat may be authorized to provide service directly to the Government whenever such direct service is in the national interest. Clearly, in view of the foregoing, the DTM is the focal point for the judgment of the Executive agencies as to the national interest. Finally, we recognize that the determination of communications services needed because of defense requirements in the national interest is a matter peculiarly within the province of the Executive. Cf. Bendix Aviation Corp. v. U.S., 272 F. 2d 533, 106 U.S. App. D.C. 304, cert. den., 361 U.S. 955.

6. Accordingly, we have concluded that our prior decision, and particularly Paragraphs 38(c) and 39, did not appropriately delineate the situation with respect to the Government as an authorized user and the procedures applicable thereto. We recognize that Comsat may be authorized to provide service directly to the Government whenever such direct service is in the national interest, and that Paragraph 39 should

not be applicable to service to the Government. While no specific procedures or criteria (other than the national interest) are proposed with respect to this governmental facet, in all cases where ComSat seeks to deal directly with the Government we shall act promptly after receipt of advice from the DTM. In acting on requests by Comsat for authorization to provide service directly to the Executive, it is the DTM, and not Comsat, to whom the Commission may turn with respect to the critical national interest facet. Our decision is hereby amended to the extent of reflecting the foregoing revisions.

Part II. Comsat's Contentions Concerning the Alleged Effects of our Policy.

7. Comsat states that, apart from direct service to the Government, its statutory mission may be best accomplished by affording the conventional carriers full opportunity to provide satellite service, reserving the opportunity to provide direct service to users in justified and enumerated circumstances when necessary to spur development and utilization of satellite communications. Specifically, it says, it has urged that we recognize its right to serve users directly (a) where conventional carriers fail to make a desired satellite service available on reasonable terms; (b) where a new satellite service is provided on a developmental basis; and (c) where such service to a user or class of users would in a particular case be in the public interest. While it feels that we have adopted these suggestions in principle, it is concerned that we may in practice adopt an unduly restrictive approach which may undermine the salutary effect of defined exceptions to the "carrier's carrier" policy. In particular, it is gravely disturbed by what it considers an adoption by us of a composite rate approach, under which satellite economies are realized by users only through reduction in charges made for services provided over all media, which, it seems to feel, militate against separate rates for satellite services.

8. As Comsat points out, the approach we have taken is consistent with its own thinking as to the role of being primarily a carrier's carrier, dealing directly with users as an exception to that general principle. We are, of course, well aware of our responsibilities for encouraging the development and use of satellite communications, as well as for seeing that needs of users are effectively met. The point we were stressing, however, was that this should not be at the undue expense of the vast majority of users, who would not be in a position to go to Comsat directly. We also have a general responsibility to the public, which necessarily must be harmonized with our particular responsibilities for satellite communications, to assure adequate service at

reasonable charges and to take steps to assure that the conventional carriers responsible for general service can meet this obligation. The concern expressed in our decision was over the danger implicit in competition between Comsat, having a favored position with respect to a more economical medium, and conventional carriers who are at a disadvantage in not being able to acquire such a favored position. Unless closely and wisely regulated to harmonize the statutory responsibilities above, this unequal position could result in an overall deterioration in public communications services. The approach we took on rates was a consequent corollary of these considerations, and does not, of course, preclude the establishment of satellite rates, as distinguished from a composite rate, where in the public interest.

Part III. Suggested Procedural Revisions

9. The parties have filed petitions for reconsideration and clarification in this proceeding concerned with the lack of formalized procedures to be followed by Comsat in requesting authorization to serve directly non-carrier entities. As to the case of procedure with respect to direct service to the Government, this matter is discussed in par. 6, supra. With respect to RCAC's contentions, we believe that no revisions are called for at this time, in light of the policies established in our prior decision and in this Memorandum Opinion and in light of the fact that the Commission receives regular monthly reports of foreign negotiations in this area. Further experience is necessary to enable the Commission to determine what, if any, changes are required. The Commission will remain cognizant of the petitioners' contentions in this regard and reassess the procedures now established from time to time in light of experience gained.

