AUG 12 1971

Honorable U. Alexis Johnson
Under Secretary for Political Affairs
Department of State
Washington, D. C. 20520

Dear Alex:

Recent meetings in Paris and Madrid between the FAA and the European aviation and space communities have led to a tentative decision to proceed with definition of a joint European-U.S. Program for Aeronautical Satellite Services. As a result, preparation of a Memorandum of Understanding and joint procurement specifications will take place during the next few weeks.

The Administration's policy of 7 January 1971 embodied several principles which have a bearing on these activities:

1. Ownership of the system is to be in the private sector with the FAA service requirements provided through lease arrangements.

2. Procurement of services and equipment shall be through international competitive bid.

3. The institutional, technical, and financial arrangements shall be consistent with the possibility of a multiple user system.

4. Program development should proceed promptly leading to preoperational service in 1973.

In the coming weeks these principles will be translated into tentative working agreements in terms of procurement, financial, management

ownership, and operating arrangements. Accordingly, we would like to have your views concerning the specific arrangements to be incorporated in the preliminary agreements currently being drafted.

In view of the rapid pace of events, I would appreciate having your views by 20 August.

Sincerely,

Clay T. Whitehead

Identical letters sent to

U. Alexis Johnson
James Beggs
Jack Shaffer

cc: Mr. Whitehead
Dr. Mansur
Mr. Thornell

GFMansur:tw/jm 8/11/71

Revised

DRAFT #2
8/11/71
CTWhitehead/A. Scalia:ed

not sent

MEMORANDUM FOR MR. FLANIGAN

The Aeronautical Communications Satellite Program has been a source of continuing frustrations. In spite of our discussions on the subject, I find that we are simply unable to achieve agreement with the FAA or the State Department. The State Department has constantly eroded the clear intent of the policy guidance we have provided, and has so muddied the waters that FAA does not know which way to turn.

The problem is quite clearly one of conflicting objectives. In my judgment, this is the clearest instance of a new program in which reliance on the private sector, promotion of U. S. industry in world trade, and retention of the benefits of U. S. technology can be achieved with minimal adverse consequences. State, on the other hand, appears willing to abandon or seriously compromise these goals rather than run any risk of displeasing the Europeans. The result is a typical bureaucratic stalemate.

This is precisely the type of problem OTP was established to deal with; had I thought otherwise, I would have proceeded accordingly. (I remind you that the basic policy that we laid down in January grew out of an executive Office working group including OMB, OST, Space Council, and NSC.) I am convinced that no crucial foreign relations problems exist, and no serious difficulties for the FAA. All that is involved is reluctance to accept OTP guidance in what is essentially a communications matter.

As matters now stand, State is telling my people and FAA that OTP is simply one of many agencies with a voice in this issue, and that its views are not determinative except on relatively narrow technical questions. I believe this issue is significantly important that I have to make it a test case. If we are not effective here, then the whole role of OTP will be thrown into serious question.

I therefore propose to send the attached memorandum to the President unless you see an alternative way of handling the problem effectively.

CTW

Attachment

DRAFT #2
CTWhitehead/A. Scalia:ed
8/11/71

MEMORANDUM FOR THE PRESIDENT

There has been a long-standing disagreement between NASA, FAA, and State regarding deployment of communications satellites for communications satellites for communicating with airplanes over the oceans. Following an Executive Office study, OTP established in January policy guidelines resolving the major issues. The basic thrust of this policy was that the needed services should be procured from the private sector on a competitive basis, instead of through a large and expensive government program. Since that time, we have endeavored to bring about early implementation.

The FAA needs these communications services by 1973. The same system can also provide communications services to maritime interests who would not otherwise be able to afford them. This is a job that can be done promptly and well by U.S. industry -- at low cost and with significant effect on aerospace employment. The Europeans do not want to see a U.S. unilateral program, favoring a joint program with production and technology sharing, joint ownership, and joint management. Most of the technology has been developed in this country, and U. S. industry is looking to this as a test of this Administration's sincerity in

standing up to the Europeans on their behalf.

The lower echelons of the State Department are resisting our policy guidance, prefering to compromise our economic objectives in order to achieve agreement for a jointly managed program with the Europeans. It is my belief that this Administration wishes to protect and stimulate the leadership role of our economic and communications industries, and that we wish to preserve communications as a competitive private enterprise rather than a government-owned, government-controlled activity. In that light, I believe the INTELSAT precedent to be a bad one that should not be followed. This matter has been coordinated with Peter Flanigan and Henry Kissinger, both of whom concur in our approach.

I therefore recommend that you approve the attached letters to the secretaries of State and Transportation.

CTW

Attachments

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

DIRECTOR

Honorable William P. Rogers
Secretary of State
Washington, D. C. 20520

Dear Mr. Secretary:

The President has expressed his concern that the Aeronautical Communications Satellite Program be implemented as soon as possible, and in close compliance with Administration policy objectives.

The President recognizes the desirability of reaching an agreement with the Europeans on this program. He feels, however, that this goal must be secondary to that of providing a full opportunity for U.S. industry to offer aeronautical communications satellite services on a competitive basis through the private sector. In particular, he does not wish these services to be provided by INTELSAT or by any international organization patterned after INTELSAT. The institutional arrangements must be such as to stimulate initiative and investment on the part of U.S. industry.

The President has therefore asked that I expedite the development of this program and assure that it meets the above described policy objectives. My staff will be in touch with your Department in the near future to help implement the President's wishes.

Sincerely,

Clay T. Whitehead

OUT

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Box 10 (Jackie's labels), Folder "Aerosat September 1970-December 1971"

15) Blue half-sheet notes (2) of phone calls, dtd. 8/3/71, w/attachments: 1) Note to Marge fm Judy, Office of Telecommunications Policy, dtd. 8/4/71, 1 p., no markings; 2) Telegram for Dr. Mansur fm Clay T. Whitehead, dtd. 8/3/71, 1 p., "Confidential"

August 3, 1971
2:15PM

The following was received from Dr. Mansur:

The following is Article 8 from the proposed memo of understanding. The meeting adjourned this afternoon after reviewing the complete working group recommendations and apparently there was complete agreement. This draft memo of understanding was drafted by the Europeans and indicate the lack of understanding really achieved between the U.S. Delegation and the Europeans.

ARTICLE 8. Ownership.

1. Ownership of all hardware produced for the purpose of the AeroSat System shall be transferred to the FAA and to ESRO, who shall be the co-owner of it.

2. Similarly, all intellectual property rights, including right of reproduction arising from the work done for the purpose of the AeroSat System shall belong in common to the FAA and ESRO.

3. The FAA and ESRO shall have the right to make use of any results and rights achieved under the execution of the integrated program for national US or ESRO space program. They shall on request grant licenses free of charge for the use of result and right achieved under the integrated program to such member government of ESRO which contributed to their program for the purpose of their national space program. Third parties applying for licenses may obtain them on condition to be agreed between the FAA and ESRO. Any revenues arriving therefrom shall be substracted in equal amounts from the contribution of the FAA and ESRO.

* * *

7. The question of ownership and granting of licenses regard to later operation of the AeroSat System shall be defined by the AeroSat Council taking into account a contract condition agreed with the AeroSat Contractor .....

COMMENT: The ICB portion was also softened with a secondary consideration of "fair and reasonable distribution of the work amongst Europe and the U.S."

In summary, a joint European-U.S. Program is being steamrollered, and this meeting will undoubtedly end with agreement between the FAA and the Europeans in much the same terms as are reflected in the draft working group recommendations sent to you by telegram. The options to you still remain as stated, but I personally believe that if OTP is to retain any credibility out of this operation these problems should be immediately escalated to the top. If an escalation occurs I also believe that Dave Israel must be removed as Program Manager for a variety of reasons.

August 3, 1971

Message from Dr. Mansur at Aerosat Conference in Madrid

Meeting agenda is structured so that we are proceeding on a basis of ratification of each paragraph of working group report. This is logical if the working group report represented U.S. position. OTP seems to be the only dissenting voice amidst a torrent of words from the 15 U.S. delegates. We have stated that OTP has great problems with management, ICB ownership, and objectives. The objectives of Israel and the Europeans is to deploy exclusively aeronautical satellites, and the framework of the working group reports reflect that in every paragraph. Thus, OTP is in the position of objecting to nearly every paragraph or "blowing the whistle" and stopping the whole proceedings.

The meeting has so far reviewed and tentatively ratified:

1. Equal partners with unanimity of positions of decision required in all matters including selecting the contractors.

2. European program managers if the contractor is U.S.

3. 50% ownership of something, which the Europeans believe is a satellite and the U.S. has not chosen to clarify. We are currently debating ICB. Shaffer does not believe ICB and production sharing are inconsistent since one may have several bids, even if production sharing by formula is specified.

Our options are:

1. Live with the agreement with only minor changes.

2. That our or your preparations of a statement to be read tomorrow clarifying objectives which will have the effects of stopping this Conference and clearly embarrassing Shaffer. Incidently, Shaffer arrived just before the meeting, has not read the working group report, does not understand the issues, and is not prepared. We have had only a brief conversation.

3. Make certain we hold fast to ICB which may blow the Conference -- will probably read written instructions to Shaffer since State will soften.

4. Call Shaffer and Mansur home now on some pretext so that Conference cannot make final agreement.

5. Kill program later at OMB.

We must get the objectives resolved at the highest levels of State and DOT with instructions to Rein and Shaffer. Your only option is No. 1 or No. 5.

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FOR CLAY T WHITEHEAD, OFFICE OF TELECOM POLICY FROM MANSUR

THE FOLLOWING IS THE TEXT OF THE WORKING GROUP MEETING OF THE LAST WEEK:

"2. SUMMARY CONCLUSION

THE ICAMG CONCLUDED THAT TO BRIDGE THE GAP IN TIME AND KNOWLEDGE BETWEEN THE CURRENT EXPERIMENTAL EFFORTS AND AN OPERATIONAL SATELLITE SYSTEM DESIRED AROUND 1980, A PRE-OPERATIONAL AERONAUTICAL SATELLITE SYSTEM FOR ATLANTIC AND PACIFIC OCEANS BE JOINTLY DEVELOPED, FUNDED, MANAGED, IMPLEMENTED AND EVALUATED BY EUROPE (PARTICIPATING ESRO MEMBER STATES), THE US (FAA) AND OTHER INTERESTED STATES, BASED ON THE PRINCIPLE OF EQUAL SHARING OF RESPONSIBILITIES, COST AND EFFORT BETWEEN THE MAJOR PARTIES (US/EUROPE), IN WHICH OTHER STATES CAN PARTICIPATE, AND BASED ON A SYSTEM SPECIFICATION TO BE JOINTLY PREPARED.

4. SCOPE OF JOINT EFFORT

THE DISTINCTION IS MADE BETWEEN THE FOLLOWING TWO PARTS OF THE JOINT AERONAUTICAL SATELLITE PROGRAMME TO BE COVERED BY THE MEMORANDUM OF UNDERSTANDING

- THE "INTEGRATED PROGRAMME"
DESCRIBED IN SECTION 4.1 BELOW

-THE "COORDINATED PROGRAMME"
DESCRIBED IN SECTION 4.2 BELOW

4.1 INTEGRATED PROGRAMME

(A) THE SATELLITE DEVELOPMENT
THE MANUFACTURING AND QUALIFICATION OF A PROTOTYPE, AND THE TECHNICAL ASSISTANCE TO ASSESS PERFORMANCE IN ORBIT,

(B) THE MANUFACTURING OF THE FLIGHT UNITS
THE PERFORMANCE OF ACCEPTANCE TESTS, AND THE TECHNICAL ASSISTANCE TO THE LAUNCH OPERATIONS AND EARLY ORBIT PHASES",

(C) THE LAUNCHES
INCLUDING THE PURCHASE OF THE LAUNCH VEHICLES AND ONE LAUNCHING, AS WELL AS THE CORRESPONDING PART OF THE MANAGEMENT,

(D) THE SATELLITE CONTROL FACILITIES
I.E. THE GROUND FACILITIES WHICH ARE DIRECTLY RELATED TO THE CONTROL OF THE SATELLITES IN ORBIT, INCLUDING THE TRACKING AND CALIBRATION FACILITIES, THE (HOUSE-KEEPING) TELEMETRY FACILITIES, THE COMMAND FACILITIES AND THE SPACECRAFT CONTROL CENTRE(S), AS WELL AS THESCORRESPONDING PART OF THE MANAGEMSNT.

(E) PROGRAMME MANAGEMENT
CERTAIN ADMINISTRATIVE COSTS ASSOCIATED WITH THE PERMANENT JOINT PROGRAMME OFFICE,

(F) OTHER EFFORTS
INCLUDES CERTAIN SPECIAL EFFOCTS IN SUPPORT OF ITEMS (A) THRU (D) AS DIRECTED BY THE AEROSAT COUNCIL.

4.2 COORDINATED PROGRAMME

IT IS SUGGESTED THAT THE COORDINATED PROGRAMME COVERS ATC GROUND FACILITIES, DEVELOPMENT OF AVIONICS, A SUITABLE NUMBER OF AIRCRAFT EQUIPPED FOR THE EXPERIMENTAL/PREOPERATIONAL PHASE AND EXPERIMENTAL EFFORT AND PROVISION FOR COMPANY OPERATIONAL COMMUNICATIONS AS APPROPRIATE.

EACH SET OF ATC GROUND FACILITIES IS SUPPOSED TOSCONPRISE THE FOLLOWING ELEMENTS:

(A) AERONAUTICAL SATELLITE COMMUNICATIONS CENTRE (ASCC)
TO PROVIDE THE COMMUNICATION CONTROL OF ALL SURVEILLANCE AND COMMUNICATIONS MESSAGES HANDLED BY THE SATELLITE SYSTEMS. THE ASCC SHALL PERFORM THE BASIC SURVEILLANCE COMPUTATIONS AS WELL ASIGENERAL COORDINATION AND DATA MANAGEMENT FOR THE GROUND SEGMENT.

(B) AERONAUTICAL SERVICES EARTH TERMINAL (ASET)
TO PERFORM TRANSMISSION AND RECEPTION OF ALL COMMUNICATIONS BETWEEN ASCC AND THE SPACE AND MOBILE SEGMENTS.

(C) AIR TRAFFIC CONTROL CENTRE(S) (ATCC)
TO PERFORM ATC FUNCTIONS AS FOLLOWS:

-INITIATE GROUND TO MOBILE ATC COMMUNICATION MESSAGES

- DETERMINE WHICH MOBILES WILL BE INTERROGATED FOR SURVEILLANCE AND/OR ATC COMMUNICATION PURPOSES AND HOW FREQUENTLY

-MONITOR THE POSITION OF ALL EQUPPED MOBILES WITHIN ITS CONTROL AREA

- RECEIVE MOBILE TO GROUND ATC - MESSAGES.

IT WAS AGREED THAT NOT MORE THAN 4 AERONAUTICAL SERVICES EARTH TERMINALS WOULD BE INITIALLY PERMITTED FOR EACH OF THE TWO OCEANS.

5. BASIC PRINCIPLE OF THE JOINT PROGRAMME

IT HAS BEEN AGREED THAT THE U.S. AND EUROPE WILL BE EQUAL PARTNERS IN THE JOINT PROGRAMME WITH EQUAL SHARING OF RESPONSIBILITIES, EXPENSES AND EFFORT, WHILE PROVIDING THE POSSIBILITY OF THE PARTICIPATION OF OTHER STATES.

6. INSTITUTIONAL ARRANGEMENTS

6.1 PARTICIPATION

STATES OR GROUPS OF STATES MAY BE PARTICIPANTS IN THE INTEGRATED AND/OR COORDINATED PORTIONS OF THE JOINT PROGRAMME. PARTICIPANTS IN OHE INTEGRATED PROGRAMME MAY BE "INITIAL PARTICIPANTS", RESULTING FROM BEING SIGNATORY TO THE INITIAL MEMORANDUM OF UNDERSTANDING, OR "SUBSEQUENT PARTICIPANTS" RESULTING FROM A DECISION TO SIGN THE M.O.U. AT A LATER DATE.

THE "INITIAL PARTICIPANTS" TO THE PROGRAMME WILL FULLY SUBSCRIBE TO THE SPECIFIED AERONAUTICAL COMMUNICATIONS AND SURVEILLANCE CAPABILITY, WITH US AND EUROPE ON AN EQUAL SHARE BASIS. INCLUSION OF "SUBSEQUENT PARTICIPANTS" WILL REDUCE THESE SHARES KEEPING THEM EQUAL.

THE ORGANISATIONAL STRUCTURE SHOWING THE RELATIONSHIPS OF INITIAL PARTICIPANTS IS PRESENTED IN SECTION 6.2. THE INCLUSION OF SUBSEQUENT PARTICIPANTS IS COVERED IN SECTION 6.3.

6.2 INITIAL PARTICIPANTS
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6.2.1 LEVEL 1 - STATES OR GROUPS OF STATES

THIS LEVEL CONSISTS OF THE STATES ORHGROUPS OF STATES PARTICIPATING IN THE JOINT PROGRAMME NAMELY:

(A) THE U.S.
(B) THE GROUP OF EUROPEAN STATES, MEMBERS OF ESRO OR ASSOCIATED TO IT
(C) OTHER STATES.

6.2.2 LEVEL 2 - SIGNATORY ORGANISATIONS

THIS LEVEL CONSISTS OF THOSE AGENCIEY OR ORGANISATIONS DESIGNATED BY THE GOVERNMENTS OF THE STATES OR GROUPS OF STATES MENTIONED IN LEVEL 1 AS BEING RESPONSUBLE FOR THE PROGRAMME AND TO BE THE SIGNATORIES TO THE NECESSARY ACRELMENT(S) ESTABLISHING THE PROGRAMME. THE SIGNATORY AGENCIES OR ORGANISATIONS WILL HAVE RESPONSIBILITIES AND AUTHORITY FOR FINANCIAL COMMITMENTS AND PROCUREMENT ACTIONS. THEY MUUT HAVE LEGAL PERSONALITY. THE FAA WILL FILL THIS ROLE FOR THE US; ESRO WILL BE NAMED BY THE PARTICIPATING EUROPEAN GOVERNMENTS. SIMILARLY, EACH GOVERNMENT OF OTHER INITIAL PARTIES (SEE (C) ABOVE) WILL DESIGNATE A SIGNATORY AGENCY.

THE RESPONSIBLE ORGANISATIONS AT THIS LEVEL WILL SIGN A MEMORANDUM OF UNDERSTANDING WHICH ESTABLISHES THE JOINT PROGRAMME AND THE AEROSAT COUNCIL.

6.2.3 LEVEL 3 - AEROSAT COUNCIL

THE COUNCIL WILL DEFINE THE MAIN LINES OF THE PROGRAMME AND WILL BE THE CHIEF MANAGEMENT LEVEL FOR THE JOINT PROGRAMME. IT IS EXPECTED TO REPRESENT THE RANGE OF OPERATIONAL AND TECHNICAL INTERESTS OF THE PARTIES. IT WILL ESTABLISH SUCH RULES, REGULATIONS AND GUIDANCE FOR MANAGEMENT AND EXECUTION OF THE PROGRAMME AS NECESSARY.

THE COUNCIL WILL APPROVE THE RFP, REVIEW THE PROCUREMENT PROCEDURES, AND CONFIRM THE SELECTION OF THE AEROSAT CONTRACTOR.

THE COUNCIL WILL BE COMPOSED OF AN EQUAL NUMBER OF REPRESENTATIVES FROM THE STATES MENTIONED UNDER (A) AND (B) IN LEVEL 1 (US AND EUROPEAN GROUP) AND OF ONE MEMBER OF EACH OTHER STATE (C) PROVIDED IT MAKES AN APPROPRIATE FINANCIAL CONTRIBUTION (TO BE DEFINED) TO THE JOINT PROGRAMME. ALL ACTIONS OF THE COUNCIL MUST HAVE CONCURRANCE OF AT LEAST THE TWO MAJOR INITIAL PARTIES.

THE COUNCIL IS EXPECTED TO MEET REGULARLY, AS REQUCRED.

THE AEROSAT COUNCIL WILL PROVIDE GUIDANCE AND INSTRUCTIONS TO THE JOINT PROGRAMME OFFICE THROUGH THE JOINT PROGRAMME DIRECTOR WHO WILL ACT AS SECRETARIAT OF THE COUNCIL.-

6.2.4 LEVEL 4 - JOINT PROGRAMME OFFICE

1. THE JOINT PROGRAM OFFICE WILL BE ESTABLISHED AND DIRECTED BY THE AEROSAT COUNCIL AS ITS EXECUTIVE AGENT. THE JPO IS A PERMANENT FULL-TIME ORGANISATION MANNED BY PERSONNEL MADE AVAILABLE BY FAA, ESRO AND OTHER PARTICIPANTS.

2. THE AEROSAT COUNCIL WILL ASSIGN THE FOLLOWING DUTIES TO JPO:

A) DAY TO DAY COORDINATION AND DIRECTION OF THE PREOPERATIONAL AERONAUTICAL SATELLITE PROGRAM, ANALYSIS AND REVIEW OF PROBLEMS AND SUBMISSION AS REQUIRED AND RECOMMENDATIONS TO AEROSAT COUNCIL,

B) MANAGEMENT RESPONSIBILITIES UNDER THE INTEGRATED PROGRAMME, INCLUDING :
- PROVISION OF PRIMARY LIAISON WITH AEROSAT CONTRACTOR,
-INITIATE ALL ACTIONS REQUICED TO MONITOR CONTRACTOR'S EFFORTS,
-ESTABLISH CONTRACTOR COMPLIANCE ACTIVITIES,
-DEVELOP PROCEDURES FOR DESIGN REVIEW, AND QUALIFICATION/ACCEPTANCE TESTS,
-PROVIDE LAUNCH LIAISON WITH NASAA,

(C) COORDINATION OF ALL EFFORTS BY THE VARIOUS PARTICIPANTS UNDER THE COORDINATED PROGRAMME, INCLUDING:N
-ESTABLISH COMPATIBILITY REQUIREMENTS (INTERFACE)
-VERIFY COMPATIBILITY AS REQUIRED,
-MONITORING OF PROGRESS OF COORDINATED EFFORTS,

(D) COORDINATION OF ALL EXPERIMENTAL EFFORTS,

(E) INITIATION OF SPECIAL ACTIONS AS REQUIRED.

3. CONTRACTUAL INSTRUCTIONS FROM THE FAA AND ESRO TO THE AEROSJT CONTRACTOR WILL BE GIVEN BY THE RESPECTIVE AUTHORISED CONTRACT OFFICER OF THESE ORGANISATIONS, WHO MAY BE PHYSICALLY LOCATED WITHIN THE JPO, IT BEING UNDERSTOBD THAT, IN ADDITION TO REQUISITE INTERNAL AUTHORISATIONS, THEY WILL ACT ONLY IN CONSULTATION WITH THE JPO.

4. THE JPO WILL BE HEADED BY A JOINT PROGRAMME DIRECTOR WHO WILL BE APPOINTED BY AND REPORT TO THE AEROSAT COUNCIL. THE JOINT PROGRAMME DIRECTOR IS EX-OFFICIO EXECUTIVE SECRETARY OF THE AEROFAT COUNCIL.