10. ACCORDINGLY, IT IS ORDERED, This 1st day of February, 1967, that the Petitions for Reconsideration cited above, and the replies and responses thereto, are granted to the extent set forth above in paragraph 6 and are otherwise denied.

FEDERAL COMMUNICATIONS COMMISSION

Ben F. Waple
Secretary

Released: February 3, 1967

Department of Justice

Washington

APR 29 1969

LEGAL ADVISER

Mr. Leonard C. Meeker
Legal Adviser
Department of State
Washington, D. C.

APR 30 1969

DEPARTMENT OF STATE

Dear Mr. Meeker:

This responds to your letter of February 18, 1969, in which you have asked for our opinion on two questions concerning the authority of the National Aeronautics and Space Administration (NASA) to provide launch services to a foreign government for a domestic communications satellite system. Your questions are:

- (1) "Under existing domestic law is there any legal obstacle or impediment to the provision of launch services by the National Aeronautics and Space Administration to a foreign government having a foreign operational domestic communications satellite system?
- (2) "If NASA has authority to provide such services under our law may it do so independently of the Communications Satellite Corporation, whether acting as an independent United States corporation or as an agent for Intelsat?"

Although not specifically so stated in your letter, I understand your questions assume that such launch services would be provided on a 100% reimbursable basis. In these circumstances, it is our opinion that (1) there is no legal impediment to the provision of launch services by NASA if the President should direct such action; and (2) that launch services pursuant to such Presidential directive may be furnished independently of the Communications Satellite Corporation (Comsat).

1

We have considered the legal memoranda submitted by NASA and Comsat concerning these questions. Those memoranda discuss NASA's authority to engage generally in activities of a purely operational nature. No opinion is expressed herein on that issue because we find sufficient specific authority in the pertinent legislation to dispose of the questions presented without reaching the broader questions discussed by NASA and Comsat.

I.

The determination of the authority of NASA to provide launch services for foreign operational domestic communications satellite systems calls for construction of the National Aeronautics and Space Act of 1958, 72 Stat. 426, as amended, 42 U.S.C. 2451 et seq. ("Space Act") and the Communications Satellite Act of 1962, 76 Stat. 419, 47 U.S.C. 701 et seq. ("CSA").

The Space Act provides, in § 102(c) (42 U.S.C. 2451(c)), that -

"The aeronautical and space activities of the United States shall be conducted so as to contribute materially to one or more of the following objectives: * * *

(7) Cooperation by the United States with other nations or groups of nations in work done pursuant to this Act and of the peaceful application of the results thereof . . ."

Section 205 (42 U.S.C. 2475) provides that:

"The [National Aeronautics and Space] Administration, under the foreign policy guidance of the President, may engage in a program of international cooperation in work done pursuant to this Act, and in the peaceful application of the results thereof, pursuant to agreements made by the President with the advice and consent of the Senate."

The quoted provisions constitute a clear mandate for NASA to engage in international cooperation, not only in research, but also in the application of the results of aeronautical and space activities. 1/ The legislative history of § 205 makes it clear that such cooperation is to be under the guidance of the President. 2/ The only question as to NASA's authority under this section is whether such international cooperation may only be carried out pursuant to agreements made by the President with the advice and consent of the Senate.

President Eisenhower stated with respect to § 205 at the time he signed the Space Act that he did not construe that section as prescribing the only permissible form of international cooperation:

"The new Act contains one provision that requires comment. Section 205 authorizes cooperation with other nations and groups of nations in work done pursuant to the Act and in the peaceful application of the results of such work, pursuant to international agreements entered into by the President with the advice and consent of the Senate. I regard this section merely as recognizing that international treaties may be made

1/ There is also some evidence that § 203(b)(6), 42 U.S.C. 2473(b)(6), which authorizes NASA to cooperate with other government and public and private agencies was intended to include foreign governments. See H. Rep. No. 1770, 85th Cong., 2d Sess. p. 9 (referring to the predecessor paragraph 302(a)(6) in an earlier bill).

2/ The section that eventually became § 205 as it was first passed by the House provided that international cooperation should be "under the foreign policy guidance of the State Department." H. Rep. No. 1770, 85th Cong., 2d Sess. p. 25. The Conference Report (H. Rep. No. 2166, 85th Cong., 2d Sess. p. 21) states that the conferees adopted a revised version "specifying that the Administration would act under the foreign policy guidance of the President rather than the State Department."

in this field, and as not precluding, in appropriate cases, less formal arrangements for cooperation. To construe the section otherwise would raise substantial constitutional questions." Press Release of July 29, 1958, Public Papers of the Presidents of the United States: Dwight David Eisenhower 1958, par. 185, p. 573.

In addition to this ground for not holding agreements with the advice and consent of the Senate to be necessary for international cooperation in all cases, Congress has subsequently provided detailed guidance for purposes of international cooperation by the United States with respect to communications satellites. The Communications Satellite Act of 1962 (76 Stat. 419, 47 U.S.C. 701 et seq. (CSA)) sets forth the applicable policy objectives and limitations on executive actions, and clearly does not require that such international cooperation be limited to agreements entered into with the advice and consent of the Senate. The meaning of section 205 of the Space Act must be construed in the light of this subsequent, and definitive, legislation on the subject of international cooperation by the United States in the field of communications satellites.

The Communications Satellite Act provides in § 102(a) and (b) (47 U.S.C. 701(a) and (b)) that "it is the policy of the United States to establish, in conjunction and in cooperation with other countries . . . a commercial communications satellite system as part of an improved global communications network . . ." and that "in effectuating this program care and attention will be directed . . . toward efficient and economic use of the electromagnetic frequency spectrum. . .".

Section 201(a) (47 U.S.C. 721(a)) directs that, in order to achieve the objectives and carry out the purposes of that Act, the President shall --

"(3) . . . coordinate the activities of governmental agencies with responsibilities in the field of telecommunication, so as to insure that there is full and effective compliance at all times with the policies set forth in this Act;

"(4) exercise such supervision over relationships of the Corporation [Comsat] with foreign governments or entities or with international bodies as may be appropriate to assure that such relationships shall be consistent with the national interest and the foreign policy of the United States;

"(5) insure that timely arrangements are made under which there can be foreign participation in the establishment and use of a communications satellite system; . . .

"(7) so exercise his authority as to help obtain coordinated and efficient use of the electromagnetic spectrum and the technical compatibility of the system with existing communications facilities both in the United States and abroad."

Although the CSA was enacted for the purpose of establishing an international communications satellite system, the issues raised by any proposal for United States cooperation in the establishment of a foreign communications satellite system are inseparable from those relating to the success of the international system "as part of an improved global communications network."

The CSA is a very broad mandate to establish a global network of satellite communications on the basis of international agreements to be negotiated in the future. When the CSA was enacted it was generally believed that for both technical and economic reasons any communications satellite system would be international in character, and that duplicate systems would present serious problems of

economic feasibility and technical interference in the use of the electromagnetic spectrum. 3/ While it was anticipated that communications satellites might also be used for domestic communications, the feasibility of separate systems for this purpose was not considered a likely prospect for the near future. Congress could not and did not attempt to foresee what specific organizational form domestic communications by satellite would have in relation to international communications. It did, however, make clear the objective of the United States that an international communications satellite system be established soon, and on the basis of international agreement that would protect the system from technical interference in the use of the electromagnetic spectrum as well as uneconomical competition with competing systems. To these ends, the Act authorized the President, among other things, to insure that arrangements be made for foreign participation in the system and to use his authority to obtain coordinated and efficient use of the electromagnetic spectrum.