5. THE SALARIES OF THE JPO PERSONNEL WILL BE PAID BY THEIR PARENT ORGANISATIONS. ADMINISTRATIVE AND RUNNING EXPENSES (INCLUDING TRAVEL AND OFFICE SPACE) WILL BE

6. THE JPO WILL BE SUPPORTED BY FAA, ESRO AND OTHER ORGANISATIONS AS REQUIRED.

6.2.5 LEVEL 5 : AEROSAT CONTRACTOR

IT IS EXPECTED THAT FAA AND ESRO WILL ISSUE TWO SEPARATE CONTRACTS TO A SINGLE PRIME CONTRACTOR (SECTION 9 - PROCUREMENT). THIS PRIME CONTRACTOR MAY BE AN EXISTING COMPANY OR ORGANISATION OR ONE NEWLY FORMED FOR THAT PURPOSE. THESE ARRANGEMENTS WILL NOT PREVENT THIRD PARTIES FROM CONTRIBUTING TO THE FUNDING NOR PREJUDGE THE MANNER IN WHICH THIS FUNDING WILL BESEFFECTED.
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6.3 SUBSEQUENT PARTICIPANTS

OTHER STATES READY TO MAKE APPROPRIATE FINANCIAL CONTRIBUTIONS THROUGH AN ACCESSION PROCEDURE, PARTICIPATE IN THE JOINT PROGRAMME AS ARRANGED BY THE AEROSAT COUNCIL. SUCH PARTICIPANTS WOULD HAVE REPRESENTATION ON THE AEROSAT COUNCIL AND THE SUBORDINATE BODIES, IN ACCORDANCE WITH CONDITIONS TO BE DETERMINED BY THE COUNCIL.

IF SUCH STATES PARTICIPATE IN THE COORDINATED PROGRAMME ONLY THEY MAY BE ACCORDED OBSERVER STATUS IN THE AEROSAT COUNCIL.

7. NUMBER OF SATELLITES AND LAUNCH SEQUENCE

TO MEET THE OBJECTIVES OF THE PRE-OPERATIONAL PROGRAMME, FOUR SATELLITES WILL BE DEPLOYED, TWO EACH OVER THE ATLANTIC AND PACIFIC OCEANS. THE SATELLITES WILL ALL BE OF THE SAME (OR ESSENTIALLY SAME) DESIGN. THE FIRST LAUNCH IS EXPECTED IN LATE 1974, WITH SUBSEQUENT SATELLITE CAPABILITY IN ORBIT TO BE ADDED IN ACCORDANCE WITH THE PRIORITY BELOW AND TIMED TB SATISFY THE SPECIFIC EXPERIEMENTS AND OBJECTIVES OF THE INTEGRATED AND COORDINATED PROGRAMMES (TO BE WORKED OUT IN THE NEXT FEW MONTHS). IT IS ANTICIPATED THAT TWO SATELLITES WILL BE AVAILABLE OVER THE PACIFIC BY THE END OF 1977.

PRIORITY	NO. OF SATELLITES	OCEAN
1	ONE	ATLANTIC
2	ONE	PACIFIC
3	TWO	ATLANTIC
4	TWO	PACIFIC

TO SATISFY THE ABOVE REQUIREMENTS AND ACCOUNT FOR LAUNCH OR INFLIGHT FAILURES, IT IS EXPECTED THAT SIX SATELLITES MUST BE BUILT AND SIX LAUNCHES PLANNED. THESE NUMBERS ARE THE BASIS OF THE COST ESTIMATES OF SEVTION 8.
R3. PROGRAMME COST

THE GROUP AGREED ON THE FOLLOWING BREAKDOWN OF ESTIMATED PROGRAMME COST.

A RANGE OF COST VALUES WAS CHOSEN FOR SOME ITEMS. IT IS EXPECTED THAT THE PROGRAMME COST SHOWN WILL BE AFFECTED BY PROGRAMME SCHEDULE AND LAUNCH SEQUENCE.

ESTIMATED PROGRAMME COST FOR FOUR-SATELLITE SYSTEM
(1971 PRICE LEVEL) IN MILLION $

DEVELOPMENT OF SPACECRAFT	30.0 - 40.0
6 FLIGHT SPACECRAFT AT 6.5 M	39.0
6 THOR - DELTA LAUNCHES AT 7.5 M.	45.0
2 TT&C STATIONS ACQUISITION	4.0 - 7.0
O&M FOR 2 TT&C STATIONS	5.5 - 6.5
JPO OPERATION FOR 5 YEARS (EXCLUSIVE OF SALARIES)	1.5 - 4.0
TOTAL	125.0 - 141.5

THE GROUP AGREED THAT THE PROGRAMME COST WILL BE QUALLY SHARED BETWEEN THE MAJOR PARTICIPANTS (EUROPE/US) FROM WHICH OTHER STATES' CONTRIBUTIONS WILL BE SUBTRACTED IN EQUAL AMOUNTS.

9. PROCUREMENT FOR THE INTEGRATED PROGRAMME

(A) FAA AND ESRO WILL AGREE UPON A COMMON SPECIFICATION INCLUDING DEFINITION OF THE SCOPE OF THE CONTRACT AND THE CONTRACTUAL CONDITIONS TO BE APPLIED.

(B) BASED ON THE COMMON SPECIFICATIONS, FAA AND ESRO WILL SIMULTANEOUSLY ISSUE EITHER A SINGLE RFP OR SEPARATE RFPS. THE SOURCE SELECTIONS WILL BE DONE IN COMMON (OR IN PARALLEL) AND A SINGLE PRIME CONTRACTOR CHOSEN WITH APPROVAL OF BOTH PARTIES.

(C) (ALTHOUGH IN NO DOUBT THAT THE PROCUREMENT MUST BE UNDERTAKEN UNDER INTERNATIONALLY COMPETITIVE CONDITIONS, THE ICAWG WAS UNABLE TO REACH A FINAL AGREEMENT ON THIS POINT; ON THE ONE HAND, THE EUROPEAN PARTY REQUSSTED SOME ASSSURANCE OF PRODUCTION SHARING AND CONSIDERED THAT THE PRIOR ESTABLISHMENT OF SOME BASIC PRINCIPLES GOVERNING THE CONSTITUTION OF INDUSTRIAL CONSORTIA WAS NOT INCOMPATIBLE WITH THE SPIRIT AND OBJECT OF COMPETITION. ON THE OTHER HAND THE US INSISTED ON THE NECESSITY FOR INTERNATIONAL COMPETITIVE BIDDING (ICB) DEVOID OF ANY AGREEMENT SPECIFYING A PRE-DETERMINEDSPERCENTAGE OF INDUSTRIAL CONTRACTS FOR EACH OF THE TWO MAJOR CONTRIBUTORS.)

(D) FAA AND ESRO WILL SUBSEQUENTLY SIGN SEPARATE CONTRACTS WITH THIS CHOSEN CONTRACTOR, EACH ACCORDING TO HIS OWN CONTRACTING CONDITIONS.

(E) FAA AND ESRO MAY ADDITIONALLY NEED TO SIGN AN APPROPRIATE AGREEMENT PROVIDING FOR [illegible] IN

AM TRANSMITTING THIS FOR YOUR INFORMATION. THORNELL HAS RESERVED ON THE MAJOR ISSUES. THE SITUATION IS AWKWARD SINCE THIS DOCUMENT WAS JOINTLY PREPARED BY U.S. DELEGATION AND EUROPEANS AND REPRESENTS AGREEMENT TO BE PRESENTED TO CONFERENCE TOMORROW. ANY COMMENTS YOU MAY HAVE OR THOSE OF WH WOULD BE APPRECIATED.

HILL

BT

NNNN

July 28, 1971
7:00 p.m.

The following telegram was read over the phone to Western Union for Jack Thornell, U.S. Delegation, aerosat conference, NATO. To be delivered by the American Embassy, Paris, before 8:00 a.m. their time Thurs. 7/29/71.

We seem to have continuing difficulties concerning the U.S. position for aerosat, some of which are largely semantic. Following your conversation with me and Nelson's conversation with Rein, I have once again spoken with Rein with the following results.

We must recognize the possibility, and probability if the institutional arrangements are permissive, of the private sector at their own risk orbiting a system with capacity in excess of that required for the joint FAA and ESRO requirement. As a result, we must be clear in our own minds concerning exactly what we offer to the Europeans. Rein and I agree that the Europeans "can own" a specific number of channels or, alternately, a fixed percentage of channels out of the combined ESRO/FAA requirement. Rein makes a distinction between the word "own" and the phrase "IRU" which I do not fully understand. But, in any event, the distinction is minimal. In no case does it imply ownership of the corporation which places the satellite in orbit and operates it. Nor does it imply ownership of the satellite to an extent greater than the proportionate ratio of ESRO circuits to the total. The analogy with European ownership of circuits or IRU's in transatlantic cables is perhaps the best guidelines which I can extend. 50% ownership of the enterprise or 50% ownership of the satellite with no consideration of the number of circuits contained in the satellite will ~~will~~ cause great problems.

I have attempted to reach Jack Shaffer and Lundquist to meet with Rein and myself, but both are out of the city and I am not certain when they can be reached. Until they can be reached, I trust the U.S. delegation will exercise appropriate care in the definition and presentation of the U.S. position.

Have just spoken to Rein again and he informs me the distinction between IRU and "ownership" is that ownership implies an initial one-time capital investment; whereas, IRU implies annual payment similar to lease payments.

George F. Mansur

Dr. Morgan
Aeronat

JUL 23 1971

The Honorable Dean Burch
Commissioner
Federal Communications Commission
Washington, D. C. 20554

Dear Mr. Chairman:

This is in reply to your letter of the 19th concerning the proposed program to establish a pre-operational satellite facility for international aeronautical services.

Until the present week, the U. S. executive agencies involved had not established the various options with sufficient clarity to enable fruitful consultation with the Commission. Yesterday a meeting was held with representatives of all the executive agencies involved and members of your staff, including the Deputy Chief of your Common Carrier Bureau.

I understand that no overriding regulatory difficulties were found to be contained in the present proposals. It was agreed that a small working group would hold further discussions with Commission staff to specify in greater detail and resolve in advance the problems that may be involved.

I appreciate the concern expressed in your letter to facilitate this important project. I recognize the need to keep the Commission fully advised, and assure you that we will maintain the closest cooperation.

Sincerely,

/s/
Clay T. Whitehead

AScalia:hmy
7-23-71
cc: Mr. Whitehead
Subj File
Chron File

FEDERAL COMMUNICATIONS COMMISSION

WASHINGTON, D. C. 20554

July 19, 1971

IN REPLY REFER TO:

9540

Honorable Clay T. Whitehead, Director
Office of Telecommunications Policy
1800 G Street, N.W.
Washington, D. C. 20504

Dear Mr. Whitehead:

This is in reference to the negotiations which are now under way looking toward a joint U.S.-European program to establish "pre-operational" communications satellite facilities for aeronautical services in both the Atlantic and Pacific Ocean areas. While the Commission has not been formally advised of the proposed joint program, members of the Commission's staff, subsequent to the first round of meetings with prospective foreign partners, have attended meetings of the U.S. Ad Hoc Group, chaired by Mr. Israel of the Federal Aviation Administration (F.A.A.), which is working on the program.

We wish to take this opportunity to indicate our interest in the program and to point out certain aspects which appear to involve the Commission's statutory responsibilities.

We appreciate that no final decisions have been taken concerning the proposed joint program and that many details concerning the undertaking have not been worked out. However, we understand it is contemplated that a Memorandum of Understanding would be concluded between the U.S. Government and participating European governments (represented by F.A.A. and the European Space Research Organization (ESRO), respectively), with possible initial or future participation by other governments; that appropriate joint bodies would be created to establish, control and operate the program; that F.A.A. and ESRO jointly would issue a request for proposals and choose a contractor (either a single entity or a consortium of entities from different countries); that ESRO would provide capital for and own its share of the joint enterprise; that the contractor would provide capital for and own the U.S. share and lease services to F.A.A. for a five year period (with at least the possibility that channels in the system might at some stage be

leased to Aeronautical Radio, Inc. and/or the international commercial airlines); and that the earth stations would be separately funded and procured (with F.A.A. either owning the U.S. earth stations or leasing them from a contractor).

The Commission has not, of course, reached any conclusions concerning this matter. However, as indicated above, based on our understanding of the outlines of the proposed joint international effort, we believe that several aspects of it are of direct concern to the Commission and may be subject to its jurisdiction under the Communications Act and/or the Communications Satellite Act. Any non-Government U.S. entity which would own and operate all or part of the U.S. share of the space segment and/or earth stations in the U.S. would, of course, have to be duly authorized by this Commission. Similarly, any related radio transmitters, including radar equipment used by U.S. registered non-government aircraft would require Commission authorization.

This in turn would raise questions such as how and by whom the U.S. entity or entities would be chosen 1/, which entities would be eligible, whether the activities of the entity or entities chosen would be those of a common carrier and whether there would be any problem under the antitrust laws. Further, since it is not contemplated that the proposed system would be part of the commercial satellite system envisaged by the Communications Satellite Act of 1962 (i.e., INTELSAT), it would appear necessary that, before a commitment is made to establish such a system, a finding should be made pursuant to Section 102(d) of the Satellite Act that the separate system is "required to meet unique government needs or ... otherwise required in the national interest". In view of the Commission's licensing and regulatory responsibilities, the need for frequency coordination, the relationships of the proposed aeronautical system to INTELSAT and questions concerning the role of the Communications Satellite Corporation and Aeronautical Radio, Inc., we believe the Commission must fully participate in any Section 102(d) determination, as well as in other facets of the project.

1/ There might be serious legal and policy questions if ESRO or any foreign governments were given a voice in choosing the entity which would own and operate the U.S. share of the system, as distinguished from the U.S. first choosing the entity to own and operate its share, and that entity then participating with ESRO (subject to appropriate U.S. government regulations) in establishing the system.

We consider it essential that consideration be given to the basic legal and policy questions before any final decisions are made concerning an aeronautical communications satellite system. We are aware of the importance of moving ahead with this project as rapidly as possible, and we will endeavor to cooperate with you and the other agencies involved to the maximum extent. In this connection, we would appreciate being kept fully informed concerning the program and receiving your views on the matters raised in this letter, in order to be in a position to act promptly on aspects of the program which may fall within our jurisdiction.

Sincerely yours,

Dean Burch
Chairman

cc:
Hon. John H. Shaffer
Federal Aviation Administration

Hon. Bertram W. Rein
Department of State

Donald I. Baker, Esq.
Department of Justice

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

OFFICE OF THE DIRECTOR

July 19, 1971

Scalia comments on the Dean Burch letter:

1. We should be flattered that this letter was addressed to us.

2. There is not, and never has been, any doubt that FCC approval would be necesary. But the power to say "yes" or "no" is quite different from the power of putting together the proposal. The latter should not be the FCC's perogative - but as I read their letter they are not asking that in so many words.

3. I suggest we take the last paragraph of the letter at face value, make a brief, polite reply saying that they have not been consulted before now only because the Executive's desires were not sufficiently concrete. We are now at a stage where we agree that consultation would be useful, and propose it take place at once.

4. By the way, it is the OTP's General Counsel's opinion that the Communications Satellite Act is not applicable. (This is not for inclusion in the letter mentioned above.)

cc: Mansur
Thornell
Scalia
Smith

Const.

JUL 1[illegible] 1971

Honorable Bertram Rein
Deputy Assistant Secretary for
Transportation and Telecommunications
Bureau of Economic Affairs
Department of State
Washington, D.C. 20520

Dear Bert:

Pursuant to our discussions this week on aeronautical satellites and our agreement on four basic issues of:

1. Program timing

2. Multiple user concept

3. Private ownership

4. Procurement,

the attached letter was sent to Mr. Jack Shaffer.

Sincerely,

Clay T. Whitehead

Enclosure

cys: Mr. Whitehead (2)
Dr. Mansur
Mr. Thornell's files

Aerosat

JUL 12 1976

Honorable Jack H. Shaffer
Administrator
Federal Aviation Administration
Department of Transportation
Washington, D.C. 20553

Dear Mr. Shaffer:

To clarify existing telecommunications policy and to incorporate other factors of national interest which affect the program, the following policy guidance is provided for formulation of a U.S. negotiating position for the forthcoming European meetings:

1. All activity should proceed forthrightly toward a decision in early August to proceed with a joint international program or an independent program during or immediately after the Madrid meetings.

2. The U.S. feels there must be a multiple user satellite communications system to provide those aeronautical communications services required by the FAA in the operational system. Since the pre-operational aeronautical satellite program is the first step toward the establishment of such a system and could establish many precedents, the institutional, technical and financial arrangements of a joint pre-operational international aerosat program should be consistent with this longer term goal. The possibility of a multiple user system in the pre-operational system should not be precluded until such time as it would cause significant delay in the aerosat program.

3. The policy of the U.S. is ownership of communications systems in the private sector; accordingly, the ownership of the U.S. portion of both the pre-operational and operational systems must be in the private sector. Although our foreign counterparts typically provide communications with government-owned systems, we should encourage the Europeans to adopt a private ownership approach for the aeronautical satellite program.

4. All procurements within a joint international aeronautical satellite program shall be international competitive bid.

This office supports a joint international program established under existing U.S. policy. This program can establish U.S. policy precedents in international communications programs that are important to U.S. Government and industry. Although we recognize the primary purpose and need for this program is aeronautical communication for air safety, the negotiations and any resulting joint program should atune with the sensitivities of issues broader than aeronautical satellites alone.

Sincerely,

Clay T. Whitehead

Mr. Thornell's files
Mr. Whitehead (2)
Dr. Mansur

cc: Bert Rein

OFFICE OF TELECOMMUNICATIONS POLICY
WASHINGTON

July 9, 1971

DIRECTOR

To: George Mansur
cc: Jack Thornell
From: Tom Whitehead

I think George should call Shaffer and massage him about this letter that is coming over. I am a little concerned that Shaffer is being fed by State to feel that OTP is trying to get too deeply involved in FAA business. If that exists, George, you should try to offset it. We ought to try to stress this is in FAA's interest and if you sense <u>any</u> reaction or any doubt in Shaffer's mind, you should suggest to Shaffer that if he has any doubts that this does represent guidance, he should call Peter Flanigan or Tom Whitehead.

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF TELECOMMUNICATIONS POLICY
WASHINGTON D.C. 20504

OFFICE OF THE DIRECTOR

DRAFT

Mr. John H. Shaffer
Administrator
Federal Aviation Administration
Washington, D.C.

Dear Mr. Shaffer:

I understand that the international aerosat meetings of June 15, 16, and 17 were conducted in a most cordial atmosphere and may represent a significant first step in an international cooperative activity leading to a world-wide satellite telecommunications system for civil aviation. In view of the subsequent meetings which are to be conducted in July and August, we believe it is necessary to formulate a unified Administration policy concerning the institutional and financial arrangements within which international participation may evolve.

Implicit in the Administration aeronautical satellite policy of January 7 are several principles: (1) Application of new technology developed by the Government shall transition to the private sector at such time as the technology becomes commercially mature and economically viable. (2) The Government shall lease communications services from the private sector whenever feasible and economically favorable. (3) The financial and institutional structure under which the FAA contracts ~~for~~ TO OBTAIN aeronautical satellite services ~~are obtained~~ must be consistent with orderly evolution of a public multiple user system. (4) The contract or contracts under which

these services are provided to the FAA shall be awarded through competitive bidding.

When considering the institutional and financial arrangements which are consistent with the principles expressed above, one must be careful to maintain a distinction between organizations which may directly provide leased services to the FAA and organizations which may provide system hardware. With this in mind we expect that a contract for aeronautical satellite services will be executed between the Government and a supplier of services on the basis of competitive bid, and subsequently the supplier of services may elect to obtain equipment from within his own organization or, alternately, subcontract for equipment from other organizations. Substantive restrictions concerning the source of equipment may unduly penalize the competitive posture of the service supplier and is inconsistent with the principles of competitive bidding.

Over the past several years the United States has experienced in NATO and INTELSAT a clear and determined European position of "production sharing" by predetermined formula in any international cooperative venture. This facet of the apparent European position will inevitably be the issue upon which this international cooperative venture will either fail or succeed. The U.S. has established a clear precedent not to enter into arrangements with any nation whereby predetermined "production sharing" by formula is a criterion for cooperation. The U.S. position is, in both NATO and in INTELSAT, that all procurements in international cooperative programs must be by International Competitive Bid (ICB) and we must carry this precedent through as a matter of consistent policy for the aeronautical satellite system.

Accordingly, we should encourage an international program based on the following guidelines:

1. The procurement document should specify performance

requirements (in contrast to equipment specifications) so as to provide sufficient flexibility to the service contractor to permit a system design which can evolve into a multiple user system.

2. The Government should promote international coordination of performance specifications and service requirements through a suitable advisory group composed of representatives of interested national administrations.

3. The FAA, or if you deem essential an appropriately constituted international entity with legal personality, shall award a contract, which may include only U.S. Government requirements or the combined requirements of the FAA and the international community, on the basis of international competitive bidding.

4. The Government can extend no guarantees concerning the sources from which equipment is procured, but is prepared to insert a clause in the procurement specifications which encourages international content and state that consideration will be given to the degree of international content offered by the bidder.

5. Although not a preferred approach, the Government is prepared to require the winning service contractor to establish a separate corporate entity whose ownership will be prescribed by investment in the Corporation on the basis of the extent of service utilization by all users.

The prerequisite to success in negotiations with the

Europeans for establishing an international cooperative program is to have a clearly visible and unified U.S. position that is both understood and supported by all affected agencies. Under the leadership of the FAA, and with the support of the participating agencies, we believe that this position can form the basis of a successful international cooperative program for aeronautical satellite services.

Sincerely,

George F. Mansur
Deputy D~~irector~~

Wednesday 7/7/71

MEETING
7/7/71
11 a.m.

9:50 The Flanigan/Rein meeting has been changed to 11 o'clock this morning (7/7).

MEETING
7/7/71
11:30 a.m.

Tuesday 7/6/71

4:30 Marge called to say they have tentatively scheduled the meeting for Rein and Flanigan for 11:30 a.m. tomorrow (Wednesday 7/7).

They will confirm tomorrow.

Flanigan/Rein

MEETING
Wk. of 7/6

Friday 7/2/71

4:55 Mr. Flanigan's office is planning to schedule a meeting the week of 7/6 with Bert Rein and Mr. Whitehead.

Tuesday 7/6/71 MEETING

10:50 Jack Thornell advises that the meeting with Rein and Flanigan should be scheduled tonight or early tomorrow -- so that Dr. Mansur can be notified and advised of the results.

His return arrangements are being made through London and would like to know the results of the meeting so he can plan either to talk to J. J. Robinson or come straight back. Would plan to leave Thursday morning (Geneva time) Wednesday night (our time).

Checked with Margo about when the meeting might be scheduled; he had been under the impression Dr. David was to be invited to the meeting -- and he is out of town. Told her that Tom was not of the impression that David was to be there -- so if they want to check it out and go ahead and schedule it, it would be helpful.

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

Date: July 6, 1971

Subject: Background and Information for Meeting with Flanigan and Rein

To: C. T. Whitehead

Subsequent to the release of the OTP Aerosat policy statement on January 7, 1971 and the National Program Guidelines of March 19, 1971, the FAA formed a nucleus of a program office and proceeded to prepare and release service specifications and RFP for those services. As early as mid-May the FAA plan was to release that RFP in late June or early July. In June three things occurred to slow progress on the program:

(1) The Secretary of State sent a memo to Secretary Volpe requesting that the Department of Transportation investigate international participation in the Aerosat program.

(2) Since no specific funds were required for FY 72 and leased services were to be specified, the DOT sent a memo to OMB requesting "approval in principle" of the Aerosat program. The response from OMB was, among other things, to investigate international financial participation.

(3) The Europeans requested and were granted a Ministerial level meeting in Washington on June 15 - 17. With the U.S. delegation operating under a position of "listen and don't talk" the Europeans went away with the attitude of having seen a weakened U.S. position on Aerosat.

The primary result of the June 15-17 meeting was to form an ad-hoc group to study and present alternatives for international cooperation to a reconvened Ministerial meeting on

Aug 3 - 5 in Madrid. It is with regard to the ad-hoc group meetings this summer and the Madrid meeting that differences of opinion have surfaced.

The summary of the OTP view is:

. The U.S. has clear policy guidance for these negotiations in the form of the OTP policy of Jan 7, OMB circular 76A, and precedent positions in INTELSAT and NATO, and that a clear U.S. position should be tabled at the first ad-hoc meeting in the Netherlands on July 15 - 17. By doing this, meaningful negotiations can take place and have the best chance of establishing a mutually beneficial international program at the Madrid meeting. The issues are neither new or unique and, in fact, are identical to those of INTELSAT and NATO. It is neither necessary or desirable to establish another forum for debate.

. The satellite communications services required for the program must be obtained from the private sector on a lease arrangement with the ownership of the system in the private sector.

. Aerosat represents a potential communications business expansion for a multiplicity of users, including the maritime interest, and that the institutional, financial, and technical arrangements should support a multiple user system but must not preclude such a system.

The Department of State contends that these meetings are "exploratory" and it will take a significant amount of time to negotiate a joint program after the Madrid meeting.

The DOS is opposed to support of a multiple user concept in the initial phase of the program because they view INTELSAT as the a-priori operational system service provider even though the exact wording of Article 1(k) of the INTELSAT Agreement precludes INTELSAT from providing such services.

The DOS views the procurement policies of INTELSAT as calling for production sharing. The wording of Article XIII of the Operating Agreement and Article 16 of the Agreement call for ICB with award based on price, quality, and delivery and with that being equal between more than one bidder, then consideration will be given to international content. We have no problem with the wording of INTELSAT procurement policy as a guide for the Aerosat program.

While OTP is opposed to establishing a formal "Steering Committee" of governments, the DOS supports such a committee. State views the program as requiring diplomatic negotiations and exchange of notes to establish an intergovernmental agreement for the international program, while OTP, based on precedents of NASA international programs, considers that FAA/ESRO agreements, coordinated with DOS, are the appropriate level.

The program office has firmly stated that unless they are directed otherwise, they intend to offer the Europeans production sharing guarantees for the return of their program investment to the European industry. This, coupled with the European view of "no exchange of funds" precludes competitive bidding.

The U.S. has a position of strength in this potential program but it seems that the DOT/FAA and DOS refuse to recognize and exploit that position in the best interest of U.S. Government and industry. The Europeans are gaining strength with time and unless the U.S. forces the issue, the Europeans will delay until the U.S. has completely lost the initiative and position of strength.

Jack M. Thornell

cc: G. F. Mansur

426-8552

Jon
temp dereg - Glauni/Scalia
regag filing lead agency
KSUP / tech cmte.

π ideas

911
aerosat

OFFICE OF TELECOMMUNICATIONS POLICY
WASHINGTON

June 17, 1971

MEMO TO: Tom Whitehead

Responses to the attached two letters are expected to bring into focus policy issues that need to be resolved with regard to the proposed introduction of airborne collision avoidance systems (CAS) into general operational use.

The CAS has been developed to function in a part of the spectrum heretofore assigned for military airborne radio altimeters. While development of the CAS has been expeditious, action by DOD to vacate the spectrum concerned has been delayed. The two systems are incompatible in the same operational environment, and since both involve safety-of-life, a hard decision has to be made soon.

As DOT (FAA), DOD, and FCC are all involved, this is a good illustration of why an OTP in the Executive Branch is necessary.

Bob Raish

L. R. Raish
Enclosures

cc: G. Mansur
w/Encls

Aeros-f

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

June 15, 1971

Honorable Robert H. Cannon, Jr.
Assistant Secretary of Transportation
for Systems Development and Technology
Department of Transportation
Washington, D.C. 20590

Dear Mr. Cannon:

Initiatives that began as far back as the mid-1950's have culminated in the development of an airborne collision avoidance system designed to operate on radio frequencies in the 1592.5-1622.5 MHz band. The number of mid-air collisions in recent years has increased interest in proceeding with the regular licensing of collision avoidance systems (CAS) for operational use.

Development of CAS in the 1592.5-1622.5 MHz band was authorized by the Federal Communications Commission (FCC) in early 1970. At the same time plans were made for radio altimeter functions then using the entire 1540-1660 MHz aeronautical radionavigation band to be limited to the 1600-1660 MHz portion of that band only and to be shifted eventually to the 4200-4400 MHz band. The same planning provided that no new altimeters would be authorized in either the 1540-1660 or 1600-1660 MHz bands after July 1, 1971, and those already authorized would be permitted to operate for an unspecified period, recognizing that a termination date for these devices would have to be established at some time. These actions were formalized as regards non-Government interests by an FCC Order released on June 12, 1970. Concurrence on the part of the Executive Branch agencies was obtained through coordination in the Interdepartment Radio Advisory Committee (IRAC) in May 1969.

While development of the CAS seems to have progressed satisfactorily, it became apparent several months ago that use of radio altimeters in the 1600-1660 MHz band might continue longer than originally expected, possibly for several years. Accordingly, in view of the safety of life considerations involved, the IRAC was requested in May 1970 to arrange an on-the-air test of CAS and radio altimeter devices to determine quantitatively the degree or likelihood of interference between the two systems. Initial reports from the aforementioned tests reveal unsafe

interference between the CAS and radio altimeters. Co-existence of these two systems under operational conditions in the same environment with their present technical characteristics pose what would appear to be unacceptable hazards.

Attached are reports from the Department of the Air Force and the Federal Aviation Administration that substantiate the interference problem. Further analytical data in corroboration of these two reports is understood to be in preparation at the DOD Electromagnetic Compatibility Analysis Center (ECAC) and is expected to be available shortly.

As can be seen, with two safety of life functions involved, critical decisions are needed soon with regard to timing of both the phasing out of the aforementioned altimeters and implementation of the new CAS.

To assist this Office in examining policy implications as regards the foregoing, information is requested and comments are invited as to (a) plans including target dates, if any, for the adoption of CAS for commercial and general aviation use; (b) the proposed method and responsibility for operation of CAS ground equipment; and (c) a target cut-off date for the removal of radio altimeter equipments from the 1600-1625 MHz band.

Sincerely,

L. R. Raish
Acting Director
Frequency Management

Enclosures

cc: Mr. D. L. Solomon
Acting Assistant to the
Secretary of Defense (Telecommunications)

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

June 15, 1971

Mr. David L. Solomon
Acting Assistant to the
Secretary of Defense (Tele-
communications)
Washington, D.C. 20301

Dear Mr. Solomon:

Initiatives that began as far back as the mid-1950's have culminated in the development of an airborne collision avoidance system designed to operate on radio frequencies in the 1592.5-1622.5 MHz band. The number of mid-air collisions in recent years has increased interest in proceeding with the regular licensing of collision avoidance systems (CAS) for operational use.

Development of CAS in the 1592.5-1622.5 MHz band was authorized by the Federal Communications Commission (FCC) in early 1970. At the same time plans were made for radio altimeter functions then using the entire 1540-1660 MHz aeronautical radionavigation band to be limited to the 1600-1660 MHz portion of that band only and to be shifted eventually to the 4200-4400 MHz band. The same planning provided that no new altimeters would be authorized in either the 1540-1660 or 1600-1660 MHz bands after July 1, 1971, and those already authorized would be permitted to operate for an unspecified period, recognizing that a termination date for these devices would have to be established at some time. These actions were formalized as regards non-Government interests by an FCC Order released on June 12, 1970. Concurrence on the part of the Executive Branch agencies was obtained through coordination in the Interdepartment Radio Advisory Committee (IRAC) in May 1969.

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interference between the CAS and radio altimeters. Co-existence of these two systems under operational conditions in the same environment with their present technical characteristics pose what would appear to be unacceptable hazards.

Attached are reports from the Department of the Air Force and the Federal Aviation Administration that substantiate the interference problem. Further analytical data in corroboration of these two reports is understood to be in preparation at the DOD Electromagnetic Compatibility Analysis Center (ECAC) and is expected to be available shortly.

As can be seen, with two safety of life functions involved, critical decisions are needed soon with regard to timing of both the phasing out of the aforementioned altimeters and implementation of the new CAS.

To assist this Office in examining policy implications with regard to the foregoing, information is requested and comments are invited as to plans for phasing out of DOD radio altimeter usage from the 1600-1660 MHz band and for the introduction of the CAS into operational usage aboard military aircraft.

Sincerely,

L. R. Raish
Acting Director
Frequency Management

Enclosures

cc: Hon. Robert H. Cannon, Jr.
Asst. Secretary of Transportation
for Systems Development & Technology

THE SECRETARY OF TRANSPORTATION
WASHINGTON, D.C. 20590

JUN 14 1971

Honorable William P. Rogers
Secretary of State
Washington, D.C. 20520

Dear Mr. Secretary:

I share your concern regarding the international aspects of aeronautical satellite services as expressed in your letter of June 4. We look forward to the June 15 - 17 exploratory talks with the Europeans and representatives of Canada, Japan, Australia, and the Philippines.

I am sure you are aware that in the development of the U.S. aeronautical satellite program, the Department of Transportation is being guided by the Policy Statement issued January 7, 1971, by the Office of Telecommunications Policy.

With warmest regards,

Sincerely,

/s/

John A. Volpe

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF MANAGEMENT AND BUDGET
WASHINGTON, D.C. 20503

(E)

JUN 11 1971

MEMORANDUM FOR HONORABLE JAMES M. BEGGS
Under Secretary of Transportation

Subject: DOT/FAA Aeronautical Satellite Program

We have reviewed your June 1, 1971, letter requesting OMB approval for a DOT/FAA program to establish oceanic satellite telecommunication services for air traffic control by 1980. My staff has conducted follow-up meetings with personnel from DOT/FAA, the Department of State, National Security Council, Office of Science and Technology, and the Office of Telecommunications Policy in order to understand the views of all agencies concerned with this project.

We share your belief that satellites provided through leased services are the best long-term solution to the problems presented by current communication limitations in the Atlantic and Pacific Oceans. We need to explore further, however, three areas of concern before release of an RFP.

(1) Development approach. Three questions concerning the satellite's development require discussion at the staff level:

- Why are two satellites rather than one required for pre-operational evaluation?

- Should the airlines, rather than the Government, fund the development of the avionics?

- Can NASA's Applications Technology Satellites (ATS-F, ATS-G), ground simulations, and Department of Defense experience with communication satellites be substituted for a dedicated development satellite?

(2) International co-operation. The staffs of the Department of State, National Security Council, and Office of Science and Technology see this program as an opportunity to further international co-operation in line with the President's overall objectives. We are sympathetic to this view and believe that the U.S. Government should fully explore the possibilities of making this an international project before we proceed unilaterally.

(3) Costs. More specific concepts of funding arrangements among DOT, the airlines, and other nations should be worked out before the issuance of an RFP in order to insure program commitment and continuation to prospective contractors. Concerning future year budget requirements, we assume that the aeronautical satellite has sufficient priority among the DOT/FAA programs that you are willing, if necessary, to reprogram funds in 1973 to accomodate future leased costs.

James L. Pollitzer for

Donald B. Rice
Assistant Director

July

You mentioned
you wanted to
talk to
Dr. Mason
about Sen Boggs' call

Aerosat

THE SECRETARY OF TRANSPORTATION
WASHINGTON, D.C. 20590

JUN 1 1971

Honorable George P. Shultz
Director
Office of Management and Budget
Washington, D. C. 20503

Dear George:

The purpose of this letter is to obtain your approval for a far-reaching proposal and plan aimed at providing improved and essential satellite telecommunication services for air transportation over the Pacific and Atlantic Oceans by the late 1970's.

On January 7, 1971, the Administration, through the Office of Telecommunications Policy, announced publicly its detailed policy in this field. The policy statement issued at that time made a number of fundamental points:

- The United States will promote deployment of pre-operational satellite telecommunications systems in the Pacific in 1973 and in the Atlantic in 1975 in order to meet the projected requirements in those areas for air traffic control and other air transportation purposes.

- The Department of Transportation (Federal Aviation Administration) will be the lead management agency and will assume management responsibility for the pre-operational and operational systems and services.

- Commercial telecommunications facilities and services will be employed to the maximum extent feasible in the pre-operational and operational system.

- The UHF frequency band (L-Band) will be used in both the pre-operational and operational systems.

- The system should be so designed as to satisfy both government and airline requirements in the Pacific and Atlantic oceanic areas in order to achieve maximum economies.

.. Experimental evaluation of independent surveillance by satellite should begin with an initial system deployed in the Pacific and should be followed by pre-operational evaluation for air traffic control purposes after 1975.

.. Through the Department of State, the Department of Transportation will seek international utilization of the pre-operational system and begin cooperative efforts with other nations to establish an operational system in both oceanic areas by 1980.

This statement of policy and planning assumptions was affirmed and elaborated upon in a letter dated March 19, 1971, from the Office of Telecommunications Policy to the Federal Aviation Administrator, Mr. Shaffer. That letter enclosed a document setting forth a proposed National Program on Satellite Telecommunications for International Civil Aviation Operations. The Department, through the FAA, has given priority attention to developing in more detail a plan to accomplish the objectives stated in these documents, with which the Department is in full accord. An action program has been prepared by the FAA which is consistent with the aims and time-table envisioned in the Administration's stated policy on satellite telecommunications.

A critical early step in this plan involves the issuance of a "Request for Proposals" (RFP) to prospective commercial suppliers of these services. It is our opinion that to meet the established timetable a contractor must be selected by about January 1972 and thus the RFP should be issued by July 1 of this year or soon thereafter. Some $2.7 million is included in the FAA's FY 1972 budget for research and development to cover the first year's commitment under the prospective contract as well as other related projects. The contract will be for satellite voice and data link services over the period of approximately 1974-1980. The first year's costs in FY 1972 will depend upon the phasing of the lease payments and could range from a nominal sum to a few million dollars.

It is estimated that the total costs of the pre-operational leased services to 1980 will not exceed $100 million for the Pacific and $75 million for the Atlantic. The U. S. Government's share could be considerably less depending upon arrangements reached with the air carriers involved and with other nations who now share in

providing oceanic air traffic control services. It is intended that the U. S. Government's share of the lease costs for this service will be paid in large measure by the air carriers through user charges paid into the Airport/Airway Trust Fund for airways system costs and partly through normal user charges for communication services which are primarily for the airlines' own operational purposes.

The approval of OMB of the general thrust of our plan will not only permit us to move ahead promptly with the issuance of a Request for Proposals but will also provide the basis for discussions with the many organizations, both private and governmental, and both domestic and international, who are involved in this endeavor.

The basic rationale for this national initiative has been set forth by the Office of Telecommunications Policy, but I believe it may be useful to set out here some of the basic considerations which are involved.

1. The capacity of the oceanic air traffic control service in the Atlantic and Pacific is approaching its limits in terms of the communications demands placed upon it. All projections of traffic indicate that the volume and density will significantly exceed the system's capability to handle it by 1980. Our most recent projections indicate that telecommunications limitations, inherent in the existing system, will become serious in the Pacific by about 1973 and in the Atlantic area by 1975.

2. Studies of available alternatives have all pointed to satellite voice and data link communications as the best -- if not the only -- means of achieving improvements in air traffic control service over the oceans. There is universal agreement that satellite communications will be essential to an operational system over both oceans by 1980.

3. This Department strongly concurs in the choice of L-Band frequencies for the aircraft/satellite link as being optimum for future development of oceanic air traffic control and communications systems.

4. Our best estimates of the total lease costs of an operational L-Band system indicate that they are reasonable in terms of the communications improvements

that will be achieved as compared with other alternatives, none of which appear to be operationally or technically as satisfactory or feasible.

5. In addition to the use of the system for telecommunications, a satellite service could provide an independent surveillance capability which may be desirable for both oceanic and domestic use. This possibility can be examined in detail during the early pre-operational phase of the proposed program.

6. To provide an improved international air traffic control capability by 1980 -- in both oceans and under ICAO agreements and standards -- will require a major effort. It will be necessary to negotiate these international agreements and standards beginning in about 1975. Moreover, avionics and ground system installations based on these standards should be started in 1977. Approval of the basic approach now is necessary if this schedule is to be met.

We should not underestimate the difficulties that must be overcome in sustaining U. S. initiative and leadership in this program. Many of the user airlines have reservations about moving forward now with an L-Band satellite system. This results in part from the premature investments which some have made in airborne VHF satellite communications equipment. They are also concerned that the total program has not been worked out and priced out in the detail that they would like to see. It is our judgment that this simply cannot be done until we have moved further into the pre-operational system.

In addition, the current view of most European countries is that aeronautical satellite services should be provided by government investment with an internationally owned and operated satellite. We believe that if we can establish at an early point the feasibility and desirability of the approach we are proposing in the Pacific area, these views can be changed. We do believe, however, that for the Atlantic pre-operational system, a mixed leased investment arrangement might turn out to be both feasible and desirable.

In any event, these problems and obstacles in our judgment are by no means insuperable. What we need, however, is a firm decision

to move forward and, most important, we must proceed rapidly with arrangements for leased services as we have described earlier.

The foregoing has been a very brief description of our proposal and the problems which we must address. We are enclosing a booklet that outlines in more detail the problem, our proposed solution, and our plan of action. It is, in all respects, consistent with the Administration's stated policy and the program as set forth by the Office of Telecommunications Policy. A decision is particularly urgent now as the countries of the Atlantic and Pacific oceanic areas are pressing strongly for early resolution of the issues. On June 15, 1971, as a result of arrangements made through the State Department, representatives of the European Space Research Organization (ESRO) and member States are meeting here in Washington to exchange views on issues relating to the aeronautical satellite program. To prepare for this conference, I believe it would be most useful to have a full exchange of views among representatives of this Department, the Department of State, the Office of Management and Budget, and the Office of Telecommunications Policy. We will be in touch with you to arrange such a meeting within a week if at all possible.

Meanwhile, we will provide your staff and that of the other agencies principally concerned with a full briefing on our proposals. I am sending a copy of this letter to the Department of State and the Office of Telecommunications Policy for their information and advice.

Sincerely,

Jim

Acting Secretary

Enclosures

cc:
Honorable U. Alexis Johnson
Under Secretary of State for
Political Affairs

Mr. Clay T. Whitehead
Director, Office of Telecommunications
Policy

AERONAUTICAL SATELLITE PROGRAM

1 JUNE 1971

OBJECTIVE

OBTAIN OMB APPROVAL FOR FAA TO UNDERTAKE A LONG-TERM LEASE FOR A SATELLITE VOICE AND DATA LINK SERVICE IN PACIFIC AS A PART OF A BROADER PROGRAM TO:

- DEVELOP AN IMPROVED OCEANIC ATC AND AIR TRANSPORTATION SYSTEM.
- INVESTIGATE INDEPENDENT SURVEILLANCE TECHNIQUES FOR APPLICATION TO OCEANIC AND CONUS ATC.

SUMMARY

1. IMPROVEMENTS IN OCEANIC ATC SYSTEM ARE NEEDED NOW; SYSTEM WILL BE BADLY DEFICIENT BY 1980 UNLESS IMPROVEMENTS ARE MADE.

2. KEY TO OCEANIC IMPROVEMENT PROGRAM IS USE OF SATELLITES FOR COMMUNICATION AND POSSIBLY SURVEILLANCE CAPABILITIES; ASSOCIATED INDEPENDENT SURVEILLANCE EXPERIMENTATION WILL CONTRIBUTE TO DEVELOPMENT OF IMPROVED CONUS ATC SYSTEM.

3. AN IMMEDIATE START AND EXPEDITED PROGRAM IS REQUIRED IF AN INTERNATIONALLY-APPROVED OPERATIONAL CAPABILITY IS TO BE AVAILABLE BY 1980.

4. OTP POLICY HAS ASSIGNED SATELLITE RESPONSIBILITY TO DOT/FAA, SUGGESTS PREOPERATIONAL CAPABILITIES IN PACIFIC (1973) AND ATLANTIC (1975), SPECIFIES USE OF L-BAND, AND ENDORSES USE OF COMMERCIAL LEASED SERVICE TO EXTENT POSSIBLE.

5. KEY FACTORS AFFECTING PROGRAM IMPLEMENTATION INCLUDE:

   - FUNDING
   - MILITARY PARTICIPATION
   - USER ATTITUDE
   - INSTITUTIONAL AND INTERNATIONAL ARRANGEMENTS
   - U.S. INITIATIVE

6. ON BALANCE, FAA RECOMMENDS THAT:

   A) OMB APPROVE A COURSE OF ACTION UNDER WHICH FAA WILL ISSUE AN RFP BY 1 JULY 1971 FOR THE COMMERCIAL LEASE OF A PACIFIC PREOPERATIONAL VOICE AND DATA LINK SERVICE, AND

   B) THAT THE UNITED STATES ENTER INTO EARLY DISCUSSIONS WITH INTERNATIONAL COMMUNITY ON ATLANTIC PREOPERATIONAL SERVICE AND FOLLOW-ON OPERATIONAL CAPABILITIES.