Whether, and to what extent, domestic communications satellite systems established by other nations should be integrated with or operate separately from the international system is a question that is inextricably related to the issues involved in the establishment and operation of the international system. The authority to determine the U.S. position and to enter into agreements dealing with such questions must be deemed included within the broad authority conferred upon the President by the CSA.

The broad range of possible forms of international cooperation intended to be made possible by the CSA include the conclusion of international arrangements through

3/ See, e.g., S. Rep. No. 1584, 87th Cong., 2d Sess. (1962) p. 8; Hearings before the House Committee on Interstate and Foreign Commerce on H.R. 10115 and H.R. 10138, 87th Cong., 2d Sess., part 2, p. 422 (1962).

less formal devices than a treaty, as exemplified by the various agreements on which the Intelsat system is based. 4/

The clear legislative intention of the CSA is to vest in the President control of the activities of NASA and other government agencies, as well as of Comsat, when engaging in programs of international cooperation in satellite communications. I therefore conclude that the only requirement of domestic law that must be satisfied before NASA may provide reimbursable launching services for a foreign operational domestic communications satellite system is the specific approval of the President.

II.

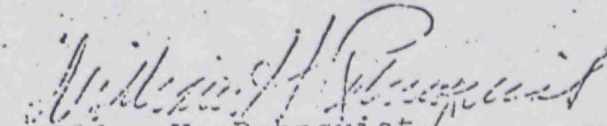
The foregoing analysis also provides the answer to your second question. Since the authority for NASA to provide such launch services is to be found (a) in NASA's general authority under the Space Act, and (b) through the approval of the President under his authority in both § 205 of the Space Act and § 201(a) of the CSA, I can find no requirement that Comsat be involved in any way in the provision of such services. 5/

4/ The Intelsat system is governed by three separate agreements. The International Telecommunications Satellite Consortium of August 20, 1964 (TIAS 5646) is an intergovernmental (executive) agreement. In addition, a "Special Agreement" (also TIAS 5646) is an agreement between the operating entities, including Comsat. A separate arbitration agreement was concluded subsequently between these operating entities.

5/ Section 201(b)(5) of the CSA (47 U.S.C. 721(b)(5)) which directs NASA to furnish reimbursable launch services to Comsat, is not inconsistent with this conclusion. That section is simply a direction making it mandatory that NASA provide such services. See, e.g., (Cont'd.)

I trust that the foregoing answers your questions.

Sincerely,



William H. Rehnquist
Assistant Attorney General
Office of Legal Counsel

5/ (Cont'd.) testimony of NASA Administrator James E. Webb in hearings before the Senate Commerce Committee on S. 2814, 87th Cong., 2d Sess., p. 143, and before the House Commerce Committee in hearings on H.R. 10115 and H.R. 10138, Pt. 2, pp. 608-9. There is no indication, either in the CSA, or in its legislative history, that section 201(b)(5) was intended as a limitation on the specific form of arrangements that might be negotiated for a global network of satellite communications. Indeed, section 305(a)(1) expressly recognizes that Comsat's ownership interest in an international system may be either by itself "or in conjunction with foreign governments or business entities."

Comsat

May 13, 1969

MEMORANDUM FOR GENERAL O'CONNELL

The Communications Satellite Act appears to give the President substantial authority and responsibility relevant to the characteristics of a domestic satellite system. Could you please advise on how these provisions provide authority for the President to take an initiative in defining the broad characteristics of domestic satellite policy and of a domestic satellite system. This should include how the Act may limit what the President can do, how it has been interpreted, and the extent to which a Presidentially stated interpretation could clarify such issues.

Could you also forward a summary of the "30-circuits" case to include the issues as defined by the FCC, their ruling, and the provision for DTM certification that procurement of the circuits from COMSAT is in the national interest.

Signed

Clay T. Whitehead
Staff Assistant

cc: Mr. Whitehead ✓
Central Files

CTWhitehead:ed