BRIEFING OUTLINE

- OCEANIC ATC
- SATELLITE PROGRAM
- IMPLEMENTATION CONSIDERATIONS

OCEANIC ATC

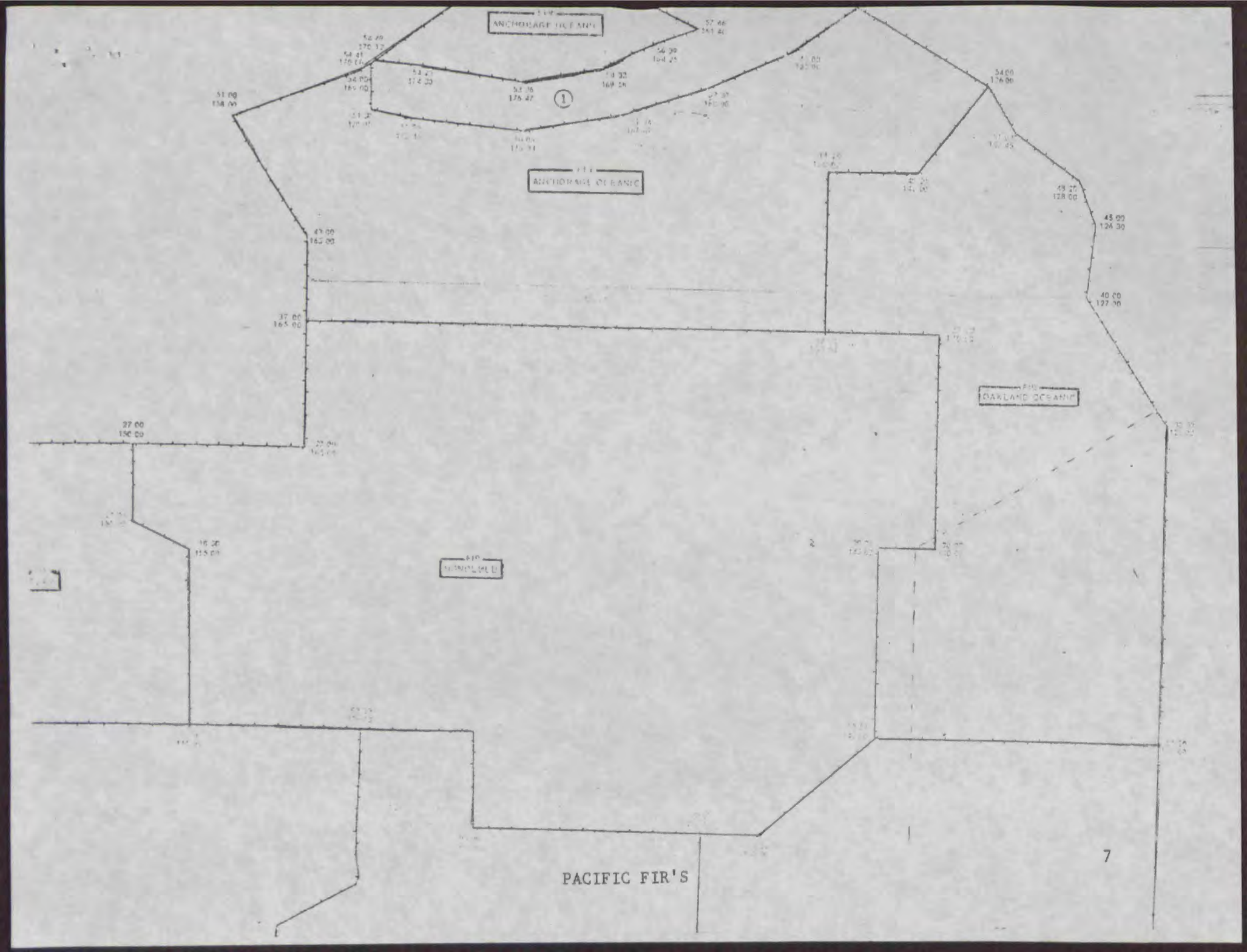
OCEANIC AIRSPACE

INTERNATIONAL (ICAO)

AIR TRAFFIC SERVICES PROVIDED THROUGH INTERNATIONAL AGREEMENTS AND STANDARDS

SYSTEM OF FIR'S

ATLANTIC FIR'S



PACIFIC FIR'S

ELEMENTS OF THE ATC SYSTEM

AIRCRAFT

NAVIGATION

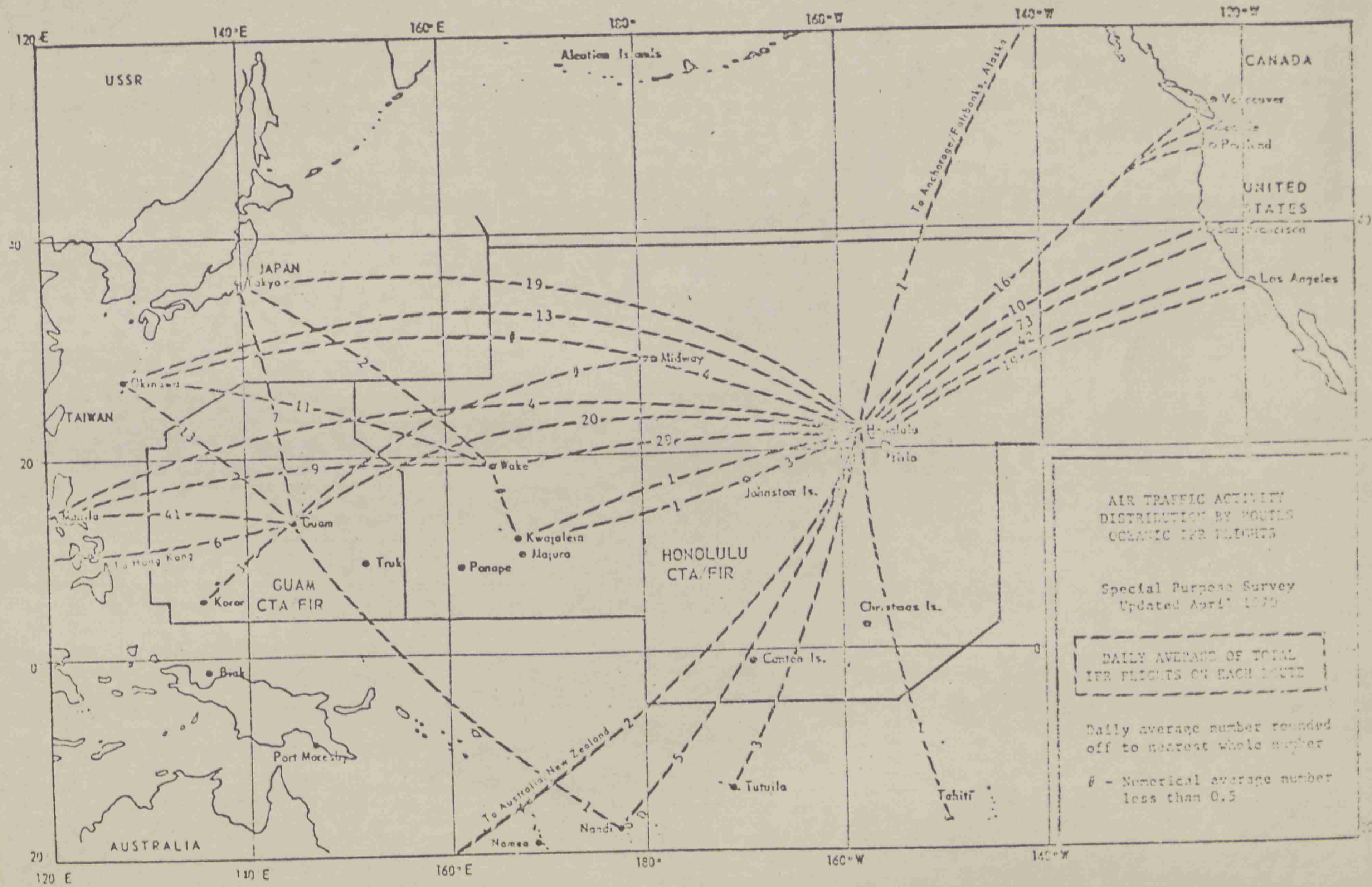
COMMUNICATIONS

SURVEILLANCE

ATC CENTERS

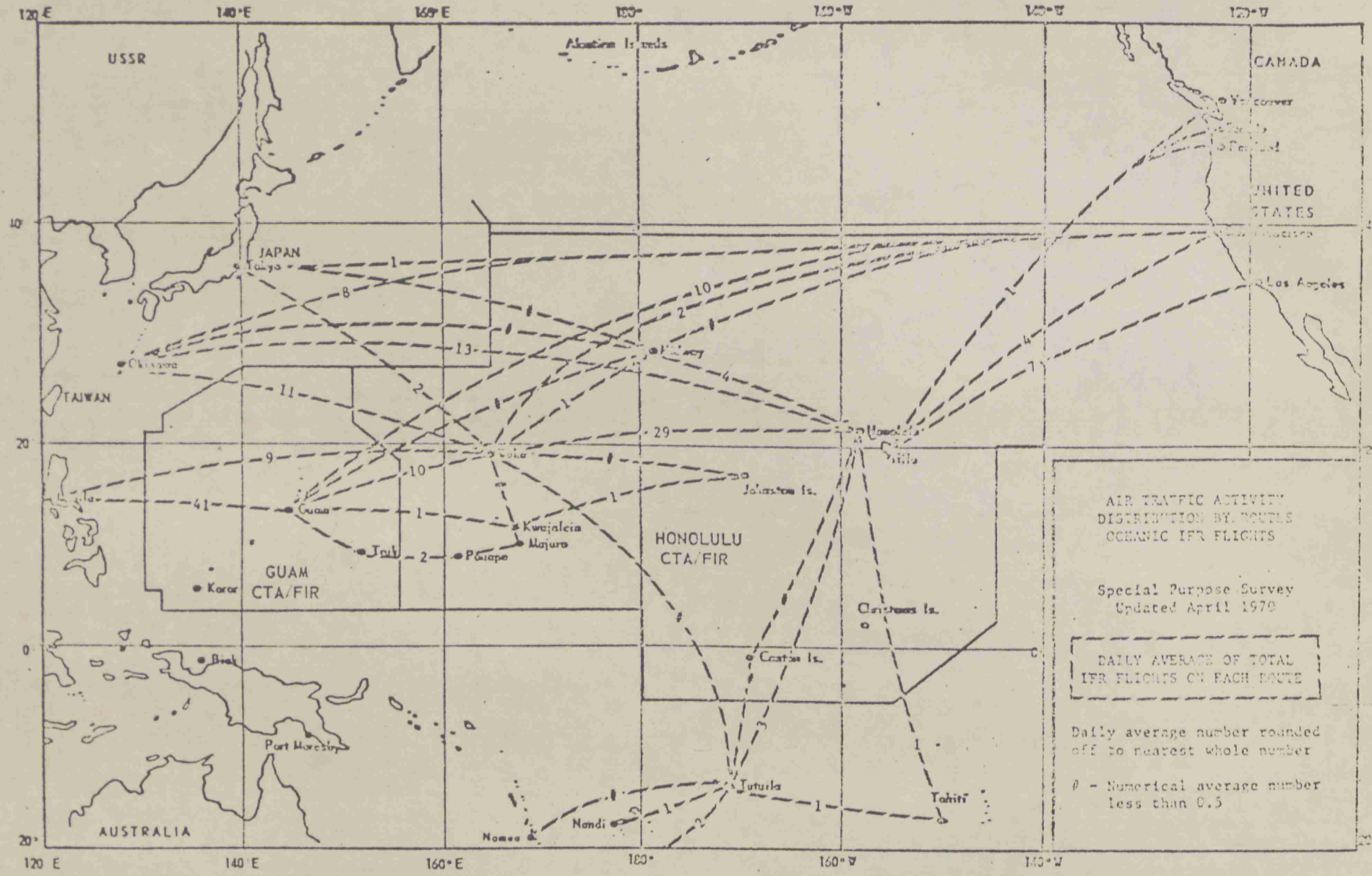
AIRCRAFT

- MOSTLY JET
- AIRSPEED 415 TO 485
- ALTITUDES 28,000 TO 39,000
- ABOUT 50% MIL. 50% CIV.



AIR TRAFFIC ACTIVITY
DISTRIBUTION BY ROUTES
OCEANIC IFR FLIGHTS
Special Purpose Survey
Updated April
DAILY AVERAGE OF TOTAL
IFR FLIGHTS ON EACH ROUTE
Daily average number rounded
off to nearest whole number
∅ - Numerical average number
less than 0.5
USSR
JAPAN
Tokyo
Okinawa
TAIWAN
Manila
To Hong Kong
Guam
Koror
GUAM
CTA FIR
Truk
Ponape
Wake
Kwajalein
Majuro
Midway
Aleutian Islands
Honolulu
Hilo
Johnston Is.
HONOLULU
CTA/FIR
Christmas Is.
Canton Is.
Tutuila
Tahiti
Nandi
Nomea
To Australia, New Zealand
To Anchorage/Fairbanks, Alaska
CANADA
Vancouver
Portland
UNITED
STATES
San Francisco
Los Angeles
Port Moresby
AUSTRALIA
120 E
140°E
160°E
180°
160°W
140°W
120°W

Source: FAA-1



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Source: FAA-1

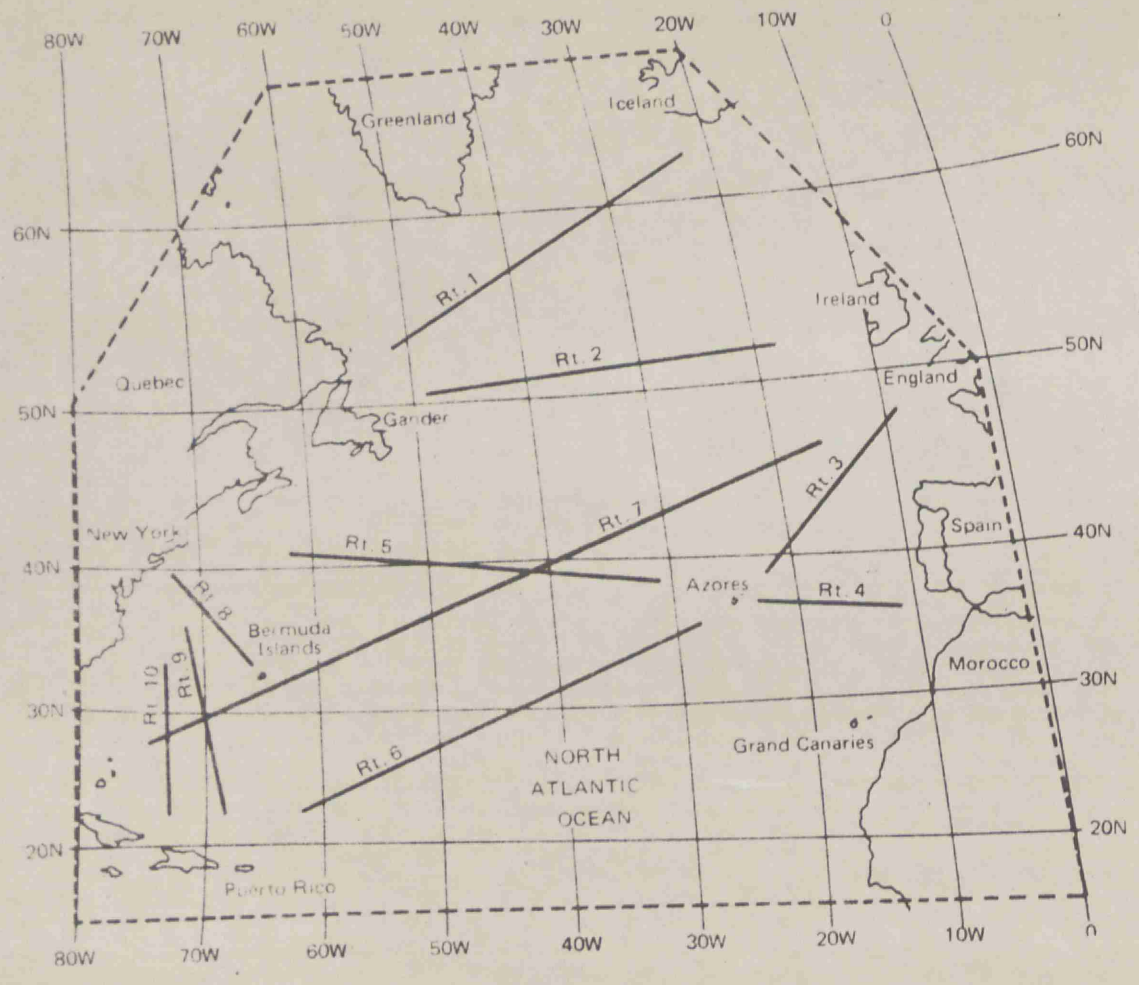
ESTIMATED PACIFIC OCEAN AIR TRAFFIC - 1970*

. AVERAGE FLIGHTS/DAY

	US FIR'S	OTHER FIR'S	TOTAL
MILITARY	245	80	325
CIVIL ON MIL. MISSION	90	50	140
CIVIL ON CIVIL MISSION	170	100	270
TOTAL	505	230	735

. CIVIL (ON CIVIL MISSION) FLIGHTS/WEEK 270 X 7 = 1890

*SOURCES FAA-1, FAA-4



Indicates area viewed by a two satellite system with one satellite at 20°W and one at 60°W

TRAFFIC BY ROUTE

Route	Number of Flights	Utilization (Percentage)
1	160	3
2	2900	47
3	60	1
4	120	2
5	625	10
6	175	3
7	57	1
8	~~346~~ 364	6
9	975	16
10	680	11
	6,116	

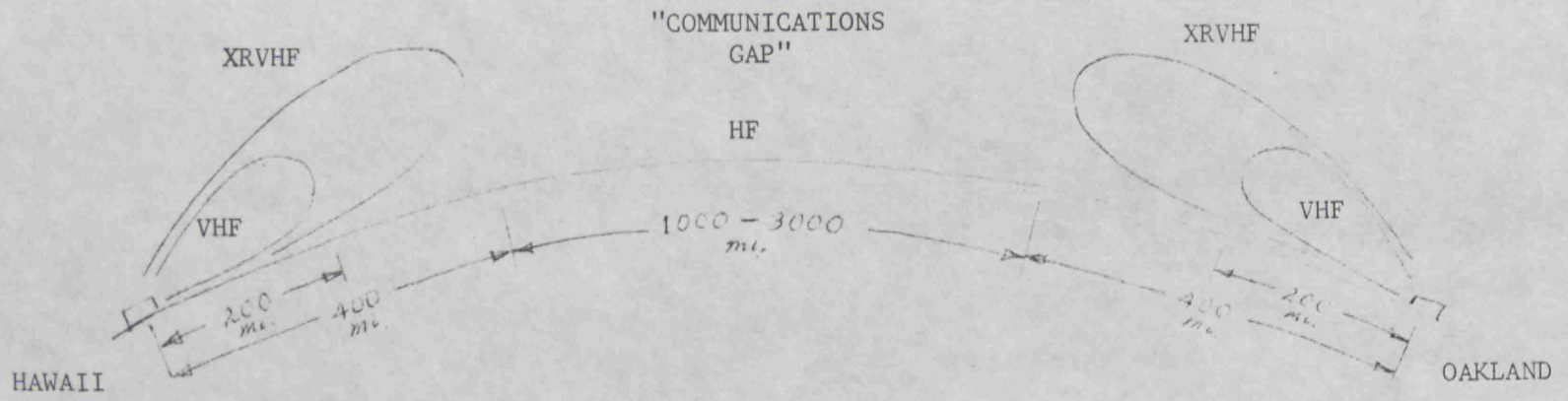
Main North Atlantic Routes, Flights Per Week
During Summer 1969

SOURCE: FAA-3

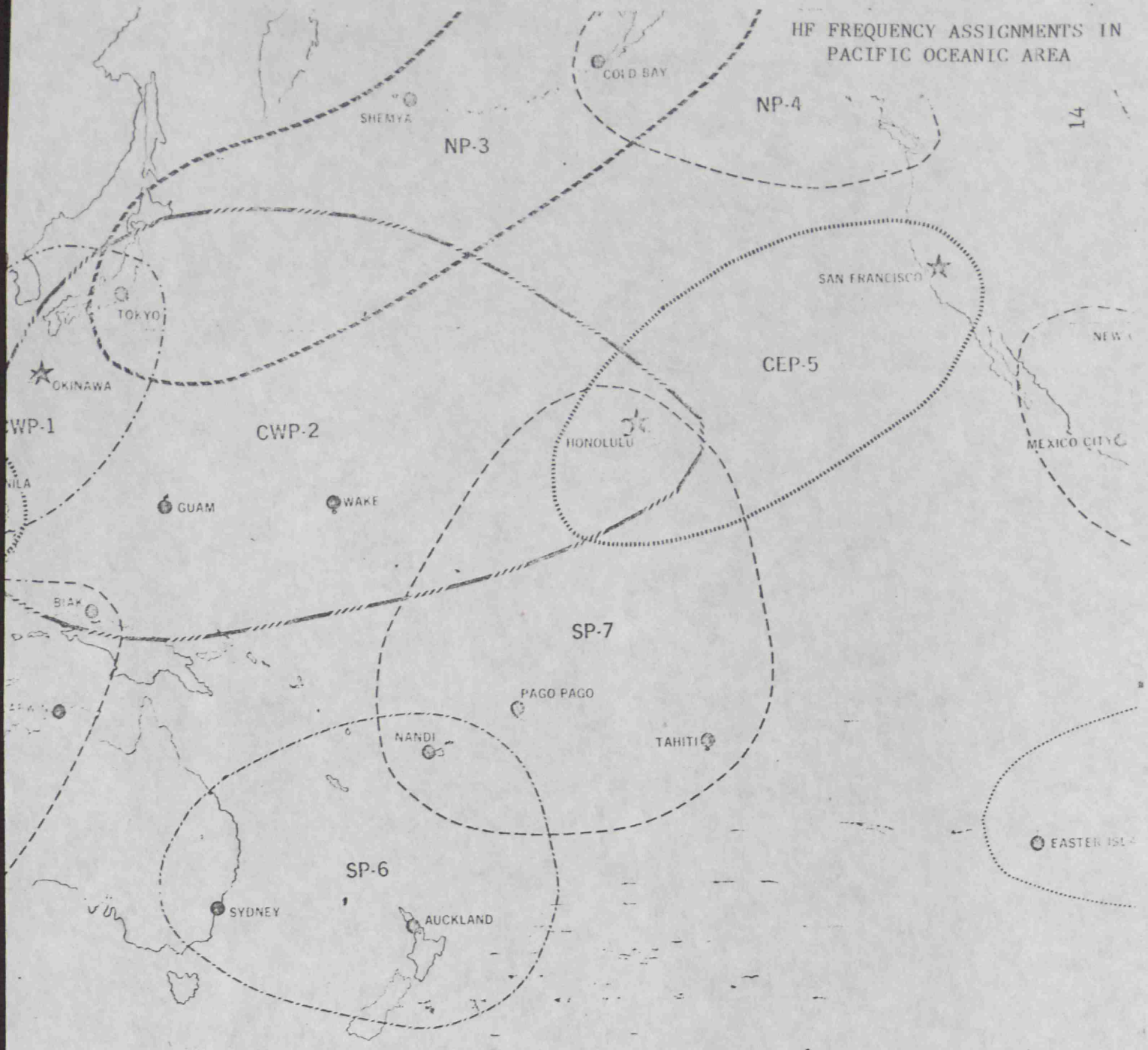
NAVIGATION

- CELESTIAL
- LORAN
- DOPPLER
- INERTIAL

PACIFIC COMMUNICATIONS



HF FREQUENCY ASSIGNMENTS IN PACIFIC OCEANIC AREA



BY ARINC

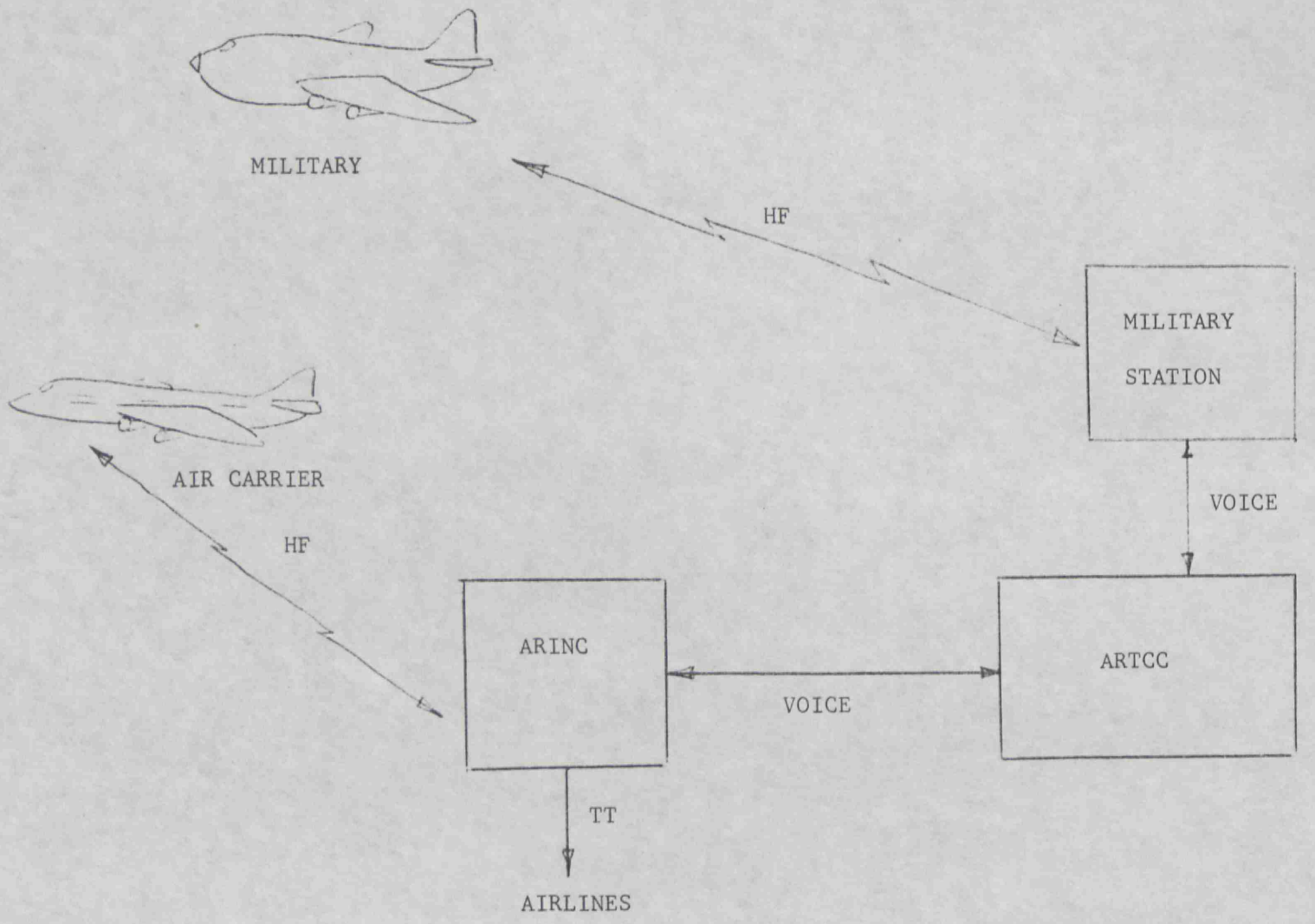
D BY OTHERS

* 3001 AND 13312 KHz IMPLEMENTED AT HONOLULU AND SAN FRANCISCO SEPT. 18, 1969 FOR USE IN THE CEP MWARA

FORMAL ICAO COORDINATION PENDING

NP-3&4	CEP-5	SP-6&7	NW & SW SAM	NE-SE-C SAM	SAT	W-CAR	E-CAR	NAT-A	NAT-B
2910	3467	2945	2889	2910	3432	2966	2952	2931	2987
5589	5554	5638	4696	5582	6610	5568	5484	5610	5673
8938	5603	8847	6666	8847	8882	6561	6540	8945	8889
13264	8875	13304	8826	11327	10049	6568	6568	13328	13288
17900	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	13336		17925	17925	17925	10017	11343		
	17909					13320	11367		
						17925	17925		

ARINC/MILITARY HF COMMUNICATIONS



ESTIMATED OCEANIC CIVIL AIRCRAFT COMMUNICATION LOADS - 1970*

AREA	INSTANTANEOUS AIRBORNE AIRCRAFT	COMMENT
CENTRAL EASTERN PACIFIC	75	SATURATING CURRENT HF
REMAINING PACIFIC	30	POOR HF PROPOGATION
PRINCIPAL ROUTES - NORTH ATLANTIC	110	REQUIRES NEW HF FAMILY
REMAINING NORTH ATLANTIC	110	EXTENDED RANGE VHF ASSISTS

* SOURCES: FAA-3, 4

(No Page 17, 18, 19)

SURVEILLANCE

CONUS - DIRECT RADAR/BEACON, UPDATED EVERY 10-15 SECONDS

OCEANIC - COMMUNICATION STATION RELAY OF PILOT POSITION REPORTS, EVERY 1° LONGITUDE OR APPROXIMATELY ONCE PER HOUR

SEPARATION STANDARDS

	OCEANIC NOW	OCEANIC RQMT. 1980*	CONUS ENROUTE RADAR
LATERAL	120 NM (100)[1] 60 WITH COMPOSITE[2]	30 NM	5 NM (10 NM ROUTE WIDTH)
LONGITUDINAL	30 MINUTES (15)[3]	5 MINUTES	5 NM [4]
ALTITUDE	1000' 2000' ABV FL290	1000' (DATE NOT ESTIMATED)	SAME

1/ 100 NM ROUTE WIDTH IN PAC

2/ COMPOSITE SEPARATION OF 1000' AND 60 NM ON ORGANIZED ROUTES (NAT ONLY)

3/ 15 MINUTES AUTHORIZED IN SPECIAL CASES (MACH)

4/ EQUIVALENT TO 40 SECONDS

* ASTRA PANEL

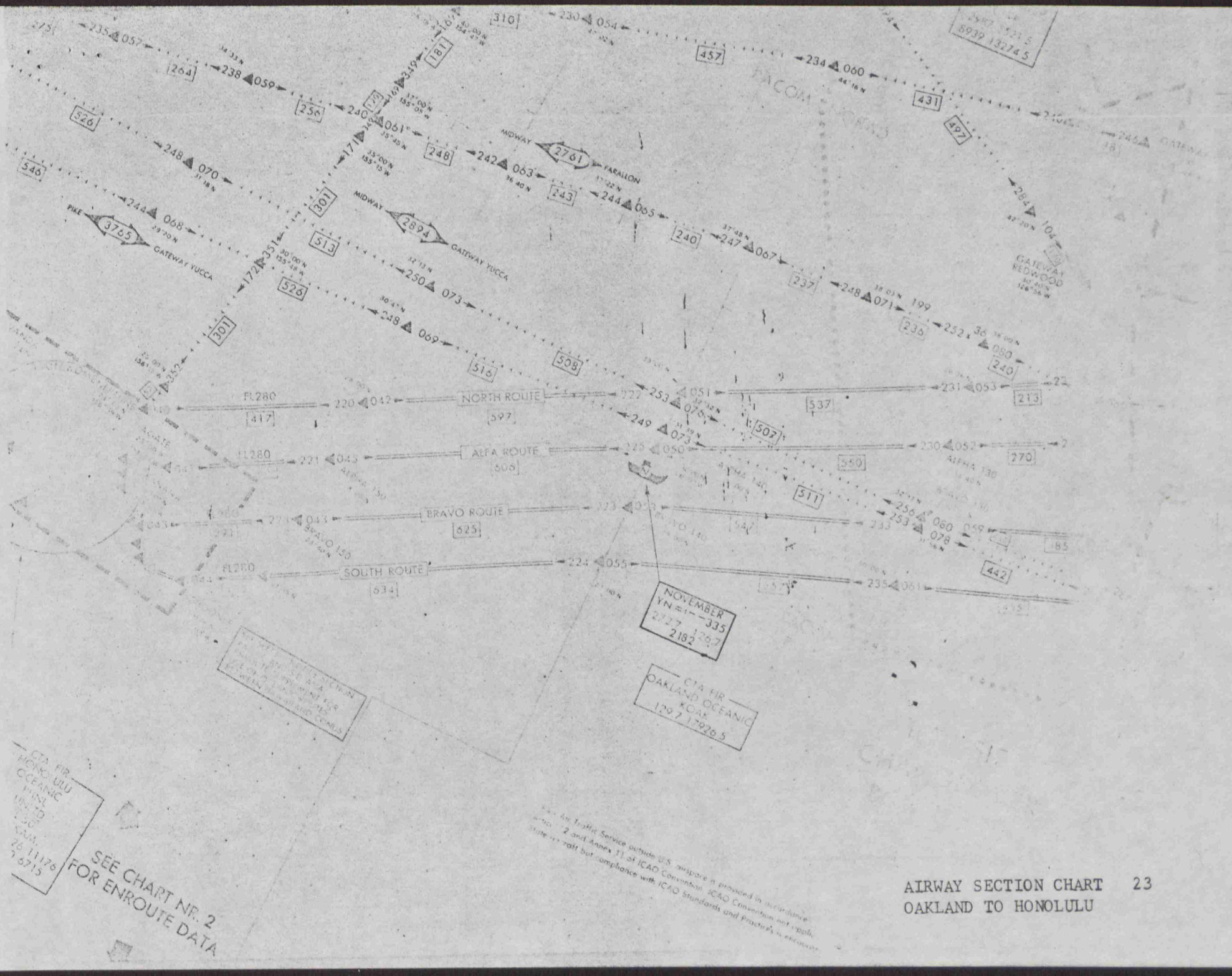
ATC CENTERS

DOMESTIC - PRIMARILY FIXED AIRWAYS

- PLAN POSITION RADAR/BEACON DISPLAYS
- FLIGHT STRIP BACKUP

OCEANIC - FEW FIXED TRACKS

- FLIGHT STRIP PRESENTATIONS ONLY



AIRWAY SECTION CHART 23
OAKLAND TO HONOLULU

OCEANIC SYSTEM PROBLEMS

1. LIMITED FLIGHT LEVELS AVAILABLE

2. LIMITED REROUTING AVAILABLE FOR ADVERSE WEATHER CONDITIONS

3. SURVEILLANCE LIMITATIONS REQUIRE LARGE SEPARATIONS AND RESTRICT AIRSPACE CAPACITY.

4. MANUAL HANDLING OF DATA PRONE TO ERRORS

5. COMMUNICATION RELIABILITY/DELAY/CONGESTION LIMITS CONTROLLER CAPACITY

6. DIFFICULTY OF HANDLING PREDETERMINED TRACKS AND CROSSING TRAFFIC

CIVIL AIR TRAFFIC IN PACIFIC

(thousands of flights)

YEAR	IGIA (1969)	PHILCO-FORD (1967) (Scheduled)
1972	96	91-95
1975	135	114-122
1980	179	144-158

(AN ESTIMATE FOR 1970 IS 100,000 FLIGHTS)

CIVIL AIR TRAFFIC IN NORTH ATLANTIC (PRINCIPAL AREA)

(thousands of flights)

		C,UK,US (1971)**			PHILCO-FORD (1967)
YEAR	ACTUAL*	SCHEDULED	OTHER*	IGIA (1969)	(SCHEDULED)
1969	110				
1972		101	32	123	80 - 88
1975		146	41	169	126 - 156
1980		242	56	261	193 - 226

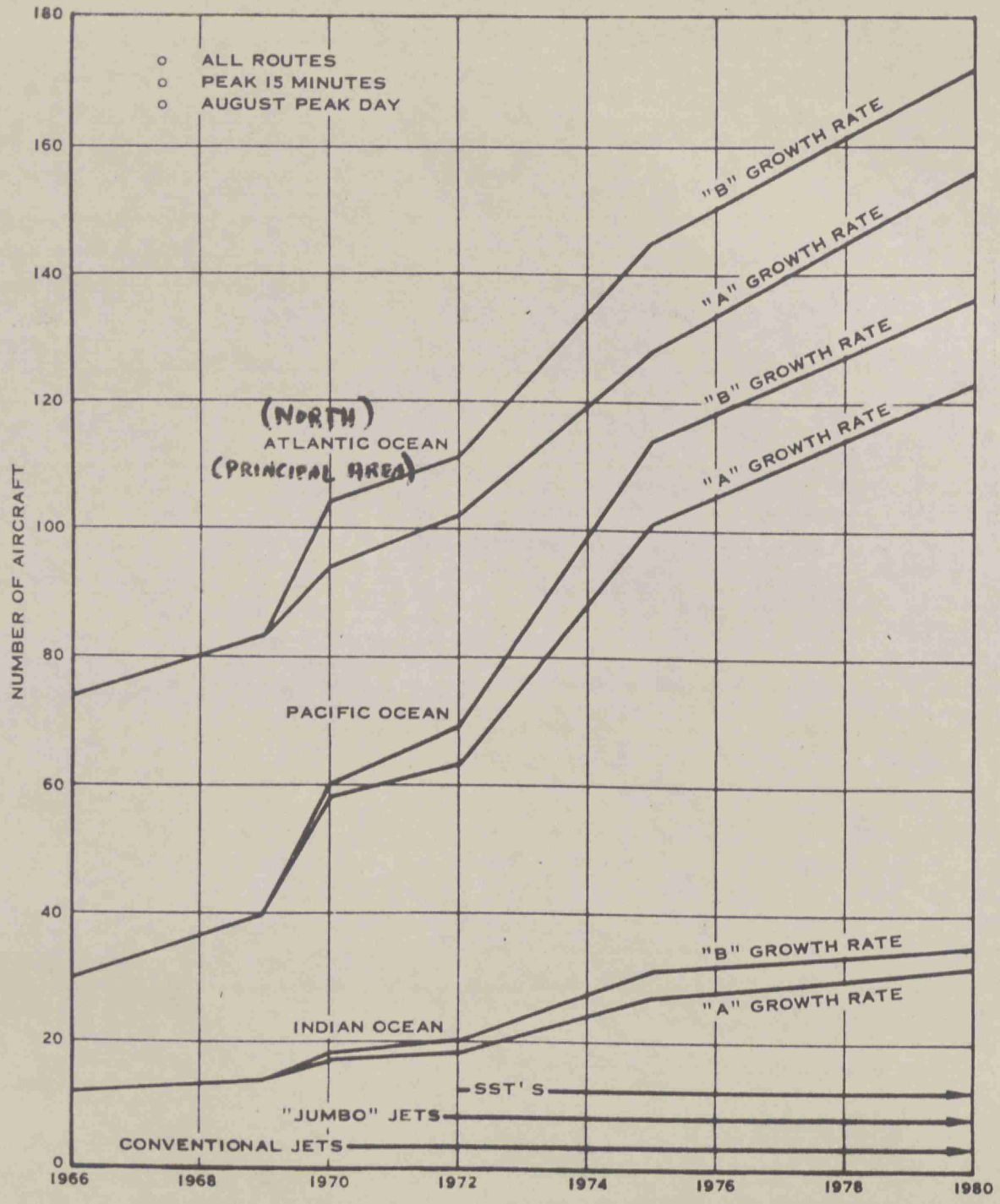
* INCLUDES SOME MILITARY ($\simeq$ 10%?)

** ADD 15% FOR ADJACENT FLOW

Table 2.2.7-6 Pacific Ocean Area
"A" Traffic Model
1966-1980 PART Scheduled Flights/Peak August Week

Year	FLTS/YR	% Increase Over 1966	Total Flts/Peak August Week	Conven Jets FPW	Elong Jets FPW	Jumbo Jets FPW	Concorde FPW	SST FPW
1966	46,100		900	900				
1967	51,200	11.1	996	887	109			
1968	57,300	24.1	1117	935	182			
1969	68,600	48.9	1340	1088	252			
1970	77,100	69.5	1525	1196	252	77		
1971	84,100	78.7	1608	1181	252	175		
1972	91,100	98.7	1788	1262	252	217	56	
1973	98,300	114.1	1927	1276	252	217	182	
1974	105,900	129.7	2067	1290	252	217	308	
1975	114,000	149.5	2245	1230	252	217	490	56
1976	118,000	156.0	2320	1053	252	217	616	182
1977	121,600	163.8	2370	977	252	217	616	308
1978	129,700	181.3	2530	955	252	217	616	490
1979	136,000	195.0	2638	937	252	217	616	616
1980	144,000	212.4	2814	987	252	217	616	742

Source : Philco Ford 1



Peak Instantaneous Number of Aircraft
(Scheduled) in the Communications Gap

SOURCE: Philco-Ford - 1

IMPACT

- INCREASINGLY DURING 1970'S, OCEANIC ATC SYSTEM DEMAND WILL EXCEED CAPACITY, RESULTING IN
  - FLOW CONTROL RESTRICTIONS
  - LESS PREFERABLE ROUTING AND ALTITUDES
  - DELAYS
- INCREASINGLY DURING 1970'S, COMMUNICATION SYSTEM WILL NOT SUPPORT AIR CARRIER REQUIREMENTS

ALTERNATIVES CONSIDERED

PROPOSAL	CONCLUSION
• NEW CONTROL CONCEPTS	UNACCEPTABLE IF ECONOMIC
• MORE COMMUNICATION CHANNELS	UNAVAILABLE
• SHIP PLATFORMS	EXPENSIVE
• OTH RADAR	NOT PROVEN
• INS RELAY TO ARTCC	REQUIRES SATELLITE RELAY
• AIR-AIR RELAY FOR COMMUNICATION	PARTIAL AND COMPLICATED
• DATA PROCESSING ASSISTANCE FOR DISPLAYS AND CONTROL	REQUIRES SATELLITE RELAY FOR DATA INPUT
• INDEPENDENT SURVEILLANCE	REQUIRES SATELLITE
• SATELLITE VOICE AND DATA RELAY	FEASIBLE

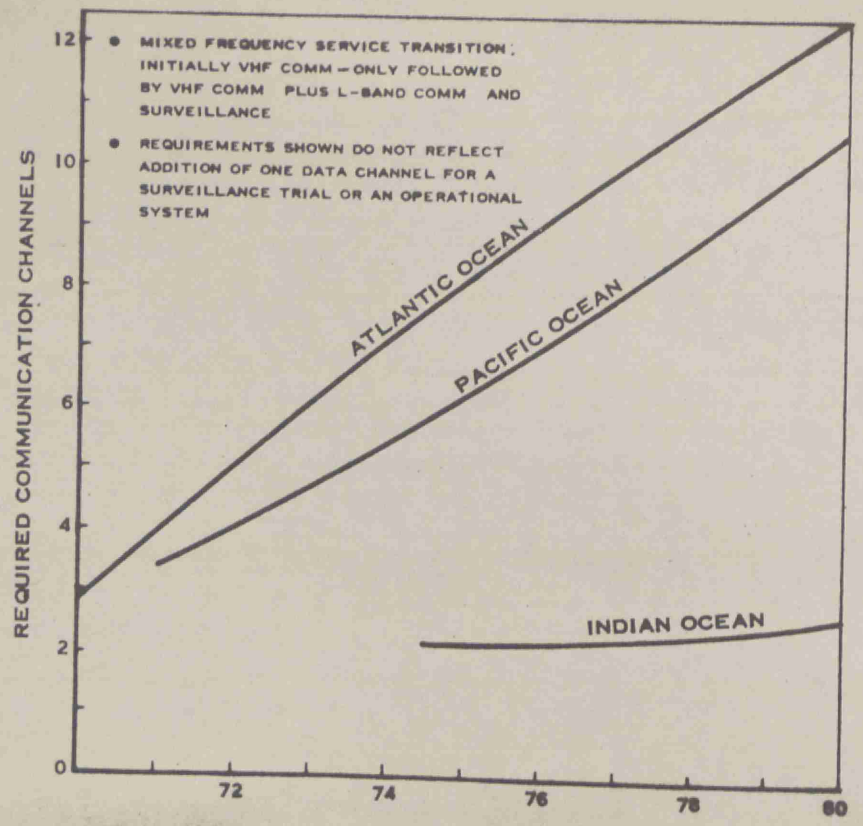
TECHNICAL CONCLUSIONS

NON-SATELLITE TECHNIQUES

- ADDITIONAL PROCEDURAL TECHNIQUES WITH MERIT EITHER HAVE BEEN ADOPTED OR REQUIRE ADDITIONAL COMMUNICATIONS AND SURVEILLANCE CAPABILITIES
- ALL OTHER TECHNIQUES FOUND UNACCEPTABLE (TECHNICALLY, OPERATIONALLY, OR ECONOMICALLY) OR ARE OF SHORT-TERM VALUE

SATELLITE WILL PROVIDE

- VOICE CHANNEL AUGMENTATION (ATC AND AIR CARRIER)
- PROVISION OF DATA LINK
- RELAY OF INS INFORMATION
- IMPLEMENTATION OF AUTOMATION
- EXPERIMENTATION/VERIFICATION OF INDEPENDENT SURVEILLANCE
- EXPERIMENTATION WITH IMPROVED NAVIGATION



Adjusted Analog Voice Communication Channel Requirements

SOURCE: Philco/Ford - 1

PROPOSED COURSE OF ACTION

AUGMENT CURRENT/PLANNED EXPERIMENTAL EFFORTS WITH A DEMONSTRATION/PREOPERATIONAL SATELLITE PROGRAM TO:

- VERIFY UNIFIED, OPERATIONAL SYSTEM DESIGN FOR INTERNATIONAL RATIFICATION
- DEMONSTRATE ACCEPTABLE OCEANIC COMMUNICATIONS/SURVEILLANCE CAPABILITIES
- TEST ALTERNATIVES FOR OCEANIC SURVEILLANCE (DEPENDENT/INDEPENDENT), DATA PROCESSING AND DISPLAY TECHNIQUES, ATC PROCEDURES
- OBTAIN EXPERIMENTAL DATA ON SATELLITE RANGING/POSITION-FIXING ACCURACY
- TEST VOICE INTELLIGIBILITY AND DATA ERROR RATE W/ALTERNATIVE MODULATION METHODS, POWER LEVELS, BEAMWIDTHS
- COMPLETE BASIC DATA ON SIGNAL CHARACTERISTICS AT L-BAND UNDER VARYING PROPAGATION CONDITIONS

AERONAUTICAL SATELLITE PROGRAM

BACKGROUND

1963 - ITU RESERVED PARTS OF SPECTRUM FOR AVIATION USE OF SPACE

1964-1967 - PAA/COMSAT/NASA/FAA EXPERIMENTATION WITH VHF AIR-GROUND COMMUNICATION VIA SYNCOM-3, ATA-1, ATS-3

1966 - FAA SUGGESTS USE OF SATELLITES AT ICAO COMM/OPS MEETING

1967 - COMSAT PROPOSED VHF SATELLITE COMMUNICATIONS OVER ATLANTIC

1968 - ESTABLISHMENT OF ASTRA PANEL

1969 - ARINC/COMSAT VHF PROPOSAL

1969-1970 - NASA/FAA EXPERIMENTATION WITH L-BAND VIA ATS-5

1969 - NASA-ESRO TALKS: INTEREST IN L-BAND

1970 - FAA/ATA/ARINC AGREEMENT ON HYBRID (VHF/L-BAND)

1970 - DOT/NASA DISCUSSIONS

1970 - COMSAT HYBRID PROPOSAL TO FAA AND ARINC

1971 - OTP POLICY STATEMENT

OTP POLICY AND PLAN

- ESTABLISHES BASIC PROGRAM AND SCHEDULE NEEDED TO EVOLVE A UNIFIED OPERATIONAL OCEANIC SYSTEM BY 1980
- ENCOURAGES INTERNATIONAL COORDINATION AND COOPERATION THROUGHOUT EXPERIMENTAL, TEST AND PRE-OPERATIONAL PHASES
- DESIGNATES DOT/FAA AS LEAD MANAGEMENT AGENCY
- DIRECTS MAXIMUM USE OF COMMERCIAL LEASED FACILITIES AND SERVICES
- IDENTIFIES OPERATIONAL PRIORITIES: IMPROVED AND EXPANDED VOICE/DATA, AUTOMATIC POSITION REPORTING, INDEPENDENT SURVEILLANCE
- PROMOTES USE OF L-BAND (1540-1660 MHz) FOR BOTH PRE-OPERATIONAL AND OPERATIONAL SATELLITE SYSTEMS (IN ACCORDANCE WITH U. S. PROPOSALS TO WARC, JUNE 71)

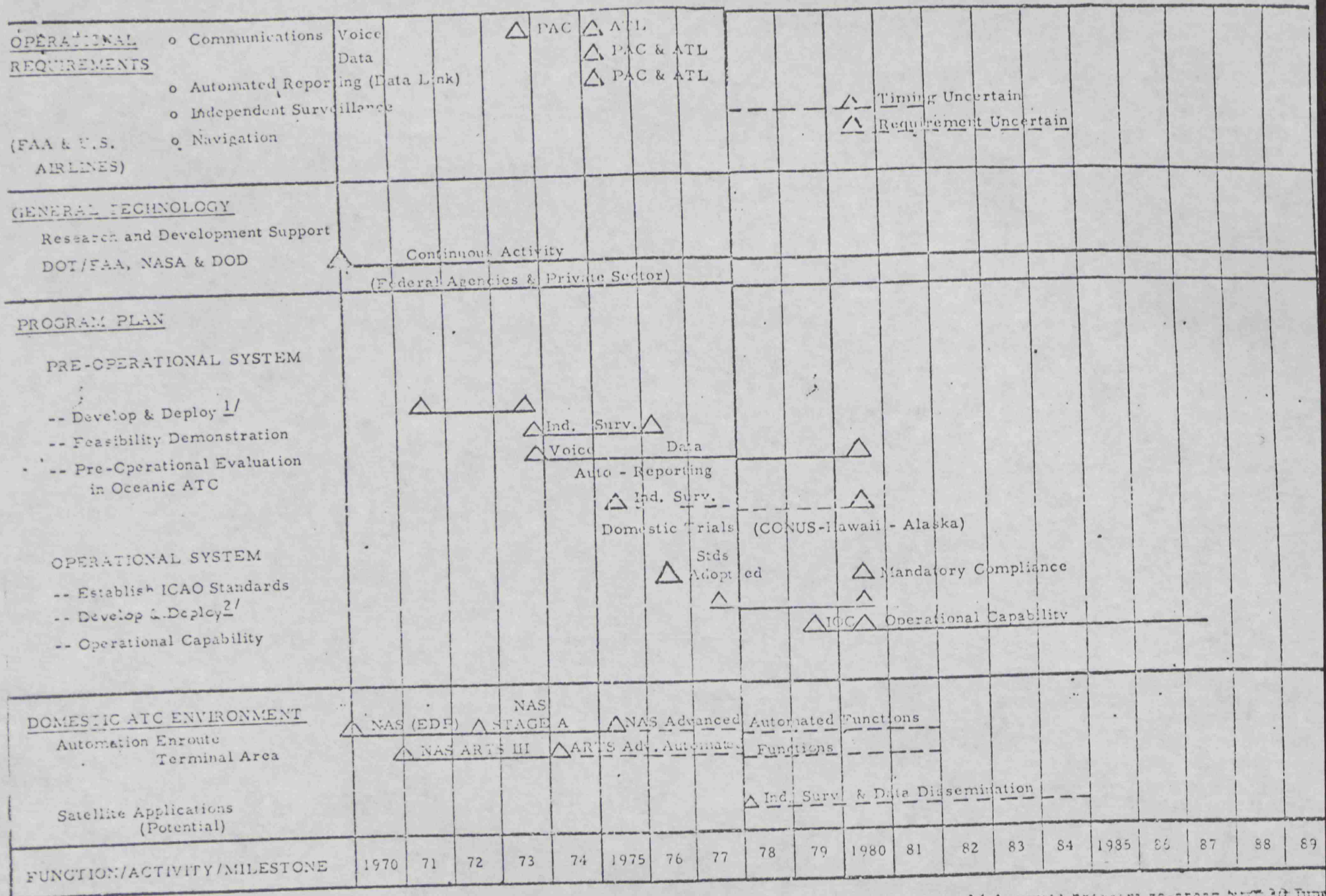
SYSTEM DEFINITIONS

PRE-OPERATIONAL SYSTEM:

- EMPHASIS ON PERFORMING BOTH TECHNICAL AND OPERATIONAL EVALUATIONS
- OPERATE IN PARALLEL WITH PRESENT SYSTEM
- VOLUNTARY AVIONICS

OPERATIONAL SYSTEM:

- PRIMARY OPERATIONAL SYSTEM AT GIVEN TIME IN GIVEN AREA
- MANDATORY AVIONICS



1/ Assumes program go-ahead NLT 30 June
2/ Assumes ICAO standards and program go-ahead NLT 30 June '77.

SCHEDULE CONSIDERATIONS

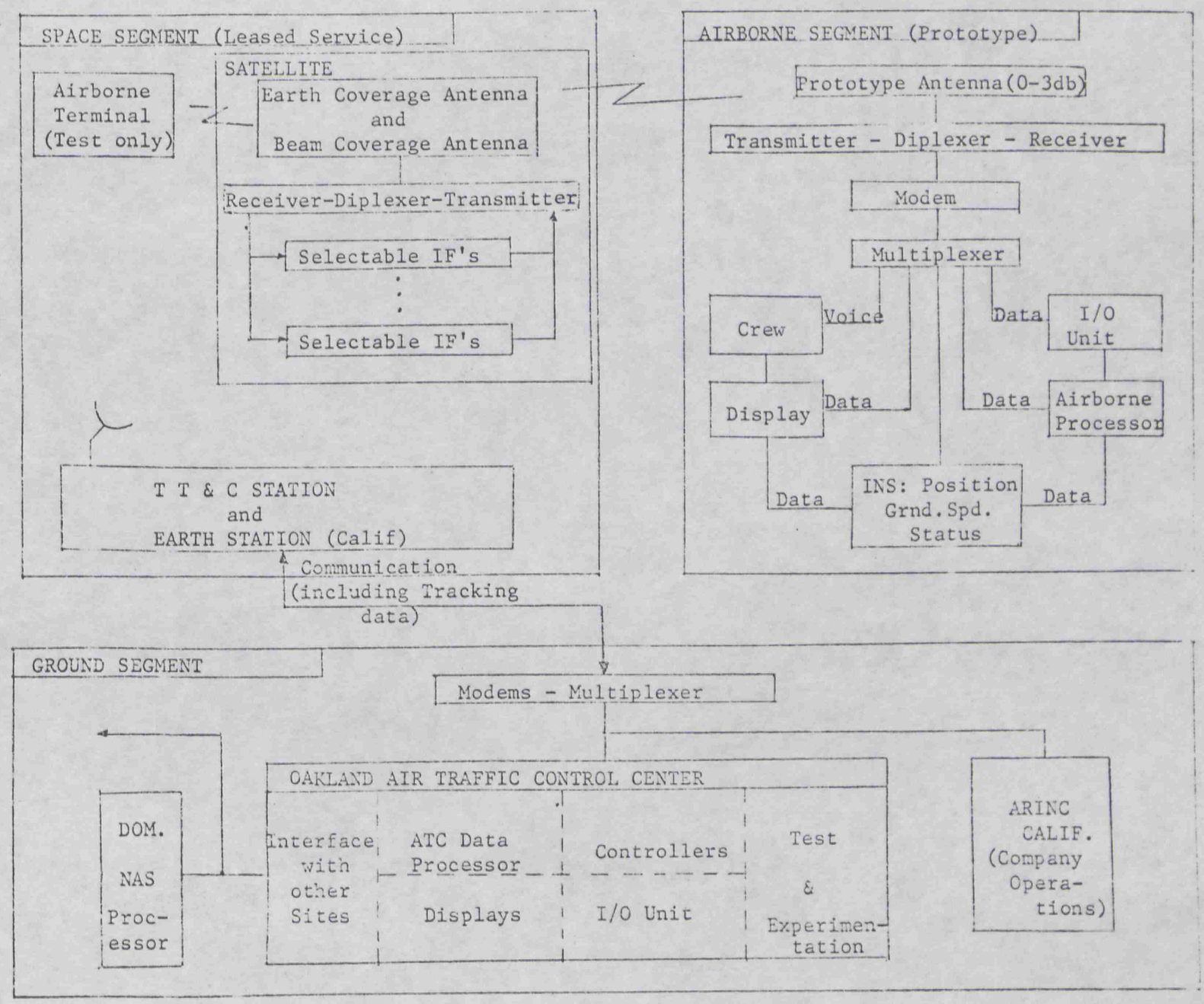
FOR MANDATORY COMPLIANCE TO OPERATIONAL SYSTEM BASED ON ICAO STANDARDS IN 1980, MUST

- BEGIN AVIONICS AND GROUND SYSTEM DEPLOYMENT BY MID-1977
- ADOPT STANDARDS BY MID-1976
- BEGIN NEGOTIATION ON SYSTEM STANDARDS BY MID-1975
- COLLECT PREOPERATIONAL DATA BEGINNING IN 1973-1974
- DECIDE TO UNDERTAKE PREOPERATION PROGRAM IN 1971

L-BAND VS. VHF

- AVAILABILITY OF CHANNELS
- PROPAGATION CHARACTERISTICS
- RANGING ACCURACIES
- POWER REQUIREMENTS
- AVAILABILITY OF L-BAND COMPONENTS
- AIRLINE INVESTMENT
- CHANNEL COSTS

PACIFIC SYSTEM DESIGN



RFP PRINCIPLES

- LEASED SERVICE
- SPECIFICATION OF MINIMUM PERFORMANCE REQUIREMENTS
- SERVICE OPTIONS ENCOURAGED
- FLEXIBILITY OF DESIGN DESIRABLE TO ACCOMMODATE EXPERIMENTS
- MAXIMUM AVIONICS CARRY OVER TO OPERATIONAL SYSTEM
- MULTI-PURPOSE SATELLITE LEASING/USAGE POSSIBLE
- PROVISIONS FOR CONTRACT RENEGOTIATION TO ACCOMMODATE CHANGES IN LEASE CHARGES

PACIFIC SPACECRAFT SERVICE RFP

- TWO PROGRAM PHASES
  - EXPERIMENTAL - TECHNIQUE TESTS, RANGING, CAPACITY MODULATION, ETC.
  - PREOPERATION - TOTAL ATC SYSTEM

- SYSTEM CONCEPT

  - AT LEAST TWO SYNCHRONOUS EQUATORIAL SATELLITES IN ORBIT
  - TWO GROUND STATIONS - OAKLAND AND HAWAII
  - FAA MODEMS AND POSITION COMPUTATION
  - VOICE/DATA LINK COMMUNICATIONS
  - SURVEILLANCE - RANGING
  - SECOND SATELLITE AVAILABLE LESS THAN ONE YEAR AFTER FIRST

- COVERAGE

  - PRIME OVER OAKLAND AND HAWAII ARTC AREAS
  - SECONDARY - EARTH DISK

- COMMUNICATION/DATA LINK

  - 4 CHANNELS PER SATELLITE - (THREE 25-50 KC B.W. & ONE - 200KC)
  - SINGLE SATELLITE ACCEPTABLE DURING ECLIPSE
  - FLEXIBILITY TO DEMONSTRATE AND TEST MANY MODULATION TECHNIQUES
  - CUT BACK ON NUMBER OF CHANNELS IF COSTS TOO HIGH
  - RECEIVED C/N_o - 44-47 DB-Hz LIKELY

- SURVEILLANCE

  - FLEXIBILITY TO DEMONSTRATE AND TEST MANY MODULATION TECHNIQUES
  - ACCURACY - 3000', 1 SIGMA

PACIFIC SPACECRAFT SERVICE RFP (con't)

- SATELLITE PACKAGE
  - C-BAND - GROUND/SATELLITE
  - L-BAND - AIRCRAFT/SATELLITE
  - POWER CONTROL
  - CHANNEL FLEXIBILITY
  - SATELLITE NOT A PROTOTYPE OF OPERATIONAL SYSTEM
  - CONTRACTOR DESIGN FLEXIBILITY
- AVIONICS
  - LIMITED QUANTITIES BY SERVICE CONTRACTOR TO DEMONSTRATE SYSTEM
  - VARIOUS ADDITIONAL MODELS TO BE FURNISHED BY OTHERS TO TEST ANTENNA GAINS, ETC.
  - PREOPERATIONAL WITH FLEXIBILITY

PROCUREMENT MILESTONES

- RELEASE OF RFP	1 JULY 1971
- RECEIPT OF RESPONSES	1 OCTOBER 1971
- COMPLETION OF EVALUATION	15 NOVEMBER 1971
- CONTRACT AWARD	FEBRUARY-MARCH 1972

PACIFIC SYSTEM COSTS, 1972-1980

	ITEM	TOTAL COST	COMMENT
1.	SYSTEM ENGINEERING/PROGRAM MANAGEMENT	$8M	R&D
2.	SPACE SEGMENT	$50-100M	LEASED, CHARGE TO OPS, SOME PORTION RECEIVABLE FROM AIRLINES AND INTERNATIONAL USERS
3.	AIRBORNE SEGMENT	$12M	R&D
4.	GROUND SEGMENT	$6M	R&D, F&E: INCLUDES CENTER HARDWARE AND SOFTWARE
5.	TEST AND EVALUATION	$20M	R&D
6.	CONTINGENCY	$20M	15-20%
		$116-166M	

YEARLY U.S. OPERATING COSTS FOR PACIFIC ICAO

	ACTUAL FY-67	ESTIMATED FY-70	ESTIMATED* FY-80
CENTERS	$16M	22	30-35
FIXED COMM.	3.4	4.5	5
EXTENDED VHF	3.4	4.5	1
HF			
SATELLITE	____	____	10-5**
	$22.8	31	41-51

* SEAT OF THE PANTS

** LESS COSTS TO CARRIERS

AIRLINES EQUIPMENT COSTS

- VHF SATELLITE AVIONICS TO DATE - $1M+ (ESTIMATED)

- L-BAND AVIONIC (DUAL SYSTEM)

  BASIC EQUIPMENT PLUS INSTALLATION - $60K (PRODUCTION)

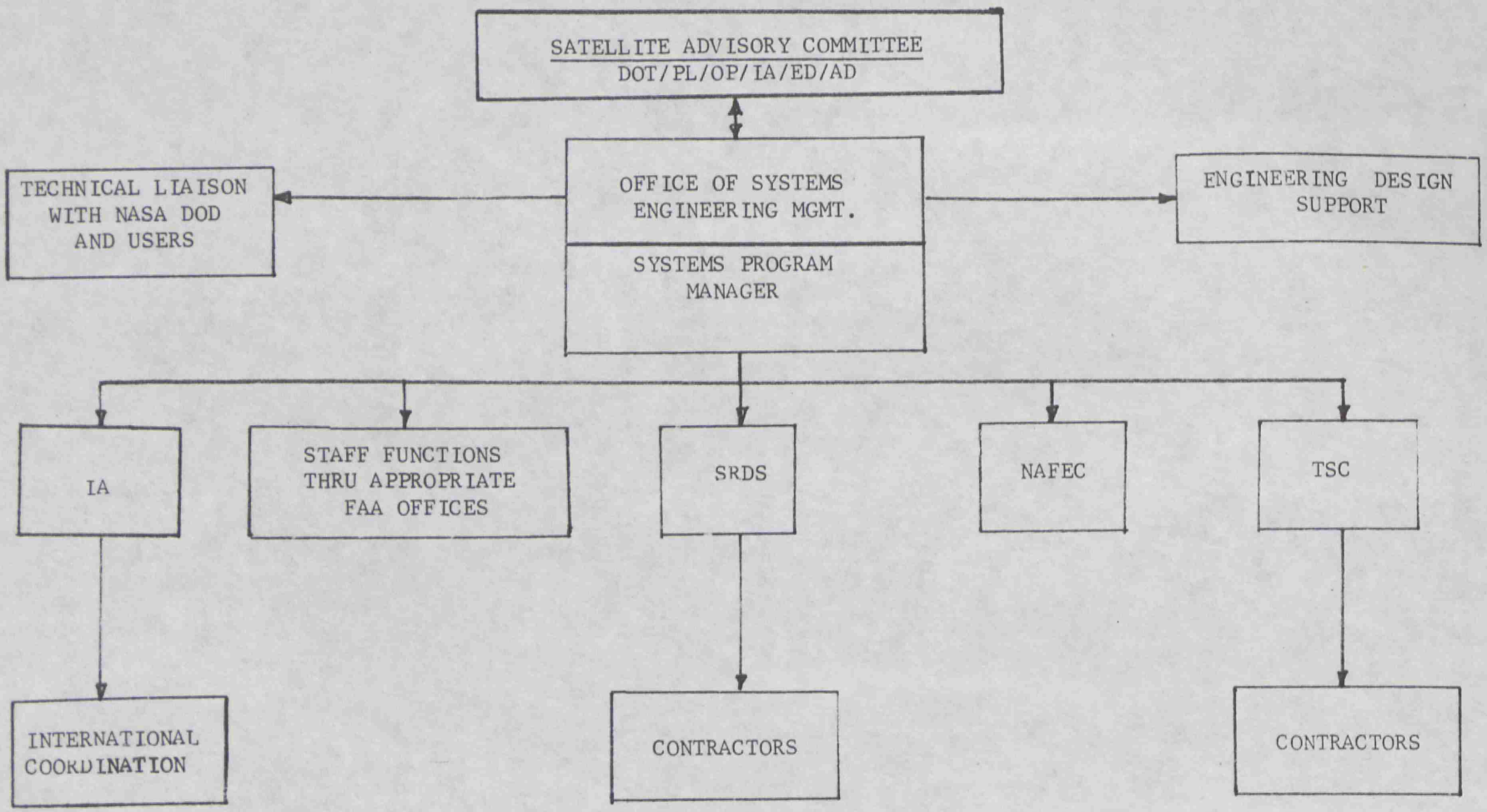
  MAINTENANCE INCLUDING PARTS FOR 10 YEARS - $90K

  COST PER YEAR (10 YEARS) - $15K

- FLEET AIRCRAFT - 1000

IMPLEMENTATION CONSIDERATIONS

FAA SATELLITE MANAGEMENT PLAN



U. S. ORGANIZATIONAL INVOLVEMENT

GOVERNMENT DIRECT	GOVERNMENT COORDINATION	OTHER
FAA	DOD	ATA
DOT	NSC	ARINC
DEPT. OF STATE	NASA	RTCA
OTP	NASC	OTHER USERS
OMB	FCC	
CONGRESS		

FUNDING QUESTIONS

- SOURCE OF FUNDS?
- IMPACT ON USER CHARGES?
- NEED FOR FY-72 FUNDS?
- COST REDUCTIONS FROM INTERNATIONAL PROGRAM?

MILITARY AIRCRAFT CONSIDERATIONS

- CURRENT MILITARY HF CHANNELS AND STATIONS APPEAR ADEQUATE FOR PRESENT AND PROJECTED TRAFFIC

- DOD FREQUENCY PREFERENCE FOR SATELLITE COMMUNICATIONS IS UHF TO PERMIT USE OF EXISTING AVIONICS

- DOD WOULD PARTICIPATE IN SYSTEM INVOLVING UHF/L-BAND HYBRID, BUT DECLINES TO REQUEST IT

- IF NO UHF/L-BAND SATELLITE, DOD WILL CONSIDER MILITARY UHF SATELLITE (DEDICATED OR SHARED) AS REQUIRED

- SEPARATE (NON-COMMON) MILITARY COMMUNICATIONS (AND SURVEILLANCE) LIKELY TO RESULT IN MORE LIMITED ATC SERVICE AND TRAFFIC SEGREGATION FOR MILITARY AIRCRAFT

IATA POSITION AS ADOPTED BY IATA TECHNICAL COMMITTEE ON 23 APRIL 1971

1. RECOGNIZES NEED FOR IMPROVEMENTS IN VOICE COMMUNICATION AND FUTURE APPLICATION OF DATA TRANSMISSION.

2. BELIEVES SATELLITE RELAY HAS BEST PROSPECTS, BUT PLANNING MUST BE BASED ON PRIOR:

   a. USER PARTICIPATION IN SPECIFICATION OF REQUIREMENTS AND FUNCTIONS THROUGH ICAO

   b. DETERMINATION OF FUNDING, USER CHARGES, AND COST/BENEFITS

   c. VERIFICATION OF TECHNICAL INFORMATION

   d. PROGRESSIVE IMPLEMENTATION, PREFERABLY AS BUILT-IN FEATURE ON NOW AIRCRAFT ON-ORDER

3. CONSIDERS ICAO ADOPTION OF L-BAND AS PREMATURE

4. OPPOSES INCLUSION OF INDEPENDENT SURVEILLANCE FUNCTIONS

5. CONSIDERS PROGRESSION TO AN OPERATIONAL SATELLITE SYSTEM ACCEPTABLE ONLY AFTER RESOLUTION OF ITEMS IN 2, ABOVE

DRAFT AIRLINE (ARINC) POSITION PAPER FOR OTP

1. CHOICE OF UHF OVER VHF NOT JUSTIFIED TECHNICALLY.

2. INVESTMENT IN VHF SATCOM FACILITIES AND AVIONICS OVER $3.5M.

3. EVOLUTIONARY APPROACH AND MORE EVALUATION NECESSARY.

4. REQUIREMENT FOR INDEPENDENT SURVEILLANCE NOT DEMONSTRATED.

5. OPPOSE USE OF FUNDS FROM ANY SOURCE FOR IMPLEMENTATION OF OPERATIONAL L-BAND SATELLITES OR INDEPENDENT SURVEILLANCE UNTIL MORE STUDIES AND DEFINITION OF FUNDING AND COST/BENEFITS.

6. UNABLE TO SUPPORT GOVERNMENT'S POSITION.

7. R&D OF POSSIBLE SATELLITE SERVICES ENDORSED.

INTERNATIONAL CONSIDERATIONS

- ULTIMATE OPERATIONAL SYSTEM MUST BE BASED ON ADOPTION OF ICAO STANDARDS
- OTHER GOVERNMENTS DESIRE INTERNATIONAL COOPERATIVE (PARTICIPATING) EFFORT FROM THE START
- OTHER GOVERNMENTS FAVOR "GOVERNMENT-OWNED" VICE "LEASED SERVICE"
- L-BAND DECISION MET BASIC EUROPEAN CONCERNS
- INSTITUTIONAL ARRANGEMENTS NOT YET CLEAR FOR INTERNATIONAL PROGRAM; COULD TAKE MANY MONTHS TO NEGOTIATE
- OTP GUIDELINES FAVOR SPEED WITH COORDINATION OVER COOPERATION (WITH POSSIBLE COST SAVINGS)

POINTS FOR INTERNATIONAL COORDINATION/COOPERATION

- RFP FOR PREOPERATIONAL CAPABILITY IN PACIFIC ONLY
- HIGH PRIORITY ON FLEXIBILITY AND NON-CONSTRAINING DESIGN
- INTERNATIONAL COMPETITIVE PROCUREMENT/INTERNATIONAL PARTNERS AND PARTICIPATION
- INTERNATIONAL PARTICIPATION IN DESIGN AND CONDUCT OF EXPERIMENTS
- AVIONICS BY SEPARATE RFP
- IMMEDIATE DISCUSSION OF FOLLOW-ON INSTITUTIONAL ARRANGEMENTS

DISCUSSION

1. PRINCIPAL RESERVATIONS TO U. S. PROCEEDING WITH LEASED SERVICE FOR PACIFIC PREOPERATIONAL CAPABILITY ARE: COST, USER CONCERN, LACK OF INTERNATIONAL AGREEMENT.

2. USER POSITION RELATES TO OPERATIONAL SYSTEM AND MAY BE SATISFIED BY PREOPERATIONAL EXPERIENCE AND NEGOTIATIONS LEADING TO OPERATIONAL SYSTEM.

3. U.S. (OTP) POLICY PRECLUDES GOVERNMENT INVESTMENT PROGRAM OR GOVERNMENT-TO-GOVERNMENT AGREEMENT IF COMMERCIAL LEASED SERVICE IS AVAILABLE.

4. THERE IS CONSIDERABLE INTEREST BY U. S. COMPANIES; AT LEAST ONE LEASED SERVICE BID IS EXPECTED.

5. U.S. LEASED SERVICE FOR A PACIFIC PREOPERATIONAL SERVICE WILL NOT CONSTRAIN OR LIMIT AN INTERNATIONAL OPERATIONAL SYSTEM; IT SHOULD AFFECT FINANCIAL AND TECHNICAL ASPECTS OF AN ATLANTIC PREOPERATIONAL SYSTEM.

6. IMMEDIATE U.S. ACTION ON LEASED SERVICE FOR PACIFIC WILL EXPEDITE MOVEMENT TO INTERNATIONAL COOPERATIVE PROGRAM.

7. PROPOSERS OF U.S. LEASE WITH PROVISIONS FOR INTERNATIONAL COMPETITIVE PROCUREMENT MAY FIND ARRANGEMENTS TO SATISFY U.S. AND INTERNATIONAL REQUIREMENTS.

8. U.S. COSTS LIKELY TO BE REDUCED BY ACTION OF 7, ABOVE.

9. PROGRAM DELAYS MAY BE REQUIRED TO ACHIEVE 7, ABOVE.

CONCLUSIONS/RECOMMENDATIONS

1. WE MUST GET STARTED NOW ON AERONAUTICAL SATELLITE PROGRAM FOR OCEANIC ATC.

2. THE PRINCIPAL ALTERNATIVES ARE:

   - U.S. INITIATIVE IN PACIFIC WITH PROVISIONS FOR INTERNATIONAL PARTICIPATION

   - PRIOR DEFINITIZATION OF FULL INTERNATIONAL PROGRAM

3. U.S. SHOULD SEEK IATA AND INTERNATIONAL AGREEMENT; U.S. INITIATIVE IN PACIFIC SHOULD EXPEDITE SUCH AGREEMENTS.

4. U.S. SHOULD TAKE INITIATIVE BY PROCEEDING WITH PACIFIC LEASE ASAP WITH PROVISIONS FOR INTERNATIONAL COOPERATION, ENCOURAGE LEASED SERVICE ARRANGEMENTS FOR ATLANTIC PREOPERATIONAL SYSTEM, AND BE PREPARED FOR DISCUSSIONS OF FOLLOW-ON OPERATIONAL SYSTEMS.

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

Aerospace

May 27, 1971

DIRECTOR

Mr. Dan S. Fargo
Publisher
Telephony Publishing Corporation
53 west Jackson Boulevard
Chicago, Illinois 60604

Dear Mr. Fargo:

Thank you for your letter of May 19, 1971 and the offer of assistance with regard to TELECOM 71.

The U.S. Delegation to the World Administrative Radio Conference for Space Telecommunications, being held in Geneva from June 7 to July 17, 1971 includes members of my Staff. Also, I plan to be in Geneva for a short while in June. Thus, we will be able to obtain information first hand. I appreciate your offer, however, and if you note anything that you feel I should know about, by all means forward it to me.

Enclosed are two items pertaining to international telecommunications that you might find interesting as background before going to Geneva.

Thank you again for your interest on my behalf.

Sincerely,

Clay T. Whitehead

Enclosures

Enforcement of an arbitrary ratio will in general raise the overall cost to the using public and lessen the vigor with which industry pursues improvements in both technologies.

5. Cable and satellite circuits are comparable for most uses, and neither technology is inherently superior in a broad sense. Therefore, research and, where appropriate, development of both cable and satellite technology should be encouraged through competitive economic incentives not directly related to the successful deployment of a particular facility.

6. The rapid development of international direct distance dialing should be encouraged through improvements in the continuity and reliability of international transmission service.

7. The executive branch will inform the FCC of significant national security and foreign policy needs. The Government will continue to use commercial facilities to the maximum extent feasible and economic; however, specialized government circuit requirements do not provide a basis for approval of inefficient facilities, nor should they affect the mix of commercial facilities. Where there are too few circuits of any particular type for Government needs, the Government will construct or lease facilities rather than burden the using public by adding commercially inefficient facilities to the carriers' rate base.

8. An international working group of Government and industry representatives should be established to explore ways which would permit more flexibility in its investment and circuit activation decisions (e.g., redefinition of half circuits). This may alleviate much of the concern of our European communications partners, to whom the principle of proportional fill for cable and satellite facilities has been particularly annoying.

9. The planning and deployment of additional facilities for Atlantic basin communications in this decade should take into consideration the following conclusions, which are the product of a comprehensive review by this Office:

   -- Existing facilities plus those Intelsat IV satellites already authorized by the FCC provide sufficient capacity to meet the traffic projected by the industry through 1977, with sufficient reserves.

-- There is already in being adequate cable capacity to accommodate current and projected needs for high-priority national security communications and for specialized commercial services.

-- Current (SF) cable technology is several times more costly per circuit than current (Intelsat IV) satellite technology for high density transatlantic routes. The next generation (SG) cable appears comparable to Intelsat IV satellites in terms of cost and capability at relevant demand levels.

-- Satellite rates for transatlantic service can and should be reduced substantially in response to the lower cost Intelsat IV technology, provided that no new capacity is constructed in the next two years so that a reasonable fill rate can be maintained. Construction of additional cable capacity at the present time will be doubly costly to the public because of the higher costs of SF cable and the creation of excess capacity that will prevent early satellite rate reduction.

-- The most efficient means for achieving overall reliability of service adequate to support international direct distance dialing appears to be automatic restoration of interrupted satellite circuits on redundant satellite facilities.

Policy Recommendations and Conclusions for International Facilities

1. New facilities should be approved only when necessary to meet valid growth requirements, and only upon demonstration that they will result in the lowest additional cost* for comparable circuit capacity, reliability, and quality. These criteria should result in the lowest overall cost to the using public, since rate-regulated carriers are normally allowed to recover from their customers through their tariff offerings all investments and operating costs plus a rate of return on investment.

2. Tariff rates cannot be used as a valid public-interest criterion for approval of investments in new facilities, since they reflect the effects of past investment costs, rate-averaging, promotional pricing, and other deviations from true service costs. Only in the unusual circumstances in which two types of facilities are burdened identically by these factors do tariff rates provide a useful measure of the comparative costs of existing facilities, and clearly such rates cannot provide a measure of future costs.

3. Excess capacity or redundant facilities should be authorized to the extent reasonably necessary to make allowance for failure of facilities and to enable automatic restoration of interrupted service -- but not in excess of this requirement. Redundant facilities to enable automatic restoration should be required where this is the least-cost means of obtaining the overall continuity and reliability of service which is needed. This does not necessarily require duplication of circuits on different types of facilities, and such a fixed policy would be unnecessarily costly to the public.

4. Public policy does not require a particular ratio between satellite and undersea cable circuit capacity. Both modes may be needed to meet special service requirements and should be vigorously developed, but within broad limits the ratio should be allowed to evolve in response to operational needs and economic considerations.

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*Based on present value of added investment and expected operating costs at relevant traffic (demands) levels. If the cost differential between alternative facilities is within the range of estimation uncertainty, the least-cost criteria should not be rigidly enforced.

Investment proposals should then be solicited and evaluated with a view to obtaining the required capability and reliability when needed at least cost. The U.S. international carriers strive to achieve the best in service through high reliability and conservative planning; our major concern from the standpoint of the public interest is that we avoid construction of excess capacity and deployment of inefficient technology.

Within reasonable limits set by the Commission, the carriers should be allowed to choose the type and timing of their new facilities. Those limits must, however, be sufficiently firm that the public interest is protected from investments which are excessively costly or otherwise seriously unsound. We believe this approach goes far to disentangle corporate and governmental decision-making to the benefit of both -- and especially to the ultimate benefit of the public.

Sincerely,

Clay T. Whitehead

Enclosure

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

DIRECTOR

May 21, 1971

Honorable Dean Burch
Chairman
Federal Communications Commission
Washington, D. C.

Dear Dean:

The planning, development, and operation of international communications facilities is a matter of major concern. There is rapidly growing public and commercial use of these facilities for telephone and telegraph traffic, television transmission, and other services. They are important to our businessmen, our news media, and our national security.

The present structure of the U. S. international communications industry creates the need for considerable governmental supervision over its investment in new facilities. In the past, this has resulted in close control of so many details of operation and construction that it is difficult to relate the regulatory controls to the overall public interest which they seek to promote.

I am enclosing the Administration's views on the policy that should guide regulation in this area. We believe that adoption of this policy framework will strengthen the ability of the Commission to assess the public interest in future investment decisions, and at the same time provide industry with the guidance it needs to plan efficiently and effectively. This policy relies on good faith and responsible action by our international carriers, which we believe will be forthcoming if the policy is firmly adopted. It leaves to the carriers, within appropriate limits, the freedom to use their judgment in those areas of operation and planning details where the Government lacks both the experience and the information to make the necessary decisions in a knowledgeable and timely way.

The policy further assumes that the Commission will determine when new capacity will be required sufficiently far in advance for orderly planning and approval of investment in new facilities.

Aeronat

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

April 23, 1971

DIRECTOR

Mr. James J. Reynolds
President
American Institute of Merchant
Shipping
1120 Connecticut Avenue, N.W.,
Suite 930
Washington, D.C. 20036

Dear Jim:

Thank you for your letter of April 15, 1971 concerning maritime mobile satellite communications. I have also seen your letters to Dr. Mansur and Mr. Dean of my staff.

We are giving every practicable consideration to the AIMS Resolution and feel that there is some prospect for increased allocations around 1600 MHz for maritime mobile use. However, the situation is not as optimistic with regard to the 300 to 600 MHz band where there is already existing a heavy concentration of U.S. and foreign communications services.

Our Aeronautical Satellite Policy statement makes reference to the possibility of a single system to support both maritime and aviation services in a worldwide system. In furtherance of this, it would be most helpful if you would meet with my Deputy Director, Dr. George F. Mansur, to develop an overview of maritime telecommunications from the standpoint of U.S. shipping operational and policy considerations.

If I can be of further assistance to you on this or any other matter, please let me know.

Sincerely,

Clay T. Whitehead

a
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m
s

AMERICAN INSTITUTE OF MERCHANT SHIPPING

1120 Connecticut Avenue, N.W., Suite 930, Washington, D. C. 20036
Phone: 202/833-2710

Pacific Regional Office
635 Sacramento Street, Suite 300, San Francisco, California 94111
Phone: 415/362-7986

April 15, 1971

Dr. Clay T. Whitehead, Director
Office of Telecommunications Policy
Executive Office of the President
1800 G Street, N. W.
Washington, D. C. 20504

Dear Dr. Whitehead:

Radio Frequency Requirements for
Maritime Mobile Satellite Communications

At a meeting held in New York, April 8th, our AIMS Telecommunications Committee received a report from one of its members on the preparations being made for a World Administrative Radio Conference for Space Telecommunications to be convened in Geneva, Switzerland, this June. This subject and its implications for the maritime user was reviewed in detail.

A definite understanding and opinion is prevalent that not enough is being done to protect maritime interests and make adequate provision for future requirements. Our technical people say that too few frequencies are being provided, and in the wrong part of the spectrum. This, in turn, will double ship equipment costs.

Following its consideration of this subject, our Committee adopted unanimously a resolution on the matter, a copy of which is appended for your information. We urgently hope that some action can and will be taken to strengthen the maritime position in this regard.

Sincerely,

James J. Reynolds

James J. Reynolds
President

Attachment as noted

American Institute of Merchant Shipping April 8, 1971

RESOLUTION ON MARITIME SATELLITES

The Telecommunications Committee of the American Institute of Merchant Shipping (A.I.M.S.), after having given due consideration to the following facts:

1. that there is a definite need to improve communications to and from vessels on the high seas for services such as:

   a) instant distress alerting and associated search and rescue
   b) safety broadcasts of storm and navigational advisories
   c) Medico information exchange
   d) position reporting to assist in elimination of the search phase of search and rescue and for business management use
   e) public correspondence, especially that relating to ships business and logistics

2. that satellites afford the potential of providing high speed, high quality and high reliability voice, data and teleprinter services

3. that the maritime mobile service has, at present, no frequency allocations for space use

4. that a World Administrative Radio Conference of Space Telecommunications (WARC-ST) will be convened in Geneva in June of this year to allocate frequencies to generic radio services for space use

5. that the United States position to the WARC-ST recommends for the Maritime Mobile Service:

   a) shared space/terrestrial service use of the VHF channels from Appendix 18 of the ITU Radio Regulations
   b) 250 kHz of spectrum for exclusive space service use at 335 MHz and between 406-420 MHz
   c) 2.5 MHz of exclusive, primary spectrum for space service use between 1535-1537.5 MHz and 1637.5-1640 MHz

6. that a recent study conducted for the Department of Transportation, U.S. Coast Guard, (1) concluded that:

   a) by 1980, the Maritime Mobile Service can reasonably be expected to require at least 5 MHz of radio frequency spectrum in each transmission direction and possibly 10 MHz
   b) any Maritime Satellite system must provide coverage in both the northern and southern hemispheres of each oceanic region
   c) interference analyses show that the Appendix 18 VHF channels would have to be cleared of all terrestrial operators to be usable for space services and that the channels are already vitally needed for conventional terrestrial services

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(1) "A Study of Maritime Mobile Satellite Service Requirements, Frequency Planning, Modulation and Interference Analysis." Automated Marine International Report DOT-CG-00505A, dated 1 Nov. 1970.

d) frequencies on the order of 1600 MHz will require the maritime community to utilize high gain tracking or multi-beam, switched antennas on-board the user vessel in order to permit use of a minimum cost space system. Such antennas are as yet undeveloped and could delay early implementation of a maritime satellite system as well as increasing the per user cost by up to a factor of 2 over lower frequency user installations

e) frequencies on the order of 400 MHz are technically optimum for Maritime Mobile Space use in that they require a minimum space segment cost, minimum user segment cost, minimum user antenna gain (i.e., omni-directional antennas) and minimum user transmitter power.

Unanimously resolves to recommend that A.I.M.S.:

1. support the Inter-Governmental Maritime Consultive Organization (IMCO) Statement on Maritime Requirements for the Use of Space Techniques, 14 July 1970, (2) as augmented by the IMCO Additional Statement of Requirements, 20 January 1971 (3)

2. strongly urge the U.S. Government to take appropriate action to:

a) insure that a space allocation for the Maritime Mobile service in the region of 300 to 600 MHz is approved at the forthcoming WARC-ST, 1971 and that the presently recommended bandwidth of 250 kHz in each transmission direction be increased to at least 2 MHz in each direction. Up and down links should be separated in frequency by at least 10%

b) insure that the proposed 1600 MHz space allocation for the Maritime Mobile service be approved at the forthcoming WARC ST, 1971 but that the bandwidth allocated be increased from the present 2.5 MHz in each transmission direction to 6.5 MHz as follows:

Down Link	(1535-1541.5 MHz	MARITIME MOBILE EXCLUSIVE
	(1541.5-1542.5 MHz	JOINT MARITIME/AERONAUTICAL MOBILE

Up Link	(1637.5-1644.0 MHz	MARITIME MOBILE EXCLUSIVE
	(1644.0-1645.0 MH	JOINT MARITIME/AERONAUTICAL MOBILE

c) insure that the Statement of the Office of Telecommunications Policy on Aeronautical Satellites, dated 7 January 1971 be augmented to provide for full Maritime participation and that the Department of Transportation, in implementing said Policy Statement, make suitable provision for the inclusion of both commercial and government maritime services.

3. request the Department of State to authorize the designation by A.I.M.S. of a representative to participate as an advisor to the United States Delegation at the forthcoming WARC Space Conference.

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(2) IMCO, Sub-committee on Radiocommunications, 7th Session, Report to the Maritime Safety Committee, Annex VI, 14 July 1970.

(3) IMCO, Sub-committee on Radiocommunications, 8th Session Report to the Maritime Safety Committee, Annex II, 20 January 1971.

Eva
Aeronautical
Satellite

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

OFFICE OF THE DIRECTOR

MAR 19 1971

Honorable John Shaffer
Administrator
Federal Aviation Administration
Washington, D. C. 20590

Dear Mr. Shaffer:

The Administration's Statement of Government Policy on Satellite Telecommunications for International Civil Aviation Operations was furnished the Secretary of Transportation by Mr. Whitehead on January 7, 1971. At that time, the Director indicated we planned to supplement the policy statement with specific program guidelines. In conjunction with other executive branch organizations, we have now developed a set of broad program guidelines which provides a framework for implementing the Government policy.

Since the establishment of an aeronautical satellite system involves many complex factors as well as many Government and private organizations both domestic and international, we believe consideration should be given by DoT/FAA to the early creation of a unique systems management organization to provide a focal point for management of the program.

The success of the National Program will depend, in large measure, upon private enterprise to provide the needed commercial communications services. We believe a broad sector of industry should be invited to respond to a set of service requirements which foster alternative market and system approaches. The National Program will also require the establishment of efficient and mutually beneficial institutional arrangements among the international entities. Therefore, we believe the United States should initiate the preoperational system deployment in the Pacific -- making provision for optional

service in the Atlantic -- while seeking suitable arrangements with interested foreign entities. The feasibility of direct financial participation in the system deployment should be examined, but the seeking of such arrangements should not impede the pace of system procurement to meet the objectives established by the Administration.

Sincerely,

G. F. Mansur

G. F. Mansur
Deputy

Enclosure
The National Program on
Satellite Telecommunications for
International Civil Aviation Operations

ENCLOSURE

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

THE NATIONAL PROGRAM

ON

SATELLITE TELECOMMUNICATIONS

FOR

INTERNATIONAL CIVIL AVIATION OPERATIONS

MARCH 19, 1971

CONTENTS

SUMMARY

This National Program provides broad guidelines to implement the Administration's "Statement of Government Policy on Satellite Telecommunications for International Civil Aviation," issued in January 1971.[1/] An overview of the National Program and its relationship to the domestic national aviation system is shown in Appendix B.

The National Program incorporates these key features:

- Establishment of an evolutionary program extending through the decade of the 1970's and into the 1980's.
- Assignment of priorities to meet the specific operational requirements for improved and expanded voice and data communications capability, and for the development of independent surveillance capability.
- Pre-operational system evaluation in an air traffic control environment which, along with other contributions to the International Civil Aviation Organization (ICAO), will facilitate the early adoption of the essential characteristics of an operational system.
- Designation of the Department of Transportation/Federal Aviation Administration (DOT/FAA), as lead management agency, to prepare the National Plan for Satellite Telecommunications for International Civil Aviation Operations within the program guidelines contained in this document.
- A unified program to meet Government and airline requirements in the Pacific and Atlantic oceanic areas to derive the economic benefits of a single program and standard equipment.
- Coordination through ICAO leading to development and adoption of international operational standards and recommended practices for use of space techniques in international civil aviation.
- Coordination with foreign governments and entities to promote international cooperation in the pre-operational and operational phases to the extent consistent with the National Policy objectives and foreign policy considerations.

1/ See Appendix A for definition of terms.

INTRODUCTION

The utility of space technology for civil aeronautical applications has been demonstrated in various projects since 1965. Organizations which have participated in experimental programs include the Federal Aviation Administration, the National Aeronautics and Space Administration, and several U.S. and foreign airlines. Although this important new capability is available for practical use, there have been extended delays in making the decisions necessary to begin the development and deployment of an operational system. As a result, modern aircraft continue to operate in transoceanic areas with marginal high frequency communications. With the advent of larger passenger aircraft and increases in traffic volume in oceanic areas, communications for traffic control, operational control, and search and rescue becomes more critical.

There is a broad consensus in both government and the private sector that satellites offer the most practicable method to assure improved, expanded and reliable communication in transoceanic airspace. Therefore, the Administration supports early deployment of a satellite system and has formulated a Government Policy on Satellite Telecommunications for International Civil Aviation Operations. To meet the objectives established in the January 7, 1971 Statement of Government Policy, the responsible Federal agencies should take the initiative to plan and implement the National Program. The guidelines contained in this paper provide the basic framework for program planning, international coordination, and implementation of the National Program.

OPERATIONAL REQUIREMENTS

The Federal Aviation Administration has the statutory responsibility to provide air traffic services for domestic requirements and, through agreement with the International Civil Aviation Organization, for specific areas of international airspace. 2/

Major responsibility of the United States in the international airspace lies in the Pacific where about thirteen million square miles in five Flight Information Regions is provided air traffic service. Most of the oceanic area is provided air/ground communications through high frequency radiotelephony. Saturation of available HF channels is

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2/ The Federal Aviation Act of 1958, Public Law 85-726; and the Convention on International Civil Aviation. TIAS 1591 Signed in Chicago, Illinois, December 7, 1944.

forecast in the Pacific and Atlantic during the 1973-1975 time frame and flow control may be needed to ensure adequate safety margins if communications are not improved. 3/

Based on traffic projections, the FAA has recommended the following specific requirements with priority as listed:

a. Communications -- Voice and data service is required to provide improved and expanded pilot to controller air traffic control service, company operational control, and other services (weather, search and rescue, etc.) to and from aircraft operating on international air routes in the Pacific (1973) and Atlantic (1975) oceanic areas.

b. Automatic Reporting -- In order to minimize communications channel congestion and to increase the efficiency of the air traffic control system, automatic reporting of aircraft position information by data transmission is required in the Pacific and Atlantic oceanic areas by 1975.

In addition, the FAA believes that Independent Surveillance will eventually be required; therefore, developmental work should begin with the initial system planning. In order to realize the benefits of improved satellite communications (including data link), and independent surveillance, when implemented, an appropriate interface must be provided between oceanic and domestic communications systems to assure operational compatibility. The several techniques for providing surveillance should be investigated and ATC procedures and ancillary equipment developed.

DISCUSSION

There are several factors relating to the National Program for which guidelines are necessary. These factors include: (a) the priorities for deployment in the Pacific and Atlantic oceanic areas; (b) introduction of advanced and efficient system techniques; (c) frequency spectrum assignment; (d) the nature and extent of future research and development in space technology and aircraft avionics which are necessary to support

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3/ See FAA forecast in document, "FAA Operational Requirements 1970-80 For Aeronautical Satellite Services via Satellites," November 17, 1970, and ARINC forecast in ARINC letter, File 07-15-2, to the Office of Telecommunications Policy, November 3, 1970.

the orderly evolution and growth of the total program, and the need for pre-operational evaluation in an air traffic control environment, and (c) the characteristics of the initial pre-operational system.

a. Deployment Priorities

Communication traffic surveys developed by the DOT/FAA indicate that a minimum of three equivalent voice channels from satellite(s) will be required in the Pacific by 1973. This capability is the first priority for the pre-operational aeronautical satellite system. The provision of data link communication including the automatic reporting on aircraft position information is second priority. The deployment of a pre-operational system should initially provide the voice and data link capability in the Pacific and subsequently in the Atlantic upon coordination with the international entities responsible for air traffic control in the North Atlantic routes.

b. Advanced System Techniques

Opportunities to utilize advanced and efficient techniques to improve civil aviation operations should be exploited. One new technique offered by space technology is independent surveillance for air traffic control. The system deployed for pre-operational communications should employ multiple satellites to assure continuity of service; therefore, the incremental cost for the space segment to provide position determination for either independent surveillance or navigation is nominal. Early development of independent surveillance capability should be pursued by the United States in the interest of enhanced air safety and economy of operations. This conclusion is consistent with other studies which suggest that satellite systems could form an integral part of the domestic air traffic control system.

c. Frequency Spectrum Assignment

Based on a careful evaluation of long-term objectives and trends in technology, the United States policy is to promote the deployment of the pre-operational and operational system at UHF (L-band), and to encourage ICAO's adoption of L-band as part of the essential system characteristics for the operational system.

The United States proposals to be considered by the World Administrative Radio Conference (WARC) on Space Telecommunications being convened in Geneva, Switzerland, during June 1971, include allocation of segments of the radio frequency spectrum in the 1535-1660 MHz

band to provide for aeronautical mobile communications, aeronautical radionavigation functions and maritime mobile communications.[4/] Accordingly, the frequency plan for implementing the National Program should be in consonance with the U.S. proposals to the WARC; additionally, the frequency plan should be consistent with evolution of an integrated multiple user communication and position-location system.

d. Research and Development Support and Pre-Operational Evaluation

The state-of-the-art in satellite, airborne and terrestrial technology is sufficiently advanced to provide the equipment necessary for pre-operational communications channel capacity as well as an experimental independent surveillance capability in the near-term. Beyond the mid-1970's, normal advances in satellite communications technology are expected to provide technology suitable for deployment of the operational system designed to meet ICAO standards.

To ensure efficient and economical operational system(s), the pre-operational program should include: (i) experimental verification of UHF (L-band) propagation predictions and the effect on communications, and position-fixing performance; (ii) development of plans for the operational system for submission to ICAO that are compatible with the domestic systems; (iii) experimental verification of optimum techniques and procedures with respect to the air traffic control environment, in both domestic and international operations.

c. Systems Approach

The pre-operational system should utilize existing space, airborne, and terresterial technology and use if feasible a single basic satellite configuration deployed in both the Pacific and Atlantic oceanic basins. In order to provide maximum flexibility, the antenna system in each satellite should include both earth coverage and narrow beam capability, thus assuring appropriate channel capacity for both low and high density routes.

THE NATIONAL PROGRAM FRAMEWORK

The National Program is an evolutionary program for application of space techniques for international aviation extending through the decade of the 1970's and into the 1980's.[5/]

4/ See Appendix C for pertinent extract from the U.S. proposals.
5/ See Appendix B.

The pre-operational program represents the first phase of the National Program, and includes the following activities: (a) deployment of the pre-operational system; (b) pre-operational evaluation of voice and data communications; and (c) independent surveillance experimentation and pre-operational evaluation. All of the activities should be coordinated with appropriate governments, and international cooperation in activities is to be encouraged.

The next phase of The National Program is the transittion period between the pre-operational system and the operational system, following establishment of ICAO standards for essential system characteristics. The final phase includes the deployment and operation of the operational system.

The phasing of The National Program is depicted graphically in Appendix B. This overview of The National Program projects a schedule to implement the Statement of Government Policy, and includes the following elements:

a. Operational Requirements. The milestones for the specific operational requirements as stated by the DOT/FAA and the U.S. airlines are shown in Appendix B and reflect deployment of a Pacific capability in 1973 and an Atlantic capability in 1975.

b. General Technology. Continuing research and development during the 1970's and 1980's is shown in the summary schedule. DOT, with the responsibility for the general improvement of the airports and airways, and the DOD, with requirements for precision navigation and expanded military communications, will conduct research and development programs. The results of such research and development are available for aeronautical satellite applications. NASA, through broadbase advanced technology projects, and the private sector, through independent research and development programs, will also make available a wide range of technology advances. Collectively, these total efforts should provide advances necessary to support the evolutionary development of the operational system.

c. Program Plan. The schedule for deployment of the oceanic satellite systems is complementary to the DOT/FAA plans for the expansion and automation of domestic ATC. The program for the pre-operational systems, implemented, insofar as possible in cooperation with interested governments and entities, can be met provided a key decision to proceed is made not later than June 30, 1971. Timely transition from the pre-operational system to the operational system will require that ICAO adopt essential

characteristics no later than June 30, 1976. The U.S. should promote ICAO adoption by this date of standards which are based upon the results of the experimental and operational evaluation of the pre-operational system.

d. Domestic Air Traffic Control Environment. The time phasing of domestic air traffic control automation is based upon the FAA 10-year Plan 1971-1980.

PLANNING AND IMPLEMENTING THE NATIONAL PROGRAM

The management agency (DOT/FAA) should prepare a National Plan, based upon the guidance contained in this document, to plan the activities required to implement the National Program. The plan should treat operational, technical, organizational, and economic matters and provide for international coordination and cooperation. June 30, 1971 should be the target for completion of the National Plan. It shall be consistent with the following specific guidelines:

a. The Department of Transportation/Federal Aviation Administration, which has the statutory responsibility for air traffic control, is responsible for defining requirements, program budgeting, management of research and development, and procurement and operation of pre-operational and operational systems and services.

b. The management agency (DOT/FAA) should proceed immediately to plan and establish the pre-operational system in the Pacific oceanic area and, subsequently, in the Atlantic oceanic area. DOT/FAA, in coordination with the Department of State, should seek cooperation with other interested governments as appropriate in planning and implementing The National Program. The goal for deployment of the Pacific oceanic segment is 1973 to provide for pre-operational evaluation of communications and other services for cooperating air carriers and participating government aircraft. The goal for deployment of the Atlantic oceanic segment is 1975 with comparable capability.

c. The management agency (DOT/FAA) will implement the pre-operational and operational system by utilizing commercial communication facilities and services to the maximum extent feasible, provided that such use is consistent with other national policy. The provision of commercial services must be compatible with the regulatory practices of the Federal Communications Commission.

d. The system for the pre-operational program should be a single integrated system to satisfy both Government and airline user requirements

in both the Pacific and Atlantic oceanic areas. A single basic satellite configuration should be utilized if feasible for both oceanic areas.

e. The management agency (DOT/FAA), in conjunction with the Department of State, should undertake long-term planning for the operational system. Activity should be initiated to establish an ICAO standard which will permit the implementation of the operational system in both the Atlantic and Pacific oceanic areas by 1980, as well as providing the initiative to establish the international institutional arrangements for the operational system.

f. In order to assure that the broad spectrum of space activities supported by the Government is effectively utilized and not duplicated, the National Aeronautics and Space Administration (NASA) is expected to conduct independent research and development of technologies which have broad application. In addition, NASA, under the management and budget of the Department of Transportation,will provide other technical support unique to transportation applications.

Appendix A

DEFINITIONS

Telecommunication

The term telecommunication means any transmission, emission or reception of signs, signals, writings, images, and sounds or intelligence of any nature by wire, radio, optical, or other electromagnetic systems.

Aeronautical Telecommunication Services

The provision of voice and data communication, surveillance and/or navigation functions in ground-air-ground networks using radio transmission including relay via an active earth satellite.

Automated Air Traffic Control

The acquisition, transfer and display of flight information and, eventually, command and control guidance in an air traffic control environment by means of automatic data processing and other telecommunication techniques.

Independent Surveillance

Independent Surveillance by satellites means computation of a position fix utilizing equipment which is remote from the vehicle and is based on range measurements from two or more satellites. Usually a cooperative vehicle is inferred but it is not implicit in the term.

Navigation

Navigation by satellites means computation of a position fix utilizing equipment which is self-contained within the vehicle and is based upon the time of arrival of signals from two or more satellites whose ephermerides are known.

National Program

The formal description of the composite program established by the Administration to be undertaken by the United States Government in association with private enterprise and, as appropriate, foreign entities.

National Plan -

The formal documentation of the tasks to plan, coordinate and implement the National Program on Satellite Telecommunications for International Civil Aviation Operations. The National Plan describes the detail efforts required and approaches (operational, technical, institutional and economic) to be followed in meeting the objectives established in the National Program.

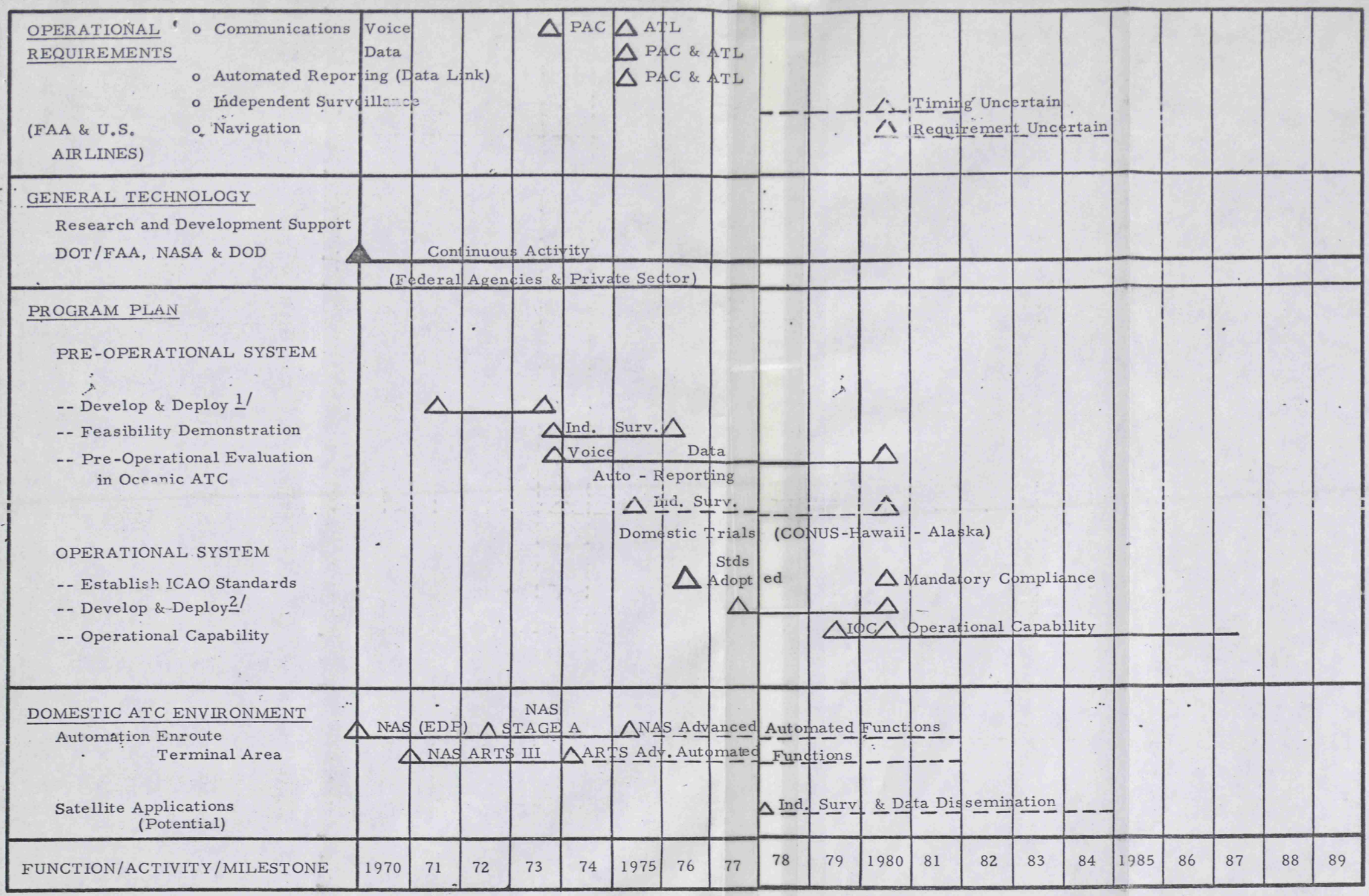
The terms used to define various aeronautical satellite systems are taken from the ICAO ASTRA Panel Second Meeting and include the following:

"Experimental Systems. These relate to experimental work on space techniques in general. Insofar as the interests of ASTRA are concerned, they would place emphasis on, but not necessarily be limited to, the solution of problems that would assist in the development of characteristics for aeronautical satellite systems. Examples would be the NASA Application Technology Satellites (ATS).

NOTE: In some States, participation by airlines could be expected provided it was not identified as experimental on their part.

Pre-Operational Systems. These would be primarily aeronautical systems with emphasis on performing operational as well as technical evaluations. For the purpose of their evaluation they would need to operate in parallel with conventional communication and/or radio-determination systems serving Air Traffic Control. It is understood that carriage of the airborne elements of such systems would be on a voluntary basis. It is also understood that while such systems might also provide only some of the functions that would be required ultimately in an operational system.

Operational Systems. These would be systems capable of being used on a primary basis to satisfy the aeronautical operational requirements established at a given time in a given area."



THE NATIONAL PROGRAM
ON
SATELLITE TELECOMMUNICATIONS
FOR
INTERNATIONAL CIVIL AVIATION OPERATIONS

1/ Assumes program go-ahead NLT 30 June '71.
2/ Assumes ICAO standards and program go-ahead NLT 30 June '77.

APPENDIX C

This Appendix contains an extract from the United States proposals to be considered by the World Administrative Radio Conference (WARC) on Space Telecommunications in 1971 in the frequency range of 1535 to 1660 MHz.

Region 1	Region 2	Region 3
1535-1537.5	~~SPACE (Telemetering)~~ MARITIME MOBILE ~~350A 351~~ 352 352C 352E[1/]	
1537.5-1542.5	~~SPACE (Telemetering)~~ ~~AERONAUTICAL RADIONAVIGATION~~ AERONAUTICAL MOBILE (R) MARITIME MOBILE ~~350A 351~~ 352 ~~352A 352B~~ 352C 352D 352F	
1542.5-1557.5	~~AERONAUTICAL RADIONAVIGATION~~ AERONAUTICAL MOBILE (R) ~~351~~ 352 ~~352A 352B~~ 352D 352G	
1557.5-1637.5	AERONAUTICAL RADIONAVIGATION ~~351~~ 352 352A 352B 352D	
1637.5-1640	~~AERONAUTICAL RADIONAVIGATION~~ MARITIME MOBILE 352 ~~352A~~ ~~352B~~ 352D 352H	
1640-1645	~~AERONAUTICAL RADIONAVIGATION~~ MARITIME MOBILE 352 ~~352A~~ ~~352B~~ 352D 352I	
1645-1660	~~AERONAUTICAL RADIONAVIGATION~~ AERONAUTICAL MOBILE (R) 352 ~~352A~~ ~~352B~~ 352D 352J	

1/ See Page 2 for description of changed or added numbered footnotes.

SUP 351

MOD 352A The bands ~~1540-1660 Mc/s~~ 1557.5-1637.5 MHz, 4200-4400 ~~Mc/s~~ MHz, 5000-5250 ~~Mc/s~~ MHz and 15.4-15.7 ~~Gc/s~~ GHz are reserved, on a world-wide basis, for the use and development of airborne electronic aids to air navigation and any directly associated ground-based or satellite-borne facilities.

MOD 352B The bands ~~1540-1660 Mc/s~~ 1557.5-1637.5 MHz, 5000-5250 ~~Mc/s~~ MHz and 15.4-15.7 ~~Gc/s~~ GHz are also allocated to the aeronautical mobile (R) service for the use and development of systems using space communication techniques. Such use and development is subject to agreement and coordination ~~between~~ among administrations concerned and those having services operating in accordance with the Table, which may be affected.

ADD 352E Limited to transmissions from satellite-borne stations to stations in the maritime mobile service for communication and/or radiodetermination purposes.

ADD 352F Limited to transmissions from satellite-borne stations to stations in the aeronautical mobile (R) and maritime mobile services for communication and/or radiodetermination purposes. Transmissions from terrestrial aeronautical stations directly to aircraft stations in the aeronautical mobile (R) service are also permitted.

ADD 352H Limited to transmissions from stations in the maritime mobile service to satellite-borne stations for communication and/or radiodetermination purposes.

ADD 352I Limited to transmissions from stations in the aeronautical mobile (R) and maritime mobile services to satellite borne stations for communication and/or radiodetermination purposes. Transmissions from aircraft stations in the aeronautical mobile (R) service directly to terrestrial aeronautical stations are also permitted.

ADD 352J Limited to transmissions from stations in the aeronautical mobile (R) service to satellite-borne stations for communication and/or radiodetermination purposes. Transmissions from aircraft stations in the aeronautical mobile (R) service directly to terrestrial aeronautical stations are also permitted.

REASON: To designate bands specifically for the development and operational use of systems employing space techniques to meet the communication and radiodetermination requirements

of the aeronautical and maritime communities. The overall distribution of bands between the aeronautical mobile (R) and maritime mobile services between 1535 and 1660 MHz is such as to permit the development of either separate or joint systems, inasmuch as provision has been made for a common translation frequency between the "up" and "down" bands.

4:10 Jack Thornell talked with Dr. Marsten who was soliciting approval to present a technical paper based upon the accomplishments of the NASA-ESRO studies on Aeronautical Systems. His reason for seeking approval was with regard to our policy paper on Aeronautical Satellite Systems.

Dick was advised that we had no problems with the paper so long as he did not use the words "pre-operational" or "operational systems" and that the presentation was couched only in technical terms and in the results of the studies.

Dr. Marsten was advised that if he did not hear to the contrary by noon Tuesday (3/2), he could assume that he had OTP approval.

Mr. Thornell will be checking with Mr. Whitehead on this.

Monday 3/1/71

MEETING
June 2-4, 1971

MR. THORNELL:

3:30 Steve talked with Dr. Marsten who has asked us to call Dr. Mansur at the U. S. Mission to NATO in Brussels and tell him that Dr. Marsten of NASA requests telphone consultation with him at his earliest convenience concerning his participation in Genoa Conference June 2-4. He wants to discuss his paper since it involves NASA-ESRO studies in the areosat f ield. He has an early paper deadline and requests a call soon.

In checking with Dr. Marsten, he says his deadline for the paper is March 30; however, he needs to check out a title with Dr. Mansur so he can work on the paper.

Checked with Mr. Whitehead, who suggested you call Dr. Marsten if you can help him; but if you think it is something that can't wait until Dr. Mansur's return on 3/8, then we can place the call. Marsten is in a meeting and can be reached on (13) 28216

Dick Mersten

Summary paper on systems exercises NASA has been thru w/ ESRO - where the systems go to meet coverage & traffic supply implications. If it creates any problems he will

Personal technical presentation.

Monday 3/1/71

1:25 STEVE

Dr. Marsten called Mr. Whitehead. He had tried to get Dr. Mansur earlier. He would like to discuss with Tom a paper he (Dr. Marsten) is to give at an international symposium in Genoa. 962-0888

Eva suggested perhaps you could return the call for Tom.

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

February 12, 1971

OFFICE OF THE DIRECTOR

George:

As requested, I discussed the attached with State. The International Institute for Communications in Genoa is an established organization which has several times in the past organized symposiums such as the one in question. It is apparently blessed by the Italian government, internationally respected, and our State Department has, in the past, encouraged U.S. participation. Tom Nelson indicates that if you would like to do this, there would be no objection by State.

SAD

Steve

Steve - will you tentatively accept invitation on my behalf - but indicate other organizations are perhaps better qualified to speak on satellite technology than OTP. Suggest a suitable topic might be "An overview of Septum technology and application Trends." If they concur, I will accept. M.

Office of Telecommunications Policy
Route Slip

27 JAN 1971

		To
	Clay T. Whitehead	
	George F. Mansur	✓
	William Plummer	
	Wilfrid Dean	
	~~Steve Doyle~~	~~F/I~~ ✓
	Walt Hinchman	
	Charles Joyce	
	William Lyons	
	Eva Daughtrey	
	Timmie White	
	Judy Morton	

REMARKS

Dr. Mansur had original

Geo.

The International Institute for Communications in Genoa?

Stevie - Can you check DOS to find out who these people are? Thanks.

gm.

COMMUNICATIONS SATELLITE CORPORATION

JOSEPH V. CHARYK
President

January 21, 1971

Dr. George F. Mansur
Deputy Director
Office of Telecommunications Policy
Executive Office of the President
Washington, D. C. 20504

Dear George:

I promised to provide you with a few more details regarding the Symposium on Long Term Prospects for Satellite Communications to be held in Genoa, Italy, June 2-4, 1971.

The Symposium is being planned under the sponsorship of the International Institute for Communications in Genoa. It proposes to cover through a series of invited papers and group discussions an assessment of the technological developments in satellites and in earth stations over the next decade or so. It also proposes to get into areas such as use of different frequencies, different kinds of future systems involving satellites, including television distribution systems, aeronautical and navigation applications, and others.

The specific paper that we would hope you could prepare and present should be one aimed at what you see will be the direction of technological developments in regard to the satellite end of the business. Since the total emphasis is on the technology and not on other factors, I would think that you would not have to worry about any interactions with policy questions.

Among other individuals who will be presenting invited papers are the following:

L.C. Tillotson of the Bell Telephone Laboratories, on the frequency question.

Sidney Metzger of our organization on point-to-point communications systems.

Leonard Jaffe of NASA and P. Blancheville of the French ORTF on television distribution.

Dick Marston and Jacques Villier, of France, on navigation aids.

G.D. Speake, Director of Research of the Marconi Company, on ground station developments. Other contributions are contemplated in this area from representatives of NEC in Japan and Siemens of Germany.

I hope that you will be able to see your way clear to present such a paper and since the Symposium comes immediately before the World Administrative Radio Conference in Geneva, it might fit well in your total planning.

The Committee is desirous of having a brief summary of the scope of the paper that would be delivered, with the title, in order to prepare the necessary program material. They would hope to receive such a summary not later than February 10.

Best regards -

Sincerely,

Joseph V. Charyk

OTP
aerosat

February 24, 1971

George:

This is the draft letter from Low to Bondi. Tom Nelson specifically calls your attention to the parenthetical statement in the final paragraph on page 2. He says you ought to consider very carefully what that means.

State Department (Bert Rein) is sending you comments on the aerosat program late today or first thing tomorrow. Nelson requests that you not sign off on this draft of Low's letter to Bondi until you have seen State's comments on the aerosat program. Nelson would like very much to talk with you personally this evening or tomorrow.

Signed

Steve

cc: Mr. Whitehead (2)
Mr. Doyle

SEDoyle/ec/24Feb71

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Office of the Administrator

Jan. 22, 1971

Tom

Dr. Whitehead:

The steps outlined in this letter to Don Rice are intended to be 100% consistent with the approach described to us by George Mansur at the time the policy statement was released. If you or he have any comments or suggestions, please let me know.

Willis

Willis Shapley

Action GFM - File

File

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

OFFICE OF THE DIRECTOR

January 25, 1971

Steve

~~Tom -~~

This letter from Shapley to Rice is, I believe, in accord with our policy statement with the exception of paragraph 6, which is ambiguous and may lead to various interpretations.

We plan a program review meeting next Monday to discuss related matters with DoT, NASA, and DoS.

The agenda for this meeting is attached.

Following the meeting I will draft a response to Shapley concuring with items 1 through 5, but clarifying our posture with respect to item 6.

George

George

OTP
aero
sat

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

January 22, 1971

Aeronautical Satellite Meeting

February 1, 1971, 10:00 AM

Office of Telecommunications Policy, Room 742

Agencies

Department of State
Department of Transportation
Federal Aviation Administration
National Aeronautics and Space Administration

AGENDA

1. Summarize activities since January 7, 1971 (each agency)

2. Comments by DOT/FAA on:

   a. Possible management arrangements for implementing the Government Policy established on January 7.

   b. Preliminary views on the general approach to implementing the policy, including actions leading to system development and deployment in both Pacific and Atlantic.

3. Comments by the Department of State on the general approach to effecting international coordination of U. S. program and utilization of the system to be implemented.

4. Comments by NASA.

5. Comments by OTP summarizing the National Program document to be distributed.

COPY FOR DR. WHITEHEAD

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WASHINGTON, D.C. 20546

OFFICE OF THE ADMINISTRATOR

January 22, 1971

Mr. Donald B. Rice
Assistant Director
Office of Management and Budget
Executive Office of the President
Washington, D.C. 20503

Dear Don:

We agree with the point made in your letter to Dr. Low of January 20, 1971, that there is a need to clarify NASA's role under the new overall policy for the development of air traffic control satellites. As a step in this direction and so that we can know as soon as possible if you feel we are on the right track, I would like to outline the course of action we now propose to take, in concert with DOT, in accordance with the White House policy statement of January 7, 1971.

1. NASA and DOT will continue their current discussions of the specific actions to be taken under the White House policy statement. In particular, we will be confirming or modifying our present understanding of the requirements for satellite services for the preoperational and future operational phases so as to be able to reorient, as may be necessary, our studies and other work in support of DOT, the studies that should be continued with ESRO, and our own studies and advanced technology work related to future systems or alternative approaches.

2. NASA will assist DOT, as desired by DOT, in developing an RFP or other appropriate procedures to establish what satellite services are available commercially, and at what cost, to meet preoperational needs for communications and surveillance in the Pacific and the Atlantic in 1973 and 1975, respectively, and in evaluating the proposals received.

3. NASA will discuss with DOT and State in what way the existing NASA-ESRO working arrangements can and should be used to help achieve proper European participation in and utilization of the preoperational system, especially in the Atlantic area. NASA-ESRO collaboration in space research and development, including the coordinated NASA-ESRO studies previously planned in the air traffic control area, will be redirected as necessary to be consistent with and support as appropriate the arrangements contemplated by DOT and State for European involvement in the preoperational system.

4. DOT and NASA will jointly plan and pursue studies to the degree necessary to provide a yardstick against which the technical approach and cost-effectiveness of the commercial proposals for the preoperational system can be assessed. Such studies would include those necessary to prepare the government to consider alternatives which may be advanced, such as an international commercial effort or a cooperative intergovernmental effort. We expect that the studies would take the form of:

a. NASA in-house studies, some of which may require contractor support of the sorts normally utilized on studies of this type,

b. NASA-ESRO studies as appropriate, and

c. Such other studies as DOT may determine necessary, with such NASA support as desired by DOT.

5. NASA will assist DOT, as desired by DOT, in developing a process and schedule for the above activities which will permit a meaningful and timely evaluation of the proposals.

6. Concurrently with the above, NASA, in concert with DOT, will consider further the need for and desirability of pursuing an advanced satellite system as the approach to the most effective operational system for the late 70's and early 80's. Based on this consideration, NASA will undertake further studies of such systems and the necessary technology development related thereto.

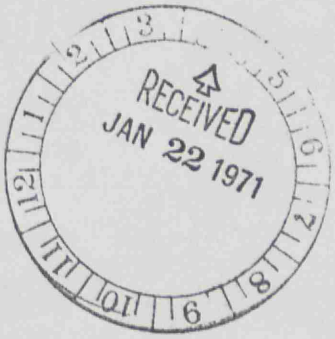
In addition to working closely with DOT, we will, of course, keep you and Dr. Whitehead currently informed of our progress and any problems that may arise. I would like very much to discuss the approach we are taking with you as soon as you can find the time.

Sincerely yours,

Willis H. Shapley
Associate Deputy Administrator

cc: Mr. James M. Beggs
Under Secretary of Transportation

Dr. Clay T. Whitehead
Director of Telecommunications Policy